Radical Right, Identity, and Retaliation

Sirus Håfström Dehdari

Academic dissertation for the Degree of Doctor of Philosophy in Economics at Stockholm University to be publicly defended on Wednesday 13 June 2018 at 13.00 in Nordenskiöldsalen, Geovetenskapens hus, Svante Arrhenius väg 12.

Abstract

Economic Distress and Support for Far-right Parties – Evidence from Sweden. This paper studies the effects of economic distress on support for far-right parties. Using Swedish election data, I show that layoff notifications among low-skilled native-born workers account for 31 percent of the increased vote share for the Swedish far-right party the *Sweden Democrats*. The effect of layoff notifications on support for the Sweden Democrats is larger in areas with a high share of low-skilled immigrants, and in areas with a low share of high-skilled immigrants. These findings are in line with theories suggesting that voters attribute their impaired economic status to immigration, due to labor market concerns. Furthermore, I find no effects on voting for other anti-EU and anti-globalization parties, challenging the notion that economic distress increases anti-globalization sentiment. Using detailed survey data, I present suggestive evidence of how increased salience of political issues related to immigration channels unemployment risk into support for far-right parties.

The Origins of Common Identity: Division, Homogenization Policies and Identity Formation in Alsace-Lorraine. We exploit the quasi-exogenous division of the French regions Alsace and Lorraine after the Franco-Prussian War in 1870 due to disagreements in the German leadership to provide evidence of group identity formation within historically homogeneous regions. People in the treated area, which was exposed to repressive homogenization policies aimed to suppress group identity, express a stronger regional identity and support more regional autonomy today. Using a regression discontinuity design at the municipal level, we find that support for two crucial referenda, which would have increased regional autonomy, subscription rates to regional newspapers, and regionalist party votes are significantly higher in the treated area. The results are robust across different specifications and bandwidths, and not driven by language differences, large agglomerations or distance to foreign countries. The differences in regional identity are strongest for the first two age cohorts after World War II and become weaker for later generations.

Gender Differences in Revenge and Strategic play: A Natural Experiment. This paper provides new evidence of gender differences in retaliatory behavior. Using game show data from a natural setting where stakes are high, we ask whether men are more likely to retaliate following an attack and whether the gender of the target matters for this decision. The behavior studied in this paper is the decision of whom to send the question to in a quiz show setting. We observe a 23 percent gender gap in the propensity to retaliate: women are less likely to seek revenge. The gender of the target matters for women but not for men, with women being more likely to retaliate against men than women. In addition, we show that retaliation is a successful way to avert future attacks in the short term. This is especially true for women, yet we find that women seek less revenge than men.

Keywords: *Far-right Parties, Political Economics, Institutional Economics, Identity Formation, Behavioral Economics, Gender Economics.*

Stockholm 2018
http://urn.kb.se/resolve?urn=urn:nbn:se:su:diva-155300

ISBN 978-91-7797-147-4
ISBN 978-91-7797-148-1
ISSN 0346-6892

Department of Economics

Stockholm University, 106 91 Stockholm

RADICAL RIGHT, IDENTITY, AND RETALIATION

Sirus Håfström Dehdari

Radical Right, Identity, and Retaliation

Sirus Håfström Dehdari

ISBN print 978-91-7797-147-4
ISBN PDF 978-91-7797-148-1
ISSN 0346-6892

Cover picture: Residential area in Upplands Väsby, north of Stockholm, where the author grew up. Photo by Johan Jönsson. The photo has been edited.

Back-cover photo by Viktoria Mahdessian Garvare.

Printed in Sweden by Universitetsservice US-AB, Stockholm 2018.
Distributor: Institute for International Economic Studies, Stockholm University

Doctoral Dissertation
Department of Economics
Stockholm University

Abstracts

Economic Distress and Support for Far-right Parties – Evidence from Sweden. This paper studies the effects of economic distress on support for far-right parties. Using Swedish election data, I show that layoff notifications among low- skilled native-born workers account for 31 percent of the increased vote share for the Swedish far-right party the *Sweden Democrats*. The effect of layoff notifications on support for the Sweden Democrats is larger in areas with a high share of low-skilled immigrants, and in areas with a low share of high-skilled immigrants. These findings are in line with theories suggesting that voters attribute their impaired economic status to immigration, due to labor market concerns. Furthermore, I find no effects on voting for other anti-EU and anti-globalization parties, challenging the notion that economic distress increases anti-globalization sentiment. Using detailed survey data, I present suggestive evidence of how increased salience of political issues related to immigration channels unemployment risk into support for far-right parties.

The Origins of Common Identity: Division, Homogenization Policies and Identity Formation in Alsace-Lorraine. We exploit the quasi-exogenous division of the French regions Alsace and Lorraine after the Franco-Prussian War in 1870 due to disagreements in the German leadership to provide evidence of group identity formation within historically homogeneous regions. People in the treated area, which was exposed to repressive homogenization policies aimed to suppress group identity, express a stronger regional identity and support more regional autonomy today. Using a regression discontinuity design at the municipal level, we find that support for two crucial referenda, which would have increased regional autonomy, subscription rates to regional newspapers, and regionalist party votes are significantly higher in the treated area. The results are robust across different specifications and bandwidths, and not driven

by language differences, large agglomerations or distance to foreign countries. The differences in regional identity are strongest for the first two age cohorts after World War II and become weaker for later generations.

Gender Differences in Revenge and Strategic play: A Natural Experiment. This paper provides new evidence of gender differences in retaliatory behavior. Using game show data from a natural setting where stakes are high, we ask whether men are more likely to retaliate following an attack and whether the gender of the target matters for this decision. The behavior studied in this paper is the decision of whom to send the question to in a quiz show setting. We observe a 23 percent gender gap in the propensity to retaliate: women are less likely to seek revenge. The gender of the target matters for women but not for men, with women being more likely to retaliate against men than women. In addition, we show that retaliation is a successful way to avert future attacks in the short term. This is especially true for women, yet we find that women seek less revenge than men.

To Victoria and my family.

Acknowledgments

In January 1986, my mother walked through the arrival terminal at Västerås Airport for the first time. I was sitting comfortably on a pile of luggage on the baggage cart, while my mother was holding my older brother's hand. The luggage contained all of our possessions, and we were searching for representatives from *Hallstahammar refugee camp*. This was my very first day in my "new country", and apart from the heavy snow and extreme cold, it was an immediate improvement from the then-prevalent conditions in Iran.

After a short while, we moved to one of Stockholm's northern suburbs, which was a "socio-economically" weak neighborhood, where an alarmingly low percentage of foreign-born students even finished high school. This was something that I did not expect to, but, I did graduate from high school, and my parents encouraged me to apply to a university. Though my parents both possessed university degrees, I nevertheless lacked an academic role model – the kind that many of my peers found in their parents – and the thought of pursuing a doctoral degree never occurred to me. A couple of years after graduation, and after studying miscellaneous courses in history at the university, I decided to pursue a bachelor's degree in statistics and economics. During this time I encountered lecturers and professors who inspired me to not only apply for a master's program but to also explore the possibility of being admitted as a Ph.D. student at the Department of Economics. During the last year of my master's program, I had the honour of meeting David Strömberg and Torsten Persson, who would not only become my advisors during my Ph.D. but would also fill my need for academic role models.

David and Torsten are responsible for my keen interest in political and institutional economics. Through working as their research assistant, I became familiar with the vast sources of Swedish data and the possibilities of acquiring these data. They taught me to study issues that would not only teach us something about the question at hand, but also enhance our understanding about human behavior more generally. Their enthusiastic attitude and deep curiosity towards the questions I was exploring was contagious. They encouraged me to work harder towards an answer. It

is, without a doubt, their tireless help and support which allowed me to finish this thesis, and I am indebted to them.

I would also like to thank the rest of the IIES academic staff, in particular Konrad Burchardi, who provided valuable feedback. Together with my advisors, he has been an important part of this thesis. Jonathan de Quidt and Robert Östling have also spent many hours discussing and commenting on my papers, and I learned a lot from these discussions. Anna Sandberg, Arash Nekoei, Ingvild Almås, Jakob Svensson, Peter Nilsson, Per Krusell, John Hassler among others, are essential in fostering a productive research environment. Of course, we would not been able to produce anything of value were it not for the institute's fantastic administrative staff: Christina Lönnblad, Ulrika Gålnander, Tove Happonen, Viktoria Garvare and Karl Eriksson.

Outside of the IIES, I am extremely grateful for inspiring conversations with Olle Folke and Johanna Rickne. I have had the pleasure of communicating continuously with them throughout the writing of this thesis and I look forward to being their colleague at the Department of Government at Uppsala University. I want to thank Mahmood Arai, Michael Lundholm, Markus Jäntti and Peter Skogman at the Department of Economics/SOFI at Stockholm University for countless interesting and thought-provoking conversations.

Doing a Ph.D. is tough, but it gets remarkably easier when you have friendly and supportive colleagues. Among my fellow graduate students at the IIES, I am especially thankful for the company of current and former officemates: Jaakko Meriläinen, Matti Mittrunen, Nathan Lane and Erik Prawitz. I survived the stressful job market thanks to support from Daniel Knutsson, Eleonora Freddi, Erik Öberg and Michela Carlana. I am grateful for the friendship of several other graduate students at the IIES, the Department of Economics, and Stockholm School of Economics: Siri Isaksson, Benedetta Lerva, Divya Dev, Hannes Malmberg, Mounir Karadja, Karl Harmenberg, Saman Darougheh, Marta Giagheddu, Anna Aevarsdottir, Montasser Ghachem, Joakim Jansson, Xueping Sun, Emma Heikensten to mention a few. Outside of Stockholm, but still in academia, I am thankful for the support from André Reslow, with whom I did both my bachelor and masters, and Kai Gehring for many long, and at times frustrating, Skype meetings. On the other side of the Atlantic, I would like

to thank Elhanan Helpman for sponsoring my visit at Harvard University and Eric Chaney for many interesting meetings and insightful comments on my projects. I am also grateful to all the participants at the fantastic annual meetings of the Politics and History Network for their helpful comments and suggestions.

Outside of academia, I would like to thank a couple of friends who have helped me maintain something that resembles a normal life: Arido, Jonathan, Dave, Fiona, Katrin, Nelson, Johan, Therese, Julius, Christina and Christian. As I enter the next chapter of my life, I am looking very much forward to sharing many fun moments, preferably in our new house!

I am deeply grateful to my family as well. My mother Farzaneh, who in her twenties actively opposed an oppressive regime, fled her country to save our lives, and started over in a new and different country, all while raising two sons. Her strong dedication to justice and equality has influenced the type of questions I find interesting and worth studying. My older brother Behroz have always inspired me to do my very best and to work hard to achieve my goals. Having him as a role model has helped me enormously. My aunt Parvin in Linköping, who has always functioned as an extra mom.

Finally, I am forever indebted to my wife Victoria, whose patience, compassion and considerateness made this journey possible. You have been by my side to celebrate my achievements and to provide comfort following setbacks. It is no exaggeration to say that this thesis would not have been written without your endless support. Thank you for everything.

Sirus H. Dehdari
Stockholm
April 2018

Contents

Introduction

My thesis consists of three independent essays in both political economics and behavioral economics. More specifically, the essays address topics related to far-right party voting, homogenization policies and identity formation, and gender differences in retaliatory behavior. This introduction briefly summarizes the three chapters. I conclude by discussing some of the most important research topics related to the electoral success of radical right parties.

Chapter 1, **Economic Distress and support for Far-right Parties – Evidence from Sweden**, studies the relationship between economic factors and support for far-right parties, using the increase in vote shares for the Swedish anti-immigration party *Sweden Democrats* following the financial crisis. By aggregating Swedish administrative individual-level data at the election-precinct level, I estimate how changes to votes for the Sweden Democrat – between the 2006 and the 2010 national elections – are affected by layoff notifications received by voters belonging to different social groups. Layoff notifications allow me to estimate the causal effect of precinct-level economic distress on electoral outcomes. I find that only layoff notifications among low-skilled native-born workers have a positive effect on the support for the Sweden Democrats: for every second low-skilled native-born worker receiving a layoff notification, the Sweden Democrats gain, on average, one additional vote. For other social groups, namely high-skilled native-born workers, high and low-skilled foreign-born workers, I find no effect, or a negative effect in some specifications.

Support for the extreme right is often linked to immigration: as refugees or minorities become visible, natives feel that their social and economic status in society is threatened, and they therefore vote for parties that promise to restrict immigration. This could potentially be related to economic distress, if natives attribute their impaired personal economic circumstances on immigration, in particular same-skill immi-

gration. To introduce this possibility, I interact the number of layoff notifications received by members of each social group with a measure of local immigration, both high and low-skilled. I find that layoff notifications among low-skilled natives have a larger effect on support for the Sweden Democrats in areas with a high share of low-skilled immigrants, while this effect is smaller in areas with a high share of high-skilled immigrants. For layoff notifications among high-skilled natives, the opposite is true. Thus, the effect that layoff notifications received by natives of a particular skill has on votes for the Sweden Democrats is more positive in areas with same-skill immigration, and less positive in areas with immigration of the opposite skill. I interpret these results as natives being more likely to attribute individual economic hardship to immigration when immigrants are present, due to a fear of increased labor market competition.

A growing literature in economics connects far-right party voting to increased globalization and international trade competition. Voters who experience worse job prospects due to firms being exposed to import competition, or off-shoring, are more likely to oppose international economic integration and free trade agreements. To test the validity of this explanation in the Swedish setting, I examine whether layoff notifications raise the vote share for the Swedish *Left Party*. I demonstrate that candidates and voters of the SD and the Left Party take almost identical positions on issues related to the European Union. Despite these similarities, increased layoff notifications do not raise the vote share of the Left Party. These findings cast doubt on claims that the effect of economic distress on voting for far-right parties is channeled through anti-globalization attitudes and resentment towards supranational organizations.

Furthermore, Chapter 1 provides suggestive evidence of economic distress being translated into support for far-right parties through increased salience of political issues related to immigration. Voters who perceive immigrants as threatening their social and economic status are arguably more likely to focus on conflicts based on culture and ethnicity. This shifts the salience of political issues from the socioeconomic dimension to the sociocultural one, and while the former is dominated by the established parties, radical right parties have positioned themselves strategically on the latter. This means that support for anti-immigration parties does not

depend on increased anti-immigration attitudes among the electorate.

Chapter 2, **The Origins of Common Identity: Division, Homogenization Policies and Identity Formation in Alsace-Lorraine** (jointly written with Kai Gehring), studies the effect of nation-building through homogenization policies on regional identity. The emergence of separatist movements in many different countries all over the world demonstrates the importance of a better understanding of the formation of a common identity. The study of this aspect of human behavior is limited due to the empirical obstacle of separating the effect of a particular policy or shock from other factors that are specific to a certain region or country. Chapter 2 exploits a natural experiment that divided historically homogeneous regions in a quasi-exogenous way to study how repressive policies influenced identity formation.

I study the division of the border regions *Alsace and Lorraine* between France and Germany following the Franco-Prussian War in 1870-71. The occupied areas were, after the Great War, returned to France. People in the occupied (treated) area experienced a change in nation status twice and were exposed to the suppression of their group identity through intrusive homogenization policies. I find that these policies have had long-term effects on regional identity: people in the treated area today exhibit a higher degree of regional identity. Using survey data, I show that respondents in the formerly occupied areas express a higher regional attachment than respondents in parts of Alsace and Lorraine that were not occupied.

To establish a causal link, I consider only municipalities at the former border dividing the formerly occupied areas with rest the of Alsace and Lorraine. I use support for European Union integration in two crucial referenda in 1992 and 2005 as proxies for regional identity since the European Union was perceived as facilitating regional autonomy and helping the regional cause. As an alternative measure of regional attachment, I consider the share of household subscription of regional newspapers. For all outcomes, I find a higher degree of regional identity in the formerly occupied areas. All available evidence suggests that the exact location of the border was exogenous to my outcome, which suggests that the difference in regional identity is caused by the change in nation status and its associated suppressive homogenization policies.

In addition, I find no differences in national identity or nationalism

between the treated and the non-treated areas. Support for Jean-Marie Le Pen in the 2007 presidential election is virtually the same on both sides of the former border. Thus, it seems that the German occupation and the harsh homogenization policies by both the German and the French states have strengthened regional identity without necessarily diminishing national identity.

Chapter 2 considers a large number of alternative explanations, such as the potential effects of proximity to Germany, religiosity, language/dialect differences and migration. I address each of these issues and conclude that it is not likely that they explain the observed differences in regional identity. Instead, I suggest that the differences result from increased parental investments in teaching regional traditions to offset the suppressive policies imposed by the German and French states. These investments have increased regional identity in the formerly occupied areas, and the difference has persisted for almost a century.

In the third and last chapter, **Gender Differences in Revenge and Strategic Play: A Natural Experiment** (jointly written with Emma Heikensten and Siri Isaksson), I examine the gender difference in retaliatory behaviors. This is an important question as our response to an attack sends a strong signal to our surroundings. A person who retaliates might avert future attacks whereas one who does not may invite more, potentially impacting success. I answer questions related to gender differences in retaliation by collecting a unique data set on a high-stake quiz-based game show broadcasted on TV in Sweden (*Vem vet mest?*). This data set provides a natural setting with clear rules and less noise than is typically found in administrative data, with more observations and higher stakes than what can be obtained in the laboratory. During the elimination stage of the game show, contestants eliminate each other by sending questions to one another. Since there are virtually no benefits to receiving questions, sending one is considered a harmful and aggressive action. My results show that women are 23 percent less likely to seek revenge. In addition, the target matters for women but not for men: women are more likely to retaliate against a man.

I exploit how retaliations affect success in the game show. A low number of questions received is associated with higher chances of avoiding elimination. I show that retaliation wards off questions, but only in the

short term. Interestingly, female retaliatory acts are more successful in terms of averting future questions than male ones. And yet, women are less likely to seek revenge.

Furthermore, I examine gender differences in other strategies commonly used by the game show contestants. In particular, I consider aggressive strategies, such as targeting the same the contestant multiple times, or always targeting contestants that are closest to being eliminated. My results suggest that women are less aggressive, which could explain why they are less eager to engage in retaliatory actions. This is in line with previous studies that show that women are more sensitive to social image concerns: if women believe that being aggressive reflects poorly on them, this could motivate them to retaliate less, even when retaliation increases their chances of being successful.

I conclude with a discussion of some important research topics related to the electoral success of far-right parties. I summarize the focus of the existing scholarship as well as identify a number understudied areas in the literature. Most studies, both theoretical and empirical, have focused on the (contextual) determinants of the increased support for the radical right. These can be broadly categorized into factors related to the economy, for instance unemployment levels and (relative) economic deprivation (e.g. Autor *et al.* 2016; Coffé *et al.* 2007; Colantone and Stanig 2016; Dippel *et al.* 2015; Lubbers *et al.* 2002; Rydgren and Ruth 2013), or visibility of minorities/refugees (e.g. Becker *et al.* 2016; Biggs and Knauss 2012; Colussi *et al.* 2016; Dustmann *et al.* 2016; Steinmayr 2016). A less extensive literature looks at historical explanations, for instance Cantoni *et al.* (2017).

The supply-side approach to explaining differences in the electoral success of radical right parties across countries has so far been focused on the interaction between the development of ethno-nationalist ideology, and the emergence of *political opportunity structures* (see Rydgren 2007). Related to this is the diffusion of these ideologies (see Rydgren 2005). One of the main political opportunity structures discussed in the literature is the occurrences of "gaps" between party positions and preferences of voters in political cleavage dimensions. These gaps can occur in dimensions that, for some reason, become salient, and where the established parties have been unable to position themselves strategically. This suggests that

the increased salience of, for instance, issues related to immigration can raise vote shares for anti-immigration parties without a higher level of anti-immigration attitudes. In Chapter 1, survey data is used to present evidence of this association, however, without providing a causal link. More empirical research is needed in order to understand how salience of political issues addressed by far-right parties can explain their emergence and electoral success.

Economists have a long tradition of evaluating the effects of different policies. Although radical right parties in most European countries have seen their vote shares increases substantially in the last two decades, they still control few local and national governments. Naturally, studies addressing the economic and social consequences of their policies are absent. Related to this is how policies conducted by incumbent politicians of other political parties are influenced by electoral incentives driven by anti-immigration attitudes. Gamalerio (2017) studies how Italian mayors up for re-election are less likely to open refugee centers in their municipalities despite the large financial benefits associated with these centers. Another related topic is how special interest groups and lobbying organizations react to the emergence of far-right parties. For instance, the *Confederation of Swedish Enterprise* have influenced the Sweden Democrats to adopt policies that would benefit the members of the confederation. The consequences of the interplay between special interest groups and far-right parties have, to the best of my knowledge, yet to be studied.

Lastly, more research is needed on the role played by social media and traditional media, such as newspapers and news channels. Boxell *et al.* (2017) studies the relationship between social media and political polarization in the US and concludes that growing use and access to the Internet cannot explain increased polarization. Rydgren (2004) argues that the generous amount of media coverage received by the Danish People's party can partly explain their electoral success, and Steinmayr (2016) discusses "micro" and "macro" exposure to immigration, where the former pertains to interactions with refugees while the latter is related to media coverage on, for instance, refugee flows. Media coverage and framing can potentially affect salience of immigration issues or anti-immigration attitudes, which in turn affects voting behavior.

References

Autor D, Dorn D, Hanson G, Majlesi K, *et al.* (2016). "Importing Political Polarization? The Electoral Consequences of Rising Trade Exposure." *Technical report*, NBER Working Paper No. 22637.

Becker SO, Fetzer T, *et al.* (2016). "Does Migration Cause Extreme Voting." *Technical report*, Competitive Advantage in the Global Economy (CAGE).

Biggs M, Knauss S (2012). "Explaining membership in the British National Party: A multilevel analysis of contact and threat." *European Sociological Review*, **28**(5), 633–646.

Boxell L, Gentzkow M, Shapiro JM (2017). "Greater Internet use is not associated with faster growth in political polarization among US demographic groups." *Proceedings of the National Academy of Sciences*, p. 201706588.

Cantoni D, Hagemeister F, Westcott M (2017). "Persistence and Activation of Right-Wing Political Ideology." *mimeo*.

Coffé H, Heyndels B, Vermeir J (2007). "Fertile grounds for extreme right-wing parties: Explaining the Vlaams Blok's electoral success." *Electoral Studies*, **26**(1), 142–155.

Colantone I, Stanig P (2016). "The Trade Origins of Nationalist Protectionism: Import Competition and Voting Behavior in Western Europe." *mimeo*.

Colussi T, Isphording IE, Pestel N (2016). "Minority Salience and Political Extremism." *IZA Discussion Paper No. 10417*.

Dippel C, Gold R, Heblich S (2015). "Globalization and Its (Dis-) Content: Trade Shocks and Voting Behavior." *Technical report*, NBER Working Paper No. 21812.

Dustmann C, Vasiljeva K, Damm AP (2016). "Refugee migration and electoral outcomes." *CReAM DP*, **19**, 16.

Gamalerio M (2017). "Not welcome anymore: the effect of electoral incentives on the reception of refugees." *mimeo*.

Lubbers M, Gijsberts M, Scheepers P (2002). "Extreme right-wing voting in Western Europe." *European Journal of Political Research*, **41**(3), 345–378.

Rydgren J (2004). "Explaining the Emergence of Radical Right-Wing Populist Parties: The Case of Denmark." *West European Politics*, **27**(3), 474–502.

Rydgren J (2005). "Is extreme right-wing populism contagious? Explaining the emergence of a new party family." *European journal of political research*, **44**(3), 413–437.

Rydgren J (2007). "The Sociology of the Radical Right." *Annual Review of Sociology*, **33**, 241–262.

Rydgren J, Ruth P (2013). "Contextual explanations of radical right-wing support in Sweden: socioeconomic marginalization, group threat, and the halo effect." *Ethnic and Racial Studies*, **36**(4), 711–728.

Steinmayr A (2016). "Exposure to Refugees and Voting for the Far-Right: (Unexpected) Results from Austria." *IZA Discussion Paper No. 9790*.

1. Economic Distress and Support for Far-right Parties – Evidence from Sweden*

1.1 Introduction

The increase in support for far-right parties is one of the largest changes to the European political landscape in the last few decades. What makes voters abandon mainstream parties and instead cast their votes for those that call for closed borders, increased barriers to trade, and leaving the European Union? Which changes in socioeconomic factors lie behind these altered voting patterns? A large strand of theoretical and empirical research aspires to answer these questions. Given the variation in par-

* I am indebted to David Strömberg, Torsten Persson, Konrad Burchardi, Olle Folke and Johanna Rickne. This project has benefited from conversations with Anders Björklund, Antonio Cabrales, Davide Cantoni, Saman Darougheh, Matthias Doepke, Eleonora Freddi, Nikhar Gaikwad, Matthew Gentzkow, Guido Imbens, Simon Jäger, Mounir Karadja, Daniel Knutsson, Eliana La Ferrara, Nathaniel Lane, Benedetta Lerva, Sara Lowes, Kaveh Majlesi, Hannes Malmberg, Rachael Meager, Jaakko Meriläinen, Joana Naritomi, Christopher Neilson, Arash Nekoei, Gerard Padró i Miguel, Erik Prawitz, Alex Rees-Jones, Dan-Olof Rooth, Jens Rydgren, Jonathan de Quidt, Laura Veldkamp, Noam Yuchtman, Florian Zimmerman, Robert Östling, and comments from seminar participants at the MPSA 2018, RES 2018, ASEN 2018, University of Munich, RES PhD Meetings 2017, SAEe 2017, EWMES 2017, Advances in Political Economy and Public Finance Workshop, University College London, Stockholm Microwave, IIES (Stockholm University), 6th Annual Lithuanian Conference on Economic Research, and the Politics and History Network (NYU). I would also like to thank David Seim for providing me with data, Nelson Hernandez for proofreading, Hulda Lif Hardardottir for expert research assistance, and Stiftelsen Lars Hiertas Minne for financial support.

liamentary representation of far-right parties across Europe, researchers are struggling to find uniform explanations that speak to most European countries. However, a consensus has formed on which type of voters are most likely to support the extreme right, namely, native-born low-skilled workers, mostly of male gender (Arzheimer and Carter 2006; Kitschelt 2007; Lubbers *et al.* 2002; Rydgren 2004b; PSU Statistics Sweden). One popular explanation for the overrepresentation of these groups is that their members support anti-immigration and anti-globalization parties in the fear of their jobs or high wages due to technological changes, immigration, or international trade (Kitschelt 1995; Norris 2005a; Rydgren 2004a, 2005). Therefore, negative shocks to employment or income are believed to raise the support for radical right parties.[1]

This paper studies the effect of economic distress on support for the extreme right. Specifically, it examines how much of the increased vote share for the Swedish anti-immigration far-right party *Sweden Democrats* (SD) can be explained by economic distress among low-skilled native-born workers. To address this question, I combine detailed election precinct-level data on the number of workers receiving layoff notifications with precinct-level election outcomes for the Sweden Democrats in the 2006 and 2010 national elections. This resulting data set differs from those used in previous studies that try to estimate the link between economic factors and support for far-right parties. First, my data use the precinct-level number of layoff notifications received by workers, instead of changes to employment shares or sectoral differences of import penetration which interacts with the sectoral composition of the geographic unit (cf. Autor *et al.* 2016; Colantone and Stanig 2016a,b; Dippel *et al.* 2015; Malgouyres 2014). My data should yield a more accurate measure of economic distress. Second, the underlying individual-level data provide layoff notification numbers conditional on skill level and origin. This allows me to estimate the effect of layoff notifications on support for the SD, by skill level and origin combinations.

I find that the change in SD votes is positively affected by layoff notifications among low-skilled native-born workers. This accounts for 31 percent of the total increase in SD votes from 2006 to 2010. For other

[1] Throughout the paper, I will use far-right parties, radical right parties, and the extreme right interchangeably.

social groups, such as high-skilled native-born, high-skilled foreign-born, and low-skilled foreign-born workers, the estimates are not statistically different from zero, or in some specifications negative.

A potential threat to empirically measuring the causal effect of layoff notifications is that the notifications are simultaneous with SD support. To overcome the potential threat of endogeneity, I construct a Bartik instrument that predicts the number of layoff notifications by the national trends in notifications within each industry, and the sectoral composition in each election precinct. Since sectoral composition might be correlated with local conditions that influence voting through other channels than notifications, I hold constant a set of observable characteristics that are highly correlated with the first principal component of the industry shares, as suggested by Goldsmith-Pinkham *et al.* (2017). Instrumental variable methods are employed with the number of notifications instrumented by the Bartik instrument. Moreover, I present OLS estimates of the effect of layoff notifications among low-skilled native-born workers. This effect accounts for 12 percent of the increase in SD votes.

Why does economic distress among low-skilled native-born workers increase support for far-right parties? One potential explanation can be found in the literature on the economic effects of immigration. Native-born workers of a particular skill are expected to lose from immigration of the same skill, as this raises the competition for jobs (Borjas *et al.* 1996, 1997). At the same time, low-skilled workers might oppose low-skilled immigration for fear of having to compete for welfare services (Facchini and Mayda 2009; Hainmueller and Hiscox 2010). Thus, it seems plausible that low-skilled native-born workers might attribute changes to personal economic circumstances to low-skilled immigration, in particular if they are exposed to immigrants.[2] To introduce this possibility, I construct a measure of precinct-level visibility of immigrants, which I interact with the number of layoff notifications. The results from these specifications show that a one standard deviation increase in the share of low-skilled immigrants increases the effect of notifications received by low-skilled native-

[2] A number of recent studies have found that the presence of refugees and immigrants increase anti-immigration attitudes (see Becker *et al.* 2016; Hangartner *et al.* 2017; Tabellini 2017).

born workers on support for the SD by 36 percent.[3] The effect is smaller in areas with larger than the average share of high-skilled immigrants. The estimated negative effect on SD voting of layoff notifications among high-skilled native-born workers is smaller when the share of high-skilled immigrants is high, and more negative in areas with a high share of low-skilled immigrants.

The empirical evidence of the effects of immigration on labor market outcomes is, however, inconclusive. Several studies find no effect on wages or employment opportunities for native workers (Bodvarsson *et al.* 2008; Card 1990; Clemens and Hunt 2017; Peri and Yasenov 2017; Ruist 2013), while some studies estimate a small but statistically significant negative effect on wages (Becker *et al.* 2016; Borjas 2015; Borjas and Monras 2017). If immigration does not affect unemployment risk or depress wages, it is unclear whether native-born workers should attribute their impaired economic status to immigration.[4] In any case, it is important to note that I find a positive effect of layoff notifications, *unrelated* to immigration, on voting for far-right parties. Thus, the presence of minorities is not a prerequisite for native-born workers to attribute individual economic hardship to immigration.

An alternative explanation is that voters are attracted to far-right parties due to their anti-globalization stance (cf. Colantone and Stanig 2016b; Dippel *et al.* 2015; Malgouyres 2014). Voters that experience worse job prospects due to firms being exposed to import competition, or off-shoring, are more likely to oppose international economic integration and free trade agreements, such as the *Transatlantic Trade and Investment Partnership* (TTIP) or the European Union. To test the validity of this explanation in the Swedish setting, I examine the relevance of anti-EU sentiment and voting behavior. I demonstrate that candidates and voters of the SD and the *Left Party* take almost identical positions on issues related to the European Union. Despite these similarities, increased layoff notifications do not raise the vote share of the Left Party. These findings

[3] A similar result is found in Strömblad and Malmberg (2015), using data on regional unemployment levels and presence of visible minorities in Sweden.

[4] In Haaland and Roth (2017), survey respondents that received information about research showing no negative effects of immigration on the labor market where more likely to support immigration. This shows that beliefs about the consequences of immigration is enough to influence anti-immigration attitudes.

cast doubt on claims that the effect of economic distress on voting for far-right parties is channelled through anti-globalization attitudes and resentment towards supranational organizations.

To understand how economic distress translates into support for far-right parties, I use theories in sociology and political science, which emphasize individual *salience* of political cleavage dimensions and conflicts based on ethnic and cultural background. If voters identify conflicts based on ethnic and cultural origin as more important than those based on class, then dimensions such as the sociocultural one becomes more salient than, for instance, the socioeconomic dimension. Voters that perceive immigrants as threatening their social and economic status are arguably more likely to focus on conflicts based on culture and ethnicity.[5] Using Swedish survey data, I show that self-perceived unemployment risk is positively correlated with higher salience of immigration-related political issues among low-skilled native-born respondents, while the same relationship is negative for high-skilled native-born respondents. This mechanism is in line with my empirical results that suggest that unemployment risk among high-skilled native-born workers does not have a positive effect on the vote share for far-right parties.

My paper contributes to three strands of literature. First, it adds to the growing literature on economic factors behind the electoral success of the extreme right. In particular, it measures to what extent layoff notifications explains the voting for far-right parties. A number of studies rely on survey data on respondents' self-perceived unemployment risk and attitudes for immigration (Dustmann and Preston 2007; Facchini and Mayda 2009; Hainmueller and Hiscox 2010; Inglehart and Norris 2016; Malhotra *et al.* 2013; Mayda 2006), while others link regional unemployment rates or predicted job separation caused by import competition to actual election outcomes (Autor *et al.* 2016; Colantone and Stanig 2016a,b; Dippel *et al.* 2015; Knigge 1998; Lubbers *et al.* 2002; Malgouyres 2014; Rydgren and Tyrberg 2016). Most of these studies find that economic distress affects voting for far-right parties, either through its effect on anti-immigrant attitudes or opposition to trade liberalization. My findings in this study suggest that low-skilled native-born workers attribute

[5] See Kitschelt (1995) for a similar argument on winners and losers of economic liberalism.

changes to their economic status on immigration, which lead them to support far-right parties.

Second, the paper contributes to the literature on visibility of immigrants and far-right voting. By interacting immigration with economic distress, I find that the positive effect of layoff notifications – only among low-skilled native-born workers – on voting for far-right parties is higher in areas with a high share of low-skilled immigrants. Numerous studies examine the relationship between far-right voting and immigration (see Golder 2003; Lubbers *et al.* 2002; Rydgren and Ruth 2013; Steinmayr 2016; Tabellini 2017). When immigrants become visible, ingroup voters – usually native-born voters – fear that their economic status is threatened, which makes policies that restrict immigration more attractive.

Third, my paper adds to the literature on the channels through which economic distress translates into support for far-right parties. I use survey data to show that self-perceived unemployment risk is positively correlated with salience of immigration issues, in line with theories discussed in, for instance, Schain *et al.* (2002), Rydgren (2004a, 2007), and Norris (2005a). In particular, these theories argue that voters turn to other political cleavage dimensions once the predominate socioeconomic dimension fails to explain their impaired economic situation. This shift benefits parties that put less focus on conflicts related to distributive questions of income and wealth, and instead emphasizes conflicts based on ethnic and cultural background.

The rest of the paper is structured as follows. Section 1.2 discusses the relevant empirical literature, while Section 1.3 presents the data and the empirical methods. Section 1.4 presents the results, and Section 1.5 considers potential mechanisms. Section 1.6 concludes.

1.2 Background and related literature

In 1988, the Sweden Democrats were founded by former members of the racist and radical right party the *Sweden Party*. In its early years, many members of the SD were also active in, or had close ties to, neo-nazi organizations (Widfeldt 2008). In the late 90s, the SD focused on re-branding themselves and received 1.4 percent of the votes in the 2002 national

election. In the 2006 election, the party did not receive enough votes to get past the 4 percent threshold, but did obtain more than 250 seats in different local councils (Rydgren and Ruth 2011).[6] Four years later, the SD entered the Swedish parliament for the first time, after receiving a vote share of 5.7 percent, resulting in 20 seats.[7] Since their electoral breakthrough, SD's success has been studied by, in particular, sociologists and political scientists. This section discusses the empirical research on the electoral success of far-right parties, and the related literature on the effects of immigration. The existing literature studying the electoral success of far-right parties has used various measures of socioeconomic and sociodemographic outcomes, such as unemployment risk and influxes of refugees and immigrants. These relate to one of two main categories of theories that explain the increased support for far-right parties discussed by researchers and mentioned in the political debate: *i)* issues concerning the visibility of minorities, and *ii)* changes to voters' personal economic circumstances.

Visibility of minorities

The first family of explanations relates to how anti-immigrant and xenophobic attitudes can be explained by the presence of immigrants and refugees. As native-born voters are exposed to minorities, they fear that their social and economic status are challenged (Rydgren and Tyrberg 2016). The *group positioning theory* states that a high presence of minority groups is perceived as threatening to the majority group's social position, while the *ethnic competition hypothesis* predicts that native voters' fear of competition for employment, housing, and general social welfare between ingroup and outgroup members intensifies when there is a large influx of immigrants. According to these theories, native voters in areas with a high share, or large influx, of immigrants, are more likely to have stronger anti-immigration attitudes, which leads to higher support for anti-immigration parties.

On the contrary, the *contact hypothesis* states that a high share of

[6] The Swedish electoral system is characterized by *proportional representation*. Each party needs to either get past the national threshold of 4 percent, or the district-level threshold of 12 percent, to receive a seat in the national parliament.

[7] Figure A1.1 in the Appendix shows SD vote share from 1998 to 2014.

immigrants allows inter-ethnic interactions, which undermines prejudices and decreases support for xenophobic parties.[8] In these neighborhoods, far-right parties are predicted to receive less support from native voters. Evidence for the contact theory is provided in a number of studies (Biggs and Knauss 2012; McLaren 2003; Pettigrew and Tropp 2006; Schneider 2008; Steinmayr 2016) while in a cross-country analysis in Rydgren (2008), the hypothesis is only supported in two out of six countries. Instead, the share of immigrants is shown to be positively correlated with anti-immigration attitudes and with support for the extreme right in Becker *et al.* (2016); Colussi *et al.* (2016); Dustmann *et al.* (2016); Hangartner *et al.* (2017); Knigge (1998); Lubbers *et al.* (2002); Rink *et al.* (2009); Rydgren and Ruth (2013); Rydgren and Tyrberg (2016); Tabellini (2017). These studies find evidence supporting either the ethnic competition hypothesis or the group positioning theory. Norris (2005b) finds no correlation the between presence of minorities and support for anti-immigration parties, while Valdez (2014) shows that areas with a non-Western population beyond a certain threshold exhibit lower support for far-right parties. At the same time, support for the SD is high in areas close to precincts with a large non-western populations. Strömblad and Malmberg (2015) show that exposure to minorities is only associated with increased voting for the SD in areas plagued by high unemployment, while areas with low unemployment instead have low support for the SD. These results can be interpreted as support for the ethnic competition hypothesis.[9]

Changes to personal economic status

The second category of explanations emphasizes economic distress as the cause of the electoral success of far-right parties. These theories offer three different channels through which voters' discontent with the mainstream parties and their policies arise. The first channel, mainly studied by

[8] Simonovits *et al.* (2017) show that an online perspective-taking game in Hungary reduced prejudice among young adults and lowered vote intentions for Hungary's far-right party.

[9] Related to the ethnic competition hypothesis is *welfare chauvinism*, where in-groups prefer to exclude outgroups in fear of losing existing welfare benefits. This is supported by the results in Strömblad and Malmberg (2015).

economists, is that unemployment, resulting from exposure to import competition from low income countries, creates calls for more restrictive trade policies. In recent years, a number of studies have linked exposure to international trade competition with support for far-right parties and found that increased import competition from low-wage countries has a positive effect on voting for far-right parties (see Colantone and Stanig 2016b; Dippel *et al.* 2015; Malgouyres 2014).[10] In Autor *et al.* (2016), imports from China is instead used to show that voters in areas exposed to trade competition elect more "extreme" House representatives: districts initially in the hands of Republicans elect more conservative Republicans while districts belonging to the Democrats elect either a more liberal Democrat or a conservative Republican. In an extension to the study, the authors provide evidence of import shocks benefiting Donald Trump in the 2016 presidential election.

The second channel, which sociologists call the *social marginalization hypothesis*, argues that residents of economically deprived areas feel let down by the established parties, which makes them more likely to vote for anti-establishment parties. Several studies using Swedish data supports this hypothesis: Rydgren and Ruth (2011, 2013); Valdez (2014). Lubbers *et al.* (2002) and Coffé *et al.* (2007) provide evidence of a positive correlation between voting for far-right parties and unemployment, while a negative correlation is found in Knigge (1998). In Arzheimer and Carter (2006), no conclusive evidence for the socioeconomic marginalization hypothesis is found.

The third channel suggests that voters attribute changes to their personal economic circumstances to immigration. These changes include, for instance, job separation, loss of access to welfare services, or a pay cut.[11] Natives blame immigrants for changes to personal economic circumstances based on concerns about the consequences and effects of immigration. The literature on these concerns can be partitioned into two

[10] The low-wage countries usually used in these studies are China, India, Malaysia, Mexico, Philippines, and Thailand.

[11] There is a subtle but important distinction between this channel and the ethnic competition hypothesis discussed above, namely that the competition for employment and welfare services described by the ethnic competition hypothesis becomes salient as immigrants become visible to ingroup members, and does not require actual changes to ingroup members' personal economic circumstances.

parts: *i)* competition for employment, and *ii)* increased strain on provision of welfare services. The consequences for natives related to the first part is dependent on the type of immigration the domestic economy is exposed to. According to the *factor-proportions analysis model* (see Borjas *et al.* 1996, 1997), we should expect factors which immigrants are considered good substitutes for to be relatively worse off. Low-skilled immigration is believed to lower relative wages for native-born low-skilled workers as a result of higher supply of this particular factor. At the same time, relative wages of high-skilled workers will rise. If this was the only concern, we would except natives to oppose immigrants with a similar skill level while being in favor of immigration of the opposite skill level.

The second important concern related to immigration is the expected burden on welfare services, in terms of both transfers and taxes. As immigration puts pressure on public services, for instance health and education, balancing the government's budget requires adjustments to both taxes and transfers, such as unemployment benefits (Facchini and Mayda 2009). For this part too, the degree of the burden depends on the skill level: high-skilled immigrants are assumed to be net contributers to public finances while the opposite is true for low-skilled immigrants (Hainmueller and Hiscox 2010). Given these assumptions, both high and low-skilled native-born voters should support high-skilled immigration while opposing low-skilled immigration. Figure 1.1 summarizes the expected reactions of natives from low and high-skilled immigration for concerns related to labor market competition and constraints on welfare.

The empirical research on the welfare burden of immigrants does not provide conclusive evidence. Some studies present evidence that immigrants pay less in taxes than they take out in benefits while others show that immigrants are net contributors to the welfare state (Ekberg 1999; Evans and Fitzgerald 2017; Martinsen and Pons Rotger 2017; Smith and Edmonston 1997). The empirical research on the impact of immigration on wages is much more extensive, but also equally inconclusive. The influential 1990 study by David Card on labor market outcomes from an exogenous shock to labor supply following the Mariel boatlift finds no effect on wages. Since then, the study has been revisited and evidence of an adverse effect on low-skilled workers' wages have been found (Borjas 2015; Borjas and Monras 2017), as well as evidence confirming the

Figure 1.1: Labor market competition and welfare concerns

	Labor market competition		**Constraints on welfare**	
	Low-skilled immigration	High-skilled immigration	Low-skilled immigration	High-skilled immigration
Low-skilled natives	Oppose	Not oppose	Oppose	Not oppose
High-skilled natives	Not oppose	Oppose	Oppose	Not oppose

Notes: Expected opposition to high and low-skilled immigration among high and low-skilled native-born voters, respectively, for concerns about labor market competition and constraints on welfare provision.

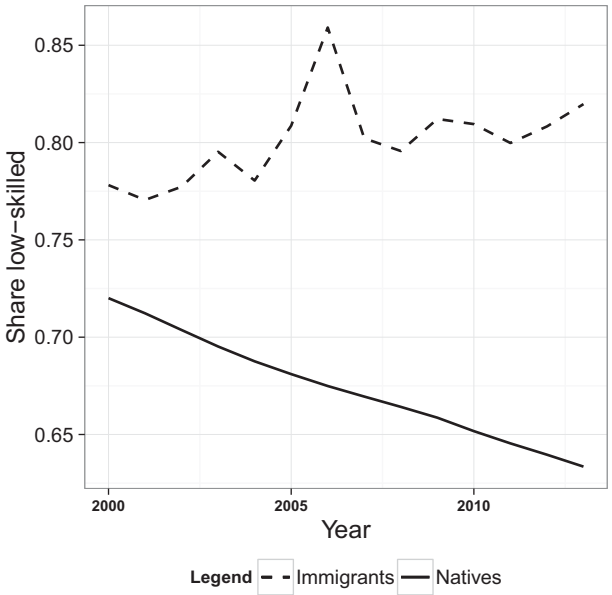
original finding of no effects (Bodvarsson *et al.* 2008; Clemens and Hunt 2017; Peri and Yasenov 2017). Other studies have either found no effects on wages, or small negative impact on wages for low-skilled workers. In Longhi *et al.* (2005), 18 studies measuring the effect of immigration on wages are statistically summarized using meta-analysis techniques. The authors find evidence of a very small overall effect on wages.

Recent immigration to Sweden has been characterized by low-skilled immigration, as shown in Figure 1.2. The share of natives with no more than a high school diploma has steadily been falling for the past 15 years, while this share among immigrants has increased. Given the theories discussed above, low-skilled native-born workers are expected to be more likely to oppose immigration to Sweden.

Salience of political issues

Although the studies discussed above find evidence of economic conditions affecting support for far-right parties, the channels through which economic distress is translated into voting for far-right parties is less known. Several studies argue that personal economic circumstances influence attitudes towards immigration (Dustmann and Preston 2007; Facchini and Mayda 2009; Malhotra *et al.* 2013; Mayda 2006), while others find little evidence of such relationship (Hainmueller and Hiscox 2010; Hainmueller and Hopkins 2014). However, the increase in anti-immigration attitudes is not a necessary condition for the emergence, and electoral success, of

Figure 1.2: Share of low-skilled, 2000 to 2014



Notes: Each line represents the share of low-skilled among native-born (solid) and newly arrived immigrants (dashed) respectively, 2000-2013. Low skill is defined as high-school education or lower as highest attained education level. Based on administrative individual-level data.

far-right anti-immigration parties. Increased *salience* of political cleavage dimensions can facilitate the occurrences of *gaps* between the preferred policies of voters and the platforms announced by political parties. The gaps emerge in dimensions where the established parties have been unable, or unwilling, to position themselves strategically (Rydgren 2004b, 2005).[12] Gaps resulting from an increased salience of political issues related to immigration can be exploited by far-right parties, which increases their support without changing anti-immigration attitudes.[13]

Furthermore, the salience of certain political dimensions is associated

[12] There are many reasons for the emergence of these gaps, such as sudden changes to parties' platforms or shift in the distribution of voters' preferences. The emergence of these gaps is discussed in detail in Rydgren (2005).

[13] For most Western European countries, a change in this salience has implied a move to the sociocultural dimension at the expense of the socioeconomic dimension, which had dominated most of the postwar era (Budge and Robertson 1987). These two dimensions have dominated the political stage for the past couple of decades (see Bell 1972; Rydgren 2005).

with the type of conflicts that voters perceive as most important. If voters identify conflicts based on ethnic and cultural origin as being more important than those based on class, then dimensions such as sociocultural ones becomes more salient than, for instance, the socioeconomic dimension.[14] What needs to be understood is why some voters abandon the economic class conflict and the classical left-right dimensions, for competition for social status and economic resources between different ethnic groups which emphasizes a set of political dimensions focusing on culture and ethnicity. Voters who feel that their access to employment and welfare services is threatened by immigrants are arguably more likely to focus on conflicts based on cultural and ethnic origin. As depicted in Figure 1.2, the lion's share of recently arrived immigrants are low-skilled. Given the theories on labor market competition and welfare concerns discussed above, we expect low-skilled native-born voters to react to experienced economic hardship by increasing salience of immigration-related issues (Rydgren 2005).[15]

The data and the empirical methods employed in this study are described in detail in the next section. Data on layoff notifications and election outcomes are used to estimate the effect of economic distress for different social groups on their support of far-right parties. To examine how this effect is influenced by immigration, measures of immigrant visibility are interacted with the number of layoff notifications. By separating immigration into high and low-skilled immigration, the relative importance of labor market competition vis-a-vis welfare concerns is studied.

[14] Kitschelt (1994) and Rydgren (2005) argue that the convergence in the political space of the mainstream parties could encourage voters to de-align from the classical left-right political conflict by causing voters to perceive the established parties as not being different from each other, or by generating a less engaging economic dimension, resulting in it becoming de-politicized (Schattschneider 1975). The convergence favors other dimensions promoting issues related to, for instance, culture, values, and identity. Kitschelt and McGann (1997) and Betz (2002) argue that the convergence in political space helped the Freedom Party of Austria promote the sociocultural cleavage dimension, while Rydgren (2004a) shows that the Danish People's Party benefited from the convergence in the economic dimension of the Danish mainstream parties by increasing the salience of the sociocultural dimension.

[15] Kitschelt (1995) argues that economic losers of market liberalism are more likely to emphasize political issues related to citizenship in an attempt to define the distribution of resources in "ethnic-particularist terms to establish a non-economic principle of allocating scarce resources in a favourable way" (p. 18).

Lastly, detailed survey data are employed to study individual responses to personal economic circumstances, in particular how it affects the salience of immigration-related issues and voting patterns for far-right parties.

1.3 Data and methodology

This section describes the individual data on layoff notifications based on Swedish administrative data, the aggregation process to electoral precincts, the empirical model, and the estimation methods. A list of all variables used in the paper can be found in the Appendix.

1.3.1 Geographical data

There were 5668 election precincts in the 2010 election with the number of eligible voters in each precinct ranging from 121 to 2809, with a mean of 1257.[16] The number of precincts was higher for the 2006 election, which had 5783 election precincts.[17] Thus, computing the difference in election results is potentially problematic. One way is to only keep precincts in 2010 that did not change over time (see Rydgren and Tyrberg 2016), while another is to match the 2006 precincts to the 2010 versions, which is the method employed in this study. I match the 2006 precincts and 2010 precincnts with detailed population data that comes in 100×100 meter squares.[18] The population of each overlapping part of a precinct in 2006 with precincts from 2010 is divided by that precincts total population, to create *population weights*. The number of votes in 2006 for each party, as well as total number of eligible voters, are then multiplied by the population weights before being aggregated on 2010 precinct level. Thus, the total votes for each party in 2006 is separated into overlapping parts with the 2010 precincts, and the number of votes distributed into each part depends on the population weights.[19] The difference in election results for each party is calculated for all precinct.

[16] Figure A1.2 shows the distribution of eligible voters per election precinct.

[17] Geographical data on precincts prior to the 2006 national election are unavailable.

[18] This matching process was unable to match 5 of the 2010 election precints, which is why I am left with 5663 precints.

[19] A similar method is used by Autor *et al.* (2016) using county population.

The administrative data provide geographical information for all individuals, where each individual belong to a *Small Area for Market Statistics (SAMS)*. There are close to 9500 SAMS and many of them coincide with election precincts. However, for those that do not coincide, a similar matching method is used as the one described above. By matching individuals to election precincts, I am able to take advantage of the spatial variation in economic distress and election outcomes across precincts. Although elections are held at the municipal level, aggregating the data to the precinct level gives approximately 20 times more observations than using aggregated data on municipal level. Municipal fixed effects and clustered standard errors on municipal level and commute zone level are employed to account for municipal-specific factors and conditions related to local labor markets.[20] The geographical information for the election precincts can be found at the website of the Swedish Election Authority, while maps for the SAMS are provided by Statistics Sweden.

1.3.2 Individual level data and survey data

Statistics Sweden provide individual-level data for the Swedish population with information on, for instance, income, employment, origin, skill level, and layoff notifications. The layoff notification variable includes all events where at least 5 workers receive a layoff notification. According to Swedish law, companies have to inform the Swedish Public Employment Service in advance if 5 or more workers are affected by a possible downsizing.[21] This means that I will not be able to capture layoffs from firms laying off less than 5 workers. However, this limitation might actually be beneficial since it reduces potential endogeneity concerns regarding layoffs resulting from the local economic environment, in particular, local factors that might also be correlated with support for far-right parties, such as local crime directed against local shops and other small businesses.[22]

The benefits of using layoff notifications instead of, for instance, job separations or changes in employment numbers as proxy for economic

[20] In the data, there exists 290 municipalities and 74 commute zones. All precincts belonging to the same municipality also belong to the same commute zone, which is why adding commute zone fixed effects will not affect the results.

[21] Job Support Schemes (Certain Measures) Act (1974:13).

[22] The layoff notification data is described in detail in Seim (2012).

distress is twofold. First, it captures shocks to unemployment risk among workers who do not necessarily lose their jobs. About two-thirds of all workers receiving a notifications are laid off, and it is reasonable to assume that the workers that are not laid off are also experiencing economic distress. Second, it only includes (potential) separations where the worker were laid off, and not those were workers voluntarily quit their jobs. If a worker is quitting her job for employment at another firm, it is unclear whether this is associated with a higher experienced unemployment risk for that particular worker.[23]

The layoff notification data are available for each year from 2005 to 2014 and are aggregated on SAMS level. Individual level data on origin and skill level (based on highest attained education level, see Appendix Table A1.1) allow me to create measures of the total number of workers receiving a layoff notification in year t within a SAMS, divided into four social groups based on skill level (low or high skill) and birthplace (inside or outside Sweden). The SAMS are then matched with precincts as described above, and a data set comprising all layoff notifications for each social group in each election precinct is constructed. The maps in Figure A1.3 in the Appendix show the increase in SD votes and the number of low-skilled native-born workers receiving a layoff notification, 2007-2010, for all election precincts. These indicate that high number of notifications and large increase in SD votes occurred in various different parts of Sweden and are not clustered around any particular location.

In addition to precinct-level data on layoff notifications and election results, this study uses a couple of Swedish surveys on both voters and political candidates. Surveys on voters' attitudes from 1986 to 2014 are available in *Riks-SOM* (2016) conducted yearly by Gothenburg University. Questions capturing anti-immigration attitudes, as well as which political issues voters find salient are asked, and the respondents are asked to name the party they prefer the most. These questions allow me to examine the validity of the theories discussed in Section 1.5 on potential mechanisms, regarding the relationship between self-reported unemploy-

[23] Income data are based on tax records, which excludes Swedish citizens that are employed abroad, for instance in Denmark. These areas will have a lower mean or median income and, potentially, a lower/higher support for the Sweden Democrats. This concern is not present when using layoff notification data.

ment risk and salience of the immigration issue.

To assess the positions of the political parties and candidates in 2010, I use the survey *Valpejl2010*, carried out by the Swedish public service broadcaster *Sveriges Television* in 2010. This includes a 5 percent random sample of all candidates running for office in either national, county, or municipal elections, and the candidates are asked about their positions on close to 50 different political issues, for instance immigration, EU, congestion taxes, and conscription. These data are used to examine candidates' positions on issues related to refugees and immigration, as well as attitudes towards the European Union. Table A1.2 and A1.3 in the Appendix describes the survey questions from Riks-SOM and Valpejl2010.

1.3.3 Empirical strategy

This study uses the number of layoff notifications and election results at the precinct level for Swedish national elections. The main outcome of interest is the change in votes the far-right party Sweden Democrats between the national elections 2006 and 2010. This outcome is separately regressed on the number of layoff notifications received by members of each social group and a set of control variables, according to the following regression model.[24]

$$\Delta SD_i = \alpha^j + \beta^j Layoff\_Notifications_i^j + \mathbf{\Gamma}_i' \boldsymbol{\theta}^j + \varepsilon_i, \qquad (1.1)$$

where ΔSD_i is the change in the number of votes for the SD in precinct i, $Layoff\_Notifications_i^j$ is the number of layoff notifications received by members of social group j in precinct i, and $\mathbf{\Gamma}_i$ is a vector of control variables, including municipal fixed effects. The unit of observation, i, is 2010 election precincts, and $j \in \{ln, hn, lf, hf\}$ represents the four social groups: low-skilled native-born, high-skilled native-born, low-skilled foreign-born, and high-skilled foreign-born.[25] The main parameter of in-

[24] I control for the total number of layoff notifications received by members of all other groups in each specification.

[25] Native-born children of immigrants are included in the foreign-born categories since their socioeconomic status are, on average, more similar to their parents' than to their native-born counterpart (Rooth and Ekberg 2003).

terest to be estimated is β^j, which captures the effect of layoff notifications among members of social group j on the election results.

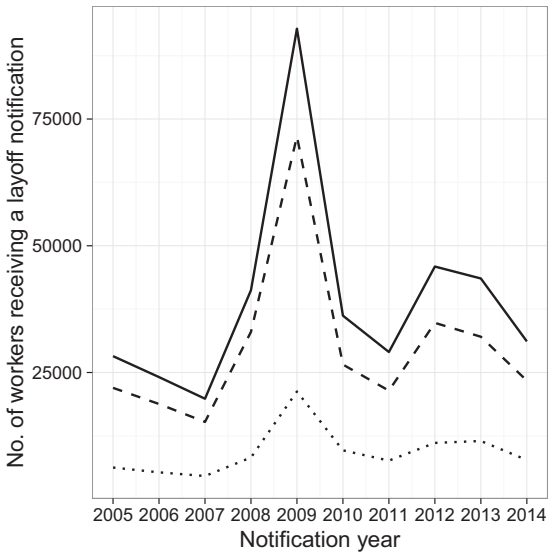
To obtain exogenous variation in the number of layoff notifications at the election precinct level, I construct a Bartik instrument relying on the sectoral composition of each election precincts, and industry-specific national trends in layoff notifications (see Bartik 1991). More specifically, the exposure of each precinct to the national changes depends on the sectoral composition of the labor force in that precinct, as well as the number of notifications in each sector in all other precincts, effectively removing any precinct-specific shocks.[26] Using the detailed administrative data on worker background and skill level, I am able to construct measures of predicted exposure to layoff notifications due to national shifts for each social group, where the predicted shocks can be separately estimated for high and low-skilled workers (cf. Autor *et al.* 2016). By focusing on layoff notifications following the financial crisis and during the Great Recession, the national trends used for the Bartik instrument are plausibly exogenous to the local economy. Figure 1.3 shows the number of workers receiving layoff notifications from 2005 to 2014. From a yearly average of about 25,000 total layoff notifications in 2005 and 2006, the number increased to almost 40,000 in 2008 and close to 100,000 in 2009, with nearly 70,000 of these received by low-skilled workers. Thus, layoff notifications between the elections in 2006 and 2010 are used, together with the sectoral composition in 2006. This measure is constructed as follows:

$$Bartik^j_{i\tau} = \sum_h L^j_{iht} \frac{N^{s(j)}_{-ih\tau}}{L^{s(j)}_{-iht}},$$

where $Bartik^j_{i\tau}$ is the Bartik instrument for social group $j = \{ln, hn, lf, hf\}$ in precinct i over time period τ; L^j_{iht} is the number of workers from social group j in precinct i and industry h in time t (preceding time period τ); and $N^{s(j)}_{-ih\tau}$ is the number of layoff notifications of skill $s(j)$ in

[26] Similar methods are used to estimate the consequences of import competition on electoral results in Autor *et al.* (2016); Colantone and Stanig (2016a,b); Dippel *et al.* (2015); Malgouyres (2014).

Figure 1.3: Yearly layoff notifications, 2005 to 2014



Notes: Solid black like represents all layoffs notifications, dashed line represents low-skilled layoffs notifications, dotted line represents high-skilled layoffs notifications. Low skill is defined as high-school education or lower as highest attained education level. Based on administrative individual-level data.

industry h in Sweden, excluding precinct i.[27] This measure constructs the amount of layoff notifications among social group j in precinct i as predicted by the national shifts and the sectoral composition in precinct i, and unrelated to the impact of local factors.

The effect of layoff notifications on SD votes are estimated using 2SLS, where $Bartik_{i\tau}^{j}$ instruments for actual number of layoff notifications. The IV regression model has the following first stage:

$$Layoff\_Notifications_{i}^{j} = \phi^{j} + \pi^{j} Bartik_{i\tau}^{j} + \mathbf{\Gamma}_{i}^{\prime}\mathbf{\Lambda}^{j} + \nu_{i}. \tag{1.2}$$

The underlying identifying assumption is based on the sectoral composition of each precinct. In order for the Bartik instrument to allow a causal interpretation, the sectoral composition must only affect the outcome through its effect on layoff notifications. To address this, I control

[27] The function $s(j)$ gives the skill level of social group j. For instance, if j represents low-skilled native-born workers, then $s(j)$ represents low-skilled workers.

for the variables frequently used in studies that estimate the correlations between socioeconomic factors and support for far-right parties, for instance the share of high and low-skilled foreign-born, share of low-skilled workers, median income, mean highest attained education, and share of male individuals (see Coffé *et al.* 2007; Harteveld *et al.* 2015; Kitschelt 2007; Norris 2005a; Rydgren and Ruth 2011, 2013; Rydgren and Tyrberg 2016; Strömblad and Malmberg 2015).[28] These controls are included in $\mathbf{\Gamma}_i$ from equation 1.1.[29]

In addition to using 2SLS, the parameters in (1.1) are estimated using OLS. This relies on the assumption that the number of notifications are exogenous to local conditions, and accurately measures precinct-level economic distress.[30] If any, or both, of these assumptions are violated, the OLS estimator will be biased. It is possible that the 2SLS and OLS estimates differ even if layoff notifications are, conditional on the controls in $\mathbf{\Gamma}_i$, exogenously allocated across precincts, and unrelated to local conditions. If the two methods measure different types of economic distress, the estimates might still differ. For instance, the number of layoff notifications in each precinct not predicted by the Bartik instrument might pick up economic distress only among workers that are receiving notifications, while the instrumented version captures economic distress in a more broader sense. For comparison, both estimates will be presented in the next section.

[28] Following Goldsmith-Pinkham *et al.* (2017), I compute the first principal component of the industry shares and examine how well a set of observable characteristics correlate with the first principal component. Table A1.4 in the Appendix shows OLS estimates of the first principal component of industry shares in 2006 regressed on the share of high and low-skilled foreign-born, share of low-skilled workers, median income, mean highest attained education, number of eligible voters, share of employed, share of male individuals, and municipal fixed effects. The $\bar{R}^2$ ranges from 0.85 to 0.89, which suggests that these controls are closely linked with the local sectoral composition in 2006.

[29] Descriptive statistics for the controls, as well as the outcomes and layoff notifications, can be found in Table A1.5 in the Appendix. Table A1.6 in the Appendix includes detailed descriptions of each variable.

[30] Note that by taking the difference of the 2010 and 2006 election outcomes, I control for the initial SD support, which could potentially be correlated with layoff notifications. Table A1.7 in the Appendix presents results for when the number of votes in 2010 is used as outcome, controlling for the number of votes in 2006. These estimates are almost identical to the case when the outcome is measured as the difference between 2010 and 2006.

1.4 Results

The effect of layoff notifications including all social groups on support for the SD, estimated using 2SLS and OLS, are presented in Table 1.1. The first column for each measure estimates regression model (1.1) without the inclusion of controls, while the second column adds the controls mentioned in Section 1.3.3. The 2SLS estimates are larger than the OLS estimates, both when comparing specifications with and without included controls. This suggests that the OLS estimates are downward biased, potentially resulting from measurement errors. Since economic distress is measured as the number of layoff notifications received by workers and the outcome is the change in number of votes, the slope coefficients are to be interpreted as the change in the increased number of votes from one additional layoff notifications. The relationship between layoff notifications and change in SD votes estimated by 2SLS is illustrated in Figure 1.4. The slope of the solid line is equal to the 2SLS point estimate from column (2) in Table 1.1 and the points are based on bins of approximately 100 observations.

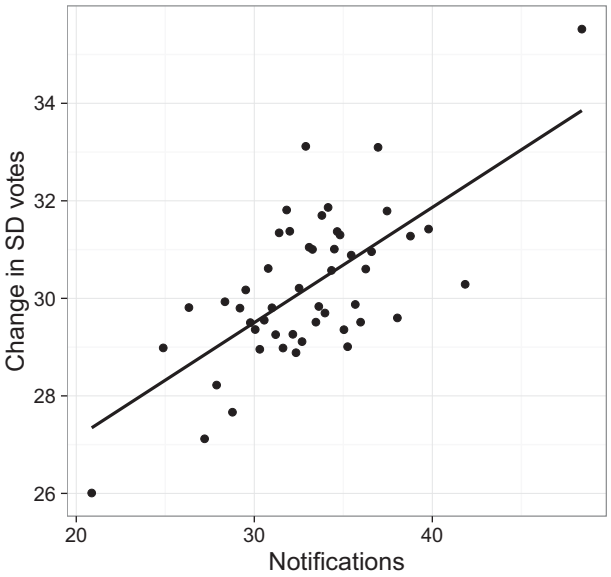
Table 1.1: ΔSD and layoff notifications, 2SLS and OLS

	2SLS		OLS	
Dep. variable: ΔSD	(1)	(2)	(3)	(4)
Notifications	0.629***	0.236***	0.392***	0.075*
	(0.076)	(0.070)	(0.063)	(0.041)
Adj. R-square	-	-	0.120	0.653
First-stage F-stat.	6014.95	1782.56	-	-
Obs.	5663	5663	5663	5663
Controls	No	Yes	No	Yes

Notes: 2SLS and OLS estimates of regression model (1.1). Dependent variable is ΔSD, and is the change in votes between the 2006 and 2010 national elections for the Sweden Democrats. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

The estimates presented in Table 1.1 use measures where layoff notifications for all social groups have been included. As discussed in Section 1.3.2, the layoff notification data can be broken down into different groups based on origin and skill level. The next section presents 2SLS and OLS estimates of the effect of layoff notification among the four social groups

Figure 1.4: ΔSD and layoff notifications



Notes: Binscatter plot for change in SD votes and the number of layoff notifications (fitted values from first stage regression) for all workers. Control and municipal fixed effects added.

discussed in Section 1.3. As we will see, the results in Table 1.1 are driven solely by notifications among low-skilled native-born workers.

1.4.1 Estimates for each social group

The estimated effects on voting for the SD are presented in Table 1.2. Each column presents 2SLS estimates from the change in votes for SD regressed separately on the number of layoff notifications for each group, controlling for the number of notifications received by members of the other groups.[31] The Bartik measure for each group is used to instru-

[31] Table A1.8 in the Appendix presents results for 2SLS and OLS estimates of a regression model where all social groups have been included simultaneously. The 2SLS estimates differ slightly from when SD votes are regressed separately on notifications for each group, and has to do with the Bartik type measure for each group being used as instrument for layoff notifications for all groups. The OLS estimates of separated regressions and the regression where all groups have been included are almost the same.

Table 1.2: ΔSD and layoff notifications, skill-origin combinations (2SLS)

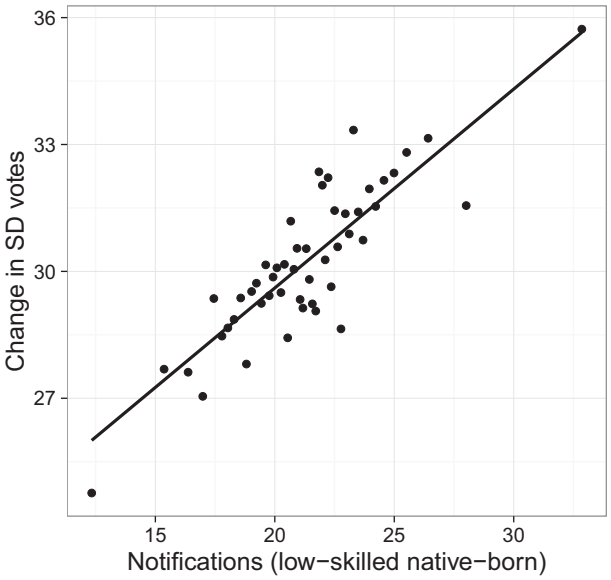
Dep. variable: ΔSD	Panel **A**: Native-born			
	Low-skilled		High-skilled	
	(1)	(2)	(3)	(4)
Notifications	0.863***	0.461***	-0.036	-0.476**
	(0.101)	(0.087)	(0.208)	(0.216)
First stage F-stat.	8249.53	1679.06	7671.76	831.99
Obs.	5663	5663	5663	5663
Controls	No	Yes	No	Yes
Dep. variable: ΔSD	Panel **B**: Foreign-born			
	Low-skilled		High-skilled	
	(1)	(2)	(3)	(4)
Notifications	0.194	0.057	-1.967**	-1.464***
	(0.130)	(0.113)	(0.961)	(0.472)
First stage F-stat.	21985.23	5071.71	5418.28	664.44
Obs.	5663	5663	5663	5663
Controls	No	Yes	No	Yes

Notes: 2SLS estimates of regression model (1.1) with layoff notifications 2007-2010 based on skill level-origin combinations. Panel **A** shows estimates for native-born workers, while Panel **B** shows estimates for foreign-born workers. Dependent variable is ΔSD, and is the change in votes between the 2006 and 2010 national elections for the Sweden Democrats. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

ment for actual notifications for the same group. For the four different social groups, only layoff notifications among native-born low-skilled has a positive effect on voting for the SD (Panel A, specification (1) to (2)). The estimates for high-skilled workers – both native-born and foreign-born – suggest a negative effect of layoff notifications on support for the SD (Panel B). Figure 1.5 illustrates the relationship between the number of notifications among low-skilled native-born workers and change in SD votes.

Since the outcome is measured as change in number of votes, and the measure of economic distress is the precinct-level number of layoff notifications, the slope coefficient in Table 1.2 can be interpreted as the increase in the change in SD votes from one additional worker receiving a notification. The slope coefficient for column (2) in Panel **A** suggests that for every second low-skilled native-born worker receiving a notification,

Figure 1.5: ΔSD and layoff notifications among low-skilled natives



Notes: Binscatter plot for change in SD votes and the number of layoff notifications (fitted values from first stage regression) among low-skilled native-born workers. Controls and municipal fixed effects added.

the Sweden Democrats gained one additional vote. The total number of layoff notifications for low-skilled native-born workers in the years 2007 to 2010 is 121,000, and together with the estimated slope coefficient of 0.46 (column (2), Panel **A**), this yielded 56,000 additional votes for the SD. Between 2006 and 2010, the SD gained more than 177,000 new voters.[32] This means that the new votes resulting from layoff notifications account for more than 31 percent of the increase in votes for the SD.

Another way to interpret the results is to compare the standard deviation of layoff notifications for 2007-2010 with the standard deviation in the change in SD votes. The change in ΔSD from a one standard deviation increase in the number of notifications among low-skilled native-born workers accounts for 33 percent of a one standard deviation in the change in SD votes. This is similar in magnitude to the interpretation we get from comparing SD votes due to layoff notifications among low-skilled

[32] Based on data from val.se and own calculations.

native-born workers to the total increase in SD votes.[33]

One drawback of matching aggregated individual-level data with election precinct-level election outcomes is that changes in vote shares do not tell us anything about which group of voters are actually changing their voting behavior. For instance, layoff notifications among high-skilled native and foreign-born workers estimated in Table 1.2 does not necessarily influence voting for members of same groups. The negative estimated slope coefficient could be resulting from, for instance, low-skilled native-born workers decreasing their support for the SD, as economic distress among other groups means that they experience less *relative deprivation* (Rydgren 2005). Another potential explanation is that members of the high-skilled social groups are more likely to find socioeconomic political dimensions as more salient when experiencing economic hardship. Issues related to taxes and welfare provision might be perceived as more salient for voters that do not perceive conflicts based on ethnic and cultural origin as important in explaining their economic position in society (see Rydgren 2005). In Section 1.5, I use survey data to examine salience of immigration issues among high and low-skilled respondents, and its relationship with self-reported unemployment risk.

Between 2007 and 2010, 38,000 high-skilled native-born workers received layoff notifications. Based on the estimated effect of layoff notifications among high-skilled native-born workers in column (4) of Table 1.2, this decreased SD votes by 18,000. Together with the increased SD votes resulting from layoff notifications among low-skilled native-born workers, the net effect of layoff notifications among native-born workers account for 21 percent of the total increase in SD votes. Compared to the 2SLS estimates, the OLS estimates of the effects of layoff notifications among high and low-skilled native-born workers are closer to zero, as shown in Table 1.3. Similar to the 2SLS estimates, the OLS estimates show a positive effect on voting for the Sweden Democrats only for low-skilled native-born workers, while the estimates suggest a negative effect for high-skilled workers, both native and foreign-born. For low-skilled native-born workers, the OLS estimate in column (2) suggests that for every fifth layoff notification received, the SD gain one additional vote. Based on

[33] In Malgouyres (2014), a one standard deviation in exposure to import competition explains 8 percent of the standard deviation in votes for Front Nationale.

Table 1.3: ΔSD and layoff notifications, skill-origin combinations (OLS)

Dep. variable: ΔSD	Panel **A**: Native-born			
	Low-skilled		High-skilled	
	(1)	(2)	(3)	(4)
Notifications	0.553***	0.179***	-0.149	-0.150**
	(0.100)	(0.052)	(0.133)	(0.060)
Adj. R-square	0.157	0.655	0.138	0.654
Obs.	5663	5663	5663	5663
Controls	No	Yes	No	Yes
Dep. variable: ΔSD	Panel **B**: Foreign-born			
	Low-skilled		High-skilled	
	(1)	(2)	(3)	(4)
Notifications	0.065	-0.080	-1.145**	-0.334**
	(0.096)	(0.077)	(0.465)	(0.166)
Adj. R-square	0.128	0.653	0.135	0.653
Obs.	5663	5663	5663	5663
Controls	No	Yes	No	Yes

Notes: OLS estimates of regression model (1.1), with layoff notifications 2007-2010 based on skill level-origin combinations. Panel **A** shows estimates for native-born workers, while Panel **B** shows estimates for foreign-born workers. Dependent variable is ΔSD, and is the change in votes between the 2006 and 2010 national elections for the Sweden Democrats. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

the total number of layoff notifications for low-skilled native-born workers between 2007 and 2010, this lead to roughly 22,000 votes for the SD, which explains 12 percent of the party's total increase of 177,000 votes. The change in ΔSD from a one standard deviation increase in layoff notifications among low-skilled native-born workers accounts for almost 13 percent of a one standard deviation of ΔSD.[34]

The 2SLS and OLS estimates of the effect of layoff notifications among low-skilled foreign-born workers are close to and not statistically different from zero. For high-skilled foreign-born workers, both 2SLS and OLS estimates a negative and statistically significant slope coefficient. However, a very small number of layoff notifications were received by high-skilled

[34] Based on the OLS estimate in column (2) of Table 1.3 and the standard deviation for layoff notifications among low-skilled native-born workers from Table A1.5 in the Appendix.

foreign-born workers (less than mean of 1 layoff notification per precinct for the whole time period), which makes the estimated effect on SD support for this group rather unreliable and quantitatively insignificant (see Table A1.6).

1.4.2 Sensitivity analysis: additional control variables

As discussed in Section 1.3.3, the Bartik instrument allows a causal interpretation if the sectoral composition affects SD support only through its effect on layoff notifications. Table A1.4 reports a high correlation between the first principal component of the industry shares and a set of observable characteristics. It is assumed that the 2SLS estimates capture the causal effect of layoff notifications on the change in SD votes, conditional on the observable characteristics. This means that the inclusion of addition controls that we expect to be correlated with both support for SD and layoff notifications should not alter the estimated effect. In order to examine this, I estimate the coefficients of regression model (1.1) with an additional set of controls: the number of individuals collecting unemployment benefits in 2006 (both stock and flow), the number of workers employed in manufacturing in 2006, and the number of workers receiving layoff notifications in manufacturing in 2006. In addition, I create a measure of the overall unemployment risk by assigning an estimated risk level to each worker based on the share of their colleagues (with the same skill level) who received a layoff notification in 2006. Several studies include unemployment risk as one of the main socioeconomic factors behind the support for far-right parties (for instance, Coffé *et al.* 2007; Rydgren and Ruth 2011, 2013), while Swank and Betz (2003) includes the share of manufacturing workers to measure post-industrialization.[35]

Table 1.4 presents the 2SLS estimates for the effect of layoff notifications on SD votes when including additional controls. Comparing these estimates to those presented in Table 1.2, the additional control variables do not change the estimated slope coefficient for layoff notifications. These results suggest that the inclusion of the observable characteristics

[35] Swank and Betz (2003) argue that workers in traditional manufacturing industries constitute the economic losers of post-industrialization, which contributes to their loss of economic and social status.

Table 1.4: ΔSD and layoff notifications, additional control variables

Dep. variable: ΔSD	Native-born		Foreign-born	
	Low-skilled (1)	High-skilled (2)	Low-skilled (3)	High-skilled (4)
Notifications	0.452***	-0.523**	0.043	-1.457***
	(0.087)	(0.231)	(0.112)	(0.501)
First stage F-stat.	1524.51	760.32	4899.17	631.87
Obs.	5663	5663	5663	5663
Controls	Yes	Yes	Yes	Yes

Notes: 2SLS estimates of regression model (1.1) with layoff notifications 2007-2010 based on skill level-origin combinations, with additional control variables. Dependent variable is ΔSD, and is the change in votes between the 2006 and 2010 national elections for the Sweden Democrats. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

correlated with first principal component effectively controls for factors related to both industry shares and support for the SD. For the rest of this section, I will focus on the 2SLS estimates for native-born workers. The OLS estimates and results for foreign-born are presented in the Appendix.

The Appendix presents results using modified versions of the outcome, as well as different definitions of skill level. The results in Table A1.9 are based on changes in vote share instead of change in the number of votes, and notifications as share of eligible voters instead of number of layoff notifications. In Table A1.10, skill level is based on occupational classification (SSYK, similar to ISCO) instead of highest attained education level.[36] The estimates presented in both tables are very similar to those discussed in Section 1.4.1: using different definition of high and low-skilled, or using vote shares instead of number of votes do not alter the results. The same holds for when election outcomes for the local elections are used instead of the national elections. Table A1.12 shows estimates of equation (1.1) using the change in votes in the municipal elections as outcome. Although the magnitude of the estimates differ slightly, they point in the same direction as when election results for the national elections are used.

[36] Workers employed in occupations coded as requiring secondary education and post-secondary education less than 2 years or less are coded as low-skilled. Table A1.11 describes how each category group is translated into skill levels.

1.4.3 Immigration and economic distress

The main focus of this study is to examine the relationship between economic distress and voting for far-right parties. What has been shown so far is that exogenous shocks to economic distress, unrelated to immigration, increase support for anti-immigration parties. However, this applies only to low-skilled native-born workers, which could potentially imply that members of this group attribute their impaired economic situation to immigration. If this is the case, we would expect the effect of layoff notifications on voting for far-right parties to be even greater in areas with a large presence of immigrants. Voters might be more likely to blame immigration for changes to their personal economic circumstances if they, at the same time, observe immigrants or refugees in their neighborhood. Following Strömblad and Malmberg (2015), who find that support for the SD is associated with visibility of minorities only in economically deprived areas, I create a precinct-level measure of the share of immigrants in the years leading up to the financial crisis.[37] These shares are constructed as the number of foreign-born individuals divided by the total number of eligible voters in each precinct, and are separated into shares of high and low-skilled.[38]

There are two important limitations to this measure. First, the administrative data only comprise of Swedish citizens or others with a permanent or temporary residence permit and excludes asylum seekers.[39] Thus, the measure of immigration most likely underestimates the true visibility of minorities in each precinct. Second, this measure does not capture exogenously given exposure to minorities. As immigrants with a residence permit are allowed to settle anywhere in the country, exposure is potentially correlated with local conditions. The estimated effect of this measure when included in the regression model in (1.1) therefore

[37] It is unlikely that immigration is caused by layoff notifications. However, since this cannot be ruled out, the share of foreign-born is measured at 2006, prior to the years used for the measure of economic distress. Using any other year between 2006 and 2010 does not change the results since the precinct-level shares of foreign-born individuals are highly correlated over time (see Table A1.13 in the Appendix).

[38] This measure excludes foreign-born individuals with two native-born parents.

[39] Asylum seekers are defined as *potential* refugees that have not yet had their asylum application reviewed. Refugees with approved asylum applications are included in the data.

does not necessarily have a casual interpretation.

Layoff notifications for high and low-skilled native-born workers are separately interacted with the share of immigrants, and the results are presented in Table 1.5. For each social group, the first specification interacts the number of layoff notifications with the share of total immigrants in each precinct, while the second column separates immigrants into high and low-skilled. These two are also separately interacted with the number of notifications.[40] The interaction of share of total immigrants with layoff notifications is positive and statistically significant for low-skilled native-born (specification (1)). When immigration is divided in high and low-skilled immigration, the interaction for the former is positive while the interaction for the latter is negative, and both are statistically significant at at least 5 percent (specification (2)). This means that layoff notifications among low-skilled native-born workers is more likely to result in support for the Sweden Democrats in areas with a large share of low-skilled immigrants, and less likely to do so when the share of high-skilled immigrants is high. In areas with a one standard deviation larger than the mean share of low-skilled immigrants, the effect of layoff notifications among low-skilled native-born workers is increased by 36 percent.[41] At the same time, a one standard deviation larger than the mean share of high-skilled immigrants decreases the effects of layoff notifications among low-skilled native-born workers by 23 percent.

Figure 1.6 demonstrates how the effect of layoff notifications among low-skilled native-born workers is influenced by the share of low-skilled immigrants. For 75 percent of the election precincts with a share of low-skilled immigrants lower than the mean, the effect of layoff notifications is negatively affected by low-skilled immigration. In areas with low-skilled immigration lower than the 10th percentile, one layoff notification to low-skilled native-born workers increase SD support by 0.31-0.33 additional votes. On the contrary, the effect of layoff notifications is considerably larger in areas with larger than the 75th percentile of share low-skilled

[40] The measures of immigration are interacted with the Bartik instrument and used as instruments in the 2SLS estimation.

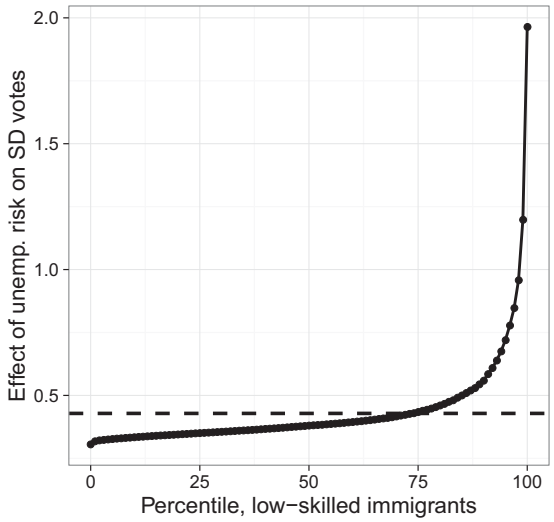
[41] Computed by multiplying the slope coefficient for the interaction between predicted notifications and share of low-skilled immigrants by one standard deviation in low-skilled immigrants, and dividing it by the main effect of the predicted number of notifications (specification (2)).

Table 1.5: ΔSD, native-born layoff notifications, and share of foreign-born (2SLS)

Dep. variable: ΔSD	Low-skilled native-born		High-skilled native-born	
	(1)	(2)	(3)	(4)
Notifications	0.486***	0.429***	-0.474**	-0.608***
	(0.091)	(0.095)	(0.221)	(0.201)
Notifications×Immigrants	0.006***		-0.002	
	(0.002)		(0.006)	
Notifications×Low-sk. immigrants		0.013***		-0.014
		(0.003)		(0.010)
Notifications×High-sk. immigrants		-0.025**		0.026*
		(0.010)		(0.014)
First stage F-stat.	839.38	561.56	417.44	293.16
Obs.	5663	5663	5663	5663
Controls	Yes	Yes	Yes	Yes

Notes: 2SLS estimates of regression model (1.1), with layoff notifications 2007-2010 based on skill level-origin combinations, and interactions with share of high and low-skilled foreign-born in 2006. Dependent variable is ΔSD, and is the change in votes between the 2006 and 2010 national elections for the Sweden Democrats. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

Figure 1.6: Share of low-skilled immigration and layoff notifications

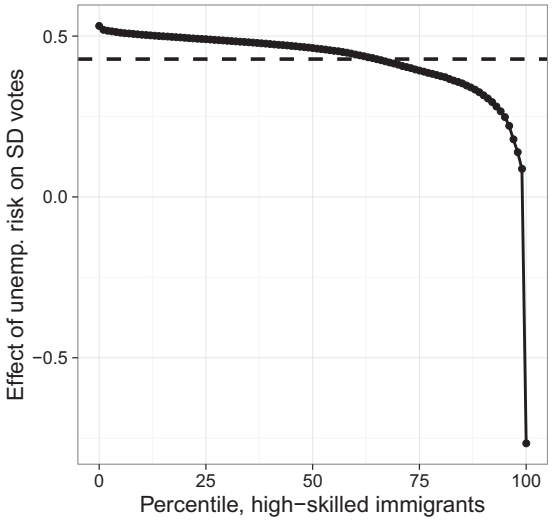


Notes: Solid black like represents the sum of the main effect and interaction effect of layoff notifications among low-skilled native-born workers and low-skilled immigration on change in SD votes. Dashed line represents the main effect for precincts with share of low-skilled immigration equal to the mean. For election precincts with a share of low-skilled immigrants lower than the mean, the total effect of layoff notifications is smaller than the main effect, and larger than the main effect in election precincts with share of low-skilled immigrants higher than the mean.

immigrants. In the top 10th decile, the effect of layoff notifications is between 0.56 and 1.96. This illustrated that the increased effect of layoff notifications by visibility of low-skilled immigrants only applies to areas with large shares of low-skilled immigrants. Figure 1.7 shows how the effect on SD votes is influenced by share of high-skilled immigrants. The positive effect of layoff notifications is only offset by high-skilled immigration in the precincts with the largest share of high-skilled immigrants. Instead, in all precincts with a share of high-skilled immigrants less than the mean, the effect of layoff notifications among low-skilled native-born workers on SD votes is larger than the average effect.

The interaction term between share of all immigrants and layoff notifications among high-skilled native-born workers is positive and statistically significant at 1 percent (Table 1.5, specification (3)). When interacted with share of high and low-skilled immigrants separately, the estimate for the interaction with high-skilled immigrants is positive, while

Figure 1.7: Share of high-skilled immigration and layoff notifications



Notes: Solid black like represents the sum of the main effect and interaction effect of layoff notifications among low-skilled native-born workers and high-skilled immigration on change in SD votes. Dashed line represents the main effect for precincts with share of high-skilled immigration equal to the mean. For election precincts with a share of high-skilled immigrants lower than the mean, the total effect of layoff notifications is smaller than the main effect, and larger than the main effect in election precincts with share of high-skilled immigrants higher than the mean.

it is negative for low-skilled immigrants, and close to being significant at 10 percent (specification (4)).[42] The main effect of layoff notifications among high-skilled native-born workers is negative, and becomes less negative in neighborhoods with a large share of high-skilled immigrants, and more negative where the share of low-skilled immigrants is high. Similar to the estimated interaction effects for layoff notifications among low-skilled native-born workers in column (2), these estimates suggest that notifications received by native-born workers of a particular skill has a larger effect on support for the SD in areas with a larger concentration of foreign-born of the same skill. Figures A1.4 and A1.5 in the Appendix shows the effect of layoff notifications among skilled native-born workers for different percentiles of the share of high and low-skilled immigrants, respectively.

[42] The estimated slope coefficients for the two interaction terms are statistically different from each other at 1 percent.

The estimates for the interaction terms suggest that visibility of immigrants increases the likelihood of natives supporting anti-immigration parties due to economic distress, however, only when natives and immigrants are of the same skill level. The different signs of the two estimates for the interaction terms of the share of high and low-skilled immigrants with the number of layoff notifications received by low-skilled native-born workers lend support to theories predicting that workers of a particular skill level are likely to expect increased competition from immigrants with the same skill (cf. Borjas *et al.* 1996, 1997). At the same time, these results are also in line with theories suggesting that natives are less likely to oppose high-skilled immigrants that are expected to make net contributions to the welfare state (Facchini and Mayda 2009; Hainmueller and Hiscox 2010). Instead, natives resist low-skilled immigrants that are believed to put pressure on the welfare system. This concern receives additional attention when the threat of unemployment increases. However, the predictions from theories on welfare concerns apply to both high and low-skilled natives, meaning that the interaction term between layoff notifications among native workers and low-skilled immigrants should be negative for both high and low-skilled natives. This is not the case, as indicated by the results in specification (4) in Table 1.5, which instead suggest that layoff notifications received by high-skilled native-born workers has a more positive effect on support for the SD when the share of high-skilled immigrants is high. This further supports theories on expected labor market competition from immigration.

The Bartik instrument predicts the number of layoff notifications by the local sectoral composition, and is exogenous given observable local characteristics. One of these characteristics is the share of immigrants, which means that the variation in unemployment risk is not caused by immigration. Nevertheless, economic distress among low-skilled native-born workers causes increased support for anti-immigration parties. Job insecurity among the members of this group is attributed to immigration, in particular in areas with higher presence of low-skilled immigrants. Conversely, low-skilled natives are less likely to attribute economic distress to immigration where minorities are less visible. These results are in line with similar findings in Strömblad and Malmberg (2015).

The Appendix presents results for layoff notifications among foreign-

born workers interacted with immigrants (Table A1.15), as well as OLS estimates for all four social groups (Table A1.16).

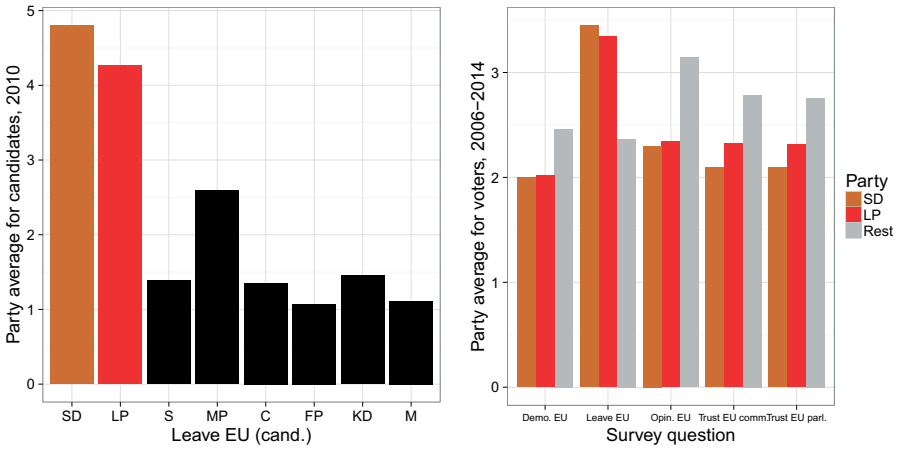
1.4.4 Other anti-globalization parties: the Left Party

Related to ethno-nationalism and social conservatism is economic nationalism, specifically protectionism and opposition to supranational organizations. Globalization is believed to limit state-level decision making and to only benefit economic and political elites. If voters blame their impaired economic situation on international political and trade agreements, they could potentially be attracted to the extreme right based on their anti-trade and anti-EU stance (Colantone and Stanig 2016b; Dippel *et al.* 2015; Malgouyres 2014). As noted by Zaslove (2004), left-wing parties have traditionally been known for opposing globalization, and in Swedish politics, this role has been taken on by the *Left Party* (*Vänsterpartiet*). If economic anxiety leads to anti-globalization sentiment, we would except the Left Party to increase their vote share in areas with high number of layoff notifications.

Before presenting the estimates from using the change in vote share of the left-wing party as the outcome in (1.1), we look at the similarity of the political candidates of the SD and the Left Party when it comes to preferences for the European Union.[43] The mean values for candidates from each party is presented in Figure 1.8a, and clearly shows how close candidates from the SD and the Left Party are in the EU question. Regarding their voters, Figure 1.8b shows average responses from Riks-SOM for statements related to the European Union. Voters who indicated that they prefer the SD or the Left Party give very similar responses to questions about whether Sweden should leave the EU (*Leave EU*), if democracy in the EU is working well (*Demo. EU*), and about their general views on the EU (*Opin. EU*). For these questions, SD and Left Party voters differ from voters of other parties. For questions about trusting EU organizations (*Trust EU comm.* and *Trust EU parl.*), the similarities between the left-wing party and the SD are less clear. Still, the anti-EU stance of the left-wing party's candidates and their voters is evident. It is

[43] Unfortunately, the surveys do not include any questions related to globalization or international trade agreements.

Figure 1.8: Statements related to the European Union



(a) For candidates (b) For voters

Notes: Average responses for survey questions related to the European Union. In 1.8a, averages are presented for all parties in the national parliament in 2010, based on survey data from Valpejl2010. In 1.8b, averages are presented for the Sweden Democrats (SD), the Left Party (LP), and all other parties in the national parliament, based on survey data from Riks-SOM (2006 to 2014). All survey questions are described in Tables A1.2 and A1.3 in the Appendix.

also important to note that the Left Party oppose the *Transatlantic Trade and Investment Partnership* (TTIP), the *Comprehensive Economic and Trade Agreement* (CETA), and the *Trade in Services Agreement* (TISA), while none of these are (publicly) opposed by the Sweden Democrats.[44]

The estimated effects of layoff notifications among native-born workers on the support for the Left Party are presented in Table 1.6. The 2SLS estimates suggest that layoff notifications among low-skilled native-born workers decreased votes for the LP, while it had no effect for high-skilled native-born workers. These result challenges the idea of economic distress affecting voting for far-right parties through anti-globalization sentiment. In the Appendix, 2SLS estimates for layoff notifications among foreign-born workers are presented (Table A1.17), as well OLS estimates for all social groups (Table A1.18).[45]

[44] See http://www.vansterpartiet.se/politik/handelspolitik (text in Swedish).

[45] Table A1.19 in the Appendix presents 2SLS estimates of interactions of immigration and layoff notifications, with Left Party voting as the dependent variable.

Table 1.6: ΔLP and layoff notifications among natives (2SLS)

Dep. variable: ΔLP	Low-skilled native-born	High-skilled native-born
	(1)	(2)
Notifications	-0.280***	-0.421
	(0.087)	(0.361)
First stage F-stat.	1679.06	831.99
Obs.	5663	5663
Controls	No	Yes

Notes: 2SLS estimates of regression model (1.1) with layoff notifications 2007-2010 based on skill level-origin combinations. Dependent variable is ΔLP, and is the change in votes between the 2006 and 2010 national elections for the Left Party. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

1.5 Mechanism

The results in Section 1.4 are based on aggregate data on both layoff notifications and election result, and suggest that increased precinct-level economic distress leads to larger support for the Sweden Democrats. The precinct-level economic distress is measured as the number of layoff notifications received by workers in that particular precinct, instrumented by local sectoral composition. However, this does not necessarily mean that those who receive layoff notifications are actually changing their voting behavior. For instance, individuals might be motivated to vote for SD when a family member or a close friend is likely to be laid off. To get a better understanding of how unemployment risk influences individual voting behavior, I examine responses to questions related to party preferences and self-perceived job insecurity from a detailed Swedish survey. In addition, I test predictions from the theories discussed in Section 1.2 on salience of immigration issues. These theories suggest that voters that are likely to be attracted to the restrictive immigration policies proposed by far-right parties due to economic distress, support anti-immigration parties through increased salience of issues related to immigration. This only applies to low-skilled workers, as they are more likely to subscribe to a perception of economic conflict based on ethnicity due to the expected competition with immigrants for economic status.

One drawback of using survey data is that the responses captures

stated preferences instead of actual outcomes. The aggregated precinct-level data used both actual layoff notifications and election results. Instead, the survey respondents are asked to report their experienced unemployment risk and which of the political parties they prefer the most. Another caveat is that the results from the survey data have no causal interpretation. With the survey data, I can only test correlations between self-reported unemployment risk, stated preferences for the SD, and salience of immigration issues. To study these links, I ask the following questions, restricted to data availability.

Question #1

The first question is related to how unemployment risk is correlated with voting the SD. Do we see the same results in the survey data as we do when using election outcomes on the precinct-level data? To answer this, I use Swedish survey data on self-perceived unemployment risk and test whether an increased unemployment risk is associated with higher support for the SD among low-skilled native-born voters, while this correlation is zero or negative, for high-skilled native-born voters.

Question #2

Is unemployment risk among low-skilled voters positively correlated with salience of issues related to immigration, while uncorrelated for high-skilled voters? To examine this, I use survey data on unemployment risk and individual salience of a range of political issues. The survey asks which issues the respondent finds most important, allowing the respondents to name up to three issues they find salient. Are respondents with a higher self-perceived unemployment risk more likely to name immigration as a salient political issue?

Question #3

This third, and last, question is related to whether the success of far-right parties is associated with increased xenophobia and anti-immigrant sen-

timent, or by increased salience of issues related to immigration.[46] The relationship between the latter and unemployment risk is addressed by *Question #2*, but do we find a similar correlation between economic distress and anti-immigrant sentiment? This is tested using the survey data on self-perceived unemployment risk, and statements about restricting immigration.[47]

The number of foreign-born respondents in the survey data is limited, which is why a meaningful analysis of the different reactions to economic distress between low-skilled native-born and foreign-born is not possible. Ruist (2013) shows that refugee immigration to Sweden between 1999 and 2007 had no significant effects on total unemployment, but had large effects on unemployment among previous immigrants. Why does not increased unemployment risk motivate foreign-born workers to support the Sweden Democrats? A potential explanation can be found by studying motions proposed by the SD. Many of the motions presented in Appendix Table A1.14 are lowering economic, social, and political status of foreign-born citizens, for instance, the removal of quotas based on ethnic background, or prohibition of dual citizenships. It is likely that foreign-born exposed to economic distress are not motivated to focus on conflicts where they, due to their ethnic or cultural background, are perceived as members of the outgroup.

1.5.1 Survey results

For examining the questions stated in the previous section, regarding salience of socioeconomic dimensions and its links to unemployment risk and voting for the SD, I use survey data from Riks-SOM on voters' party preferences and self-reported unemployment risk. The coefficients from the following regression model are estimated.

[46] Rydgren (2005) argues that voters sharing xenophobic and anti-immigrant attitudes might not base their voting decision on these attitudes if there are other issues that they perceive as more important. This implies that anti-immigrant attitudes as well as salience of political issues concerning immigration is needed for a voter to support a far-right party.

[47] Hainmueller and Hiscox (2010) use a nation wide U.S. survey and find no evidence of economic concerns explaining anti-immigrant attitudes.

$$Y_i = \theta_0 + \theta_1 Unemp\_risk_i + \boldsymbol{\lambda}' \boldsymbol{z}_i + \nu_i, \tag{1.3}$$

where Y_i is either a dummy indicating if SD is the respondent's most preferred party, a dummy indicating if the respondent named immigration as an important issue, or a measure of anti-immigration sentiment; $Unemp\_risk_i$ is the self-perceived unemployment risk; and $\boldsymbol{z}_i$ adds controls for gender and number of issues the respondent has named as important. The former is added as men are more likely to support far-right parties (Kitschelt 2007), while the latter controls for general political interest, as respondents are asked to name between zero and three issues. This means that respondents that, on average, name more issues, could be more likely to pick immigration as one of them.

Salience of immigration issues

Table 1.7 presents the results from OLS estimation of (1.3). The dependent variable for the specifications shown in the first two columns is a dummy variable taking the value 1 if the SD is the respondents most preferred party. The first specification only includes low-skilled respondents while the second uses data for high-skilled respondents. Self-perceived unemployment risk is uncorrelated with voting for the SD for high-skilled respondents while a positive and highly significant correlation is estimated for the low-skilled. A one standard deviation increase in unemployment risk among low-skilled respondents is associated with a 2 percentage points higher likelihood of voting for the SD.[48] In terms of direction and statistical significance of the estimated coefficient for unemployment risk, the survey results seem to replicate the results using precinct-level election outcomes.

The survey data also support the notion of men being more likely to support far-right parties, and the estimates suggest that this only holds for low-skilled respondents. However, the estimated coefficients for *Male* using the high and the low-skilled subsamples are not statistically different from each other. Furthermore, the number of named political issues seems

[48] The standard deviation of the variable for self-reported unemployment risk among low-skilled respondents is close to 1.

to be uncorrelated with support for the SD. This could potentially mean that SD voters are not less interested in politics than voters of other parties.

The next test involves unemployment risk and a dummy taking the value 1 if the respondent named immigration as an important political issue. In specification (4), the salience dummy is regressed on self-perceived unemployment risk only for high-skilled respondents, and the estimated coefficient suggest a negative correlation. For low-skilled respondents (specification (3)), a positive correlation is estimated, and both the high and the low-skilled cases have p-values close to 0.1.[49] These results are suggestive evidence of immigration issues being more likely to be salient as unemployment risk increases for low-skilled respondents, as suggested by the theories discussed in Section 1.2. For low-skilled respondents, a one standard deviation increase in unemployment risk is associated with a 1.6 percentage points higher likelihood of naming immigration-related issues as an salient political issue.

The variable for measuring salience of immigration issues is based on a survey question asking respondents if they consider immigration to be a important political issue, and does not exclude relevance of other issues related to, for instance, the socioeconomic dimension. Ideally, one would use a survey question allowing respondents to name the most important political issue, or relate each issue to other issues. Unfortunately, this is not available in the Riks-SOM survey and instead, respondents are asked to name a maximum of three issues they find salient. The variable capturing the number of issues named is positively correlated with naming immigration issues as salient among both high and low-skilled respondents. As respondents name a greater number of important issues, they are also more likely to name immigration as an important issue.

Anti-immigration and xenophobic sentiment vs. salience

Can the electoral success of the Sweden Democrats be explained by a rise in anti-immigrant sentiment or xenophobia? Above, I provide evidence of

[49] The p-values have been added to demonstrate that some estimated coefficients are close to being significant at 10 percent. Notice that although both estimates are not statistically different from zero, they are statistically different from each other.

Table 1.7: Survey data on self-perceived unemployment risk

	Dep. variable: Vote SD		Dep. variable: Immigration problem		Dep. variable: Accept fewer	
	Low-skilled (1)	High-skilled (2)	Low-skilled (3)	High-skilled (4)	Low-skilled (5)	High-skilled (6)
Unemp. risk	0.020***	-0.005	0.016	-0.026	-0.010	-0.076
	(0.007)	(0.005)	(0.010)	(0.018)	(0.037)	(0.060)
	[0.002]	[0.277]	[0.121]	[0.155]	[0.797]	[0.204]
Number of issues	0.005	-0.011	0.069***	0.080***	-0.045	-0.065
	(0.006)	(0.009)	(0.007)	(0.013)	(0.034)	(0.062)
Male	0.053***	0.019	0.034	0.010	0.328***	0.144
	(0.015)	(0.015)	(0.024)	(0.039)	(0.084)	(0.118)
Adj. R-square	0.021	0.003	0.056	0.033	0.017	0.003
Obs.	855	475	855	475	840	474

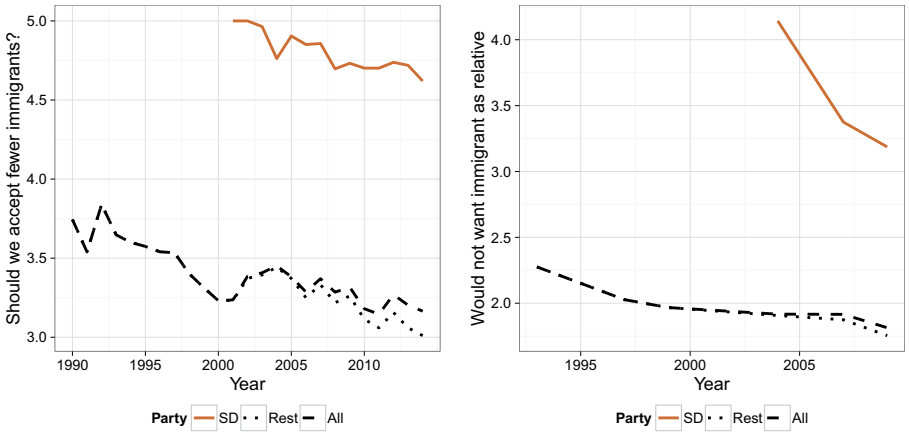
Notes: Data from Riks-SOM 2010. OLS estimates of regression model (1.3), where dependent variables are *Vote SD* = **1**[SD is most preferred party], *Immigration problem* = **1**[mentioned immigration as a salient political issue], and *Accept fewer* asks whether it is a good idea to accept fewer immigrants (1-5 where 5 corresponds to "strongly agree"). *Unemp. risk* represents respondents self-perceived risk of unemployment, and ranges from 1 to 4, with 1 corresponds to "no risk" and 4 corresponds to "very large risk". '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on heteroscedasticity-consistent standard errors (in parentheses), and p-values in brackets.

unemployment risk being positively correlated with salience of immigration issues among low-skilled native-born voters. However, the theories of salience of political cleavage dimensions discussed in Section 1.2 assume that increased support for the SD due to economic anxiety is channelled through increased importance of issues related to culture, values and identity, not through increased xenophobia or anti-immigrant attitudes. To further study this channel, I use survey questions on whether the respondent agrees with the statement that the country should accept fewer immigrants, and whether the respondent would disapprove of a family member marrying someone from another part of the world. The former question proxies for anti-immigrant sentiment while the latter captures xenophobia.

Figures 1.9a and 1.9b plot the average responses for these two questions over time and for SD voters and voters of all other parties in parliament separately (values 1-5, where 5 corresponds to "strongly agree"). Both xenophobic attitudes and anti-immigrant sentiment have steadily decreased but are for every year higher among SD voters. However, the average response for these two questions have also decreased among SD voters. There are two potential explanations for this. First, due to social stigma only respondents with strong anti-immigrant sentiment were willing to openly admit to voting or preferring the SD. As the party is becoming increasingly normalized, their voters with less extreme attitudes towards immigrants will also admit to supporting the SD. The second explanation speaks to the theories discussed in Section 1.5 and suggests that increased salience of immigration issues attracts voters to support the SD, despite not having extreme anti-immigrant attitudes. Assuming a more or less time-invariant distribution of anti-immigrant attitudes among the electorate, a larger number of voters finding immigration issues important and, therefore, more likely to vote for the SD, will necessarily decrease the average anti-immigration sentiment among SD voters.

Figure 1.10 shows the share of voters naming immigration as an important political issue, for SD voters and for supporters of the other established parties. The data show a large increase in salience after 2008. It also shows a spike in the early 90s, which coincides with the *Swedish*

Figure 1.9: Immigration and xenophobic attitudes



(a) Anti-immigration sentiment

(b) Xenophobic attitudes

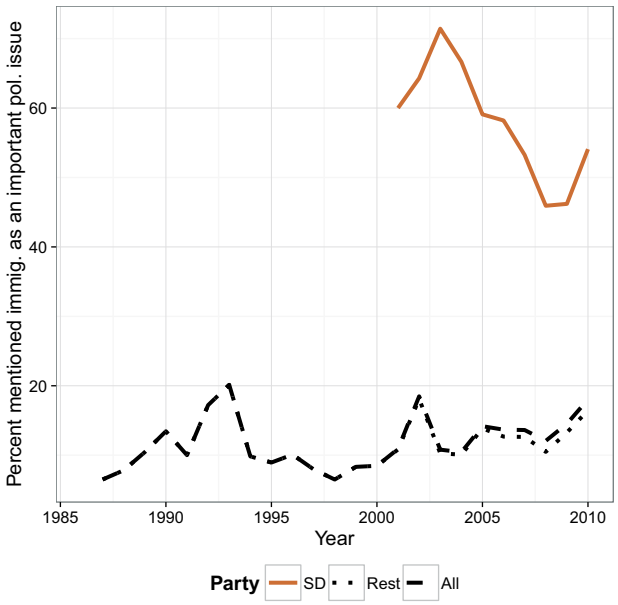
Notes: (a): Average responses for survey question *Accept fewer* ("Should we accept fewer immigrants?") for respondents indicating the Sweden Democrats as their most preferred party, and for other respondents, from Riks-SOM. (b): Average responses for survey question on xenophobic attitudes (*Immigrant relative*, agree with statement "I would not want to have an immigrant married into my family") for respondents indicating the Sweden Democrats as their most preferred party, and for other respondents, from Riks-SOM.

financial crisis.[50] This was accompanied by the emergence of *New Democracy*: an anti-establishment and anti-immigration party that entered the parliament after the 1991 national election. However, anti-immigration sentiment were also increasing in 1992 (see Figure 1.9a), which makes it difficult to separate the contribution of salience from anti-immigration attitudes to the electoral success of New Democracy.

The last two columns of Table 1.7 presents OLS estimates of the coefficients in regression model (1.3) using anti-immigration sentiment as dependent variable. The slope coefficients for self-reported unemployment risk are not statistically different from zero for any of the two skill levels. This mean that self-perceived unemployment risk does not explain differences in anti-immigrant attitudes. However, male low-skilled respondents are more likely to have anti-immigrant attitudes than their female counterpart (specification (5)).

[50] Employment dropped by almost 14 percent from 1990 to 1994.

Figure 1.10: Importance of immigration issues



Notes: Share of respondents naming immigration as an important political issue (*Immigration problem*) for respondents indicating the Sweden Democrats as their most preferred party, and for other respondents, from Riks-SOM. All survey questions from Riks-SOM are described in Table A1.2 in the Appendix.

As depicted in Figure 1.9a, SD voters are, on average, more anti-immigrant than voters from the other parties. They are also more likely to name immigration as an important political issue. We should therefore expect both these variables to explain voting for the SD when included in the same regression model. Table 1.8 presents the estimates from a regression model of voting for SD on salience of immigration and immigration attitudes, as well as controls for gender and general interest in politics. The OLS estimates for a subsample of low-skilled respondents in the first column (specification (1)) show that both salience and anti-immigration attitudes are positively correlated with voting for the SD, and significant at 1 percent. For high-skilled respondents, only the correlation between voting for SD and anti-immigration attitudes is significant at 1 percent, while the coefficient for the salience of immigration issues is significant at 10 percent.

Table 1.8: Salience of immigration issues and anti-immigration sentiment

Dep. variable: Vote SD	Low-skilled		High-skilled	
	(1)	(2)	(3)	(4)
Immigration problem	0.172***	0.150***	0.046*	0.038*
	(0.036)	(0.034)	(0.024)	(0.021)
Number of issues	-	-0.005	-	-0.012
	-	(0.005)	-	(0.009)
Male	-	0.032**	-	0.015
	-	(0.014)	-	(0.014)
Accept fewer	-	0.030***	-	0.028***
	-	(0.006)	-	(0.009)
Adj. R-square	0.079	0.109	0.014	0.070
Obs.	855	840	475	474

Notes: Data from Riks-SOM 2010. OLS estimates of regression model (1.3), where dependent variable is *Vote SD* = **1**[SD is most preferred party]. *Immigration problem* = **1**[mentioned immigration as a salient political issue], and *Accept fewer* asks whether it is a good idea to accept fewer immigrants (1-5 where 5 corresponds to "strongly agree"). '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on heteroscedasticity-consistent standard errors (in parentheses).

1.6 Conclusion

With the recent electoral success of radical right parties in many European countries, a growing literature in different fields of social science is trying to explain their success. Most studies focus on the casual link between immigrant visibility and anti-immigrant sentiment while a recent wave of papers in economics instead emphasizes the role of global trade. Job displacement due to exposure to import competition from low-income countries is believed to generate a demand for anti-trade policies, or, to intensify (existing) ingroup-outgroup conflicts. This study further examines the economic factors behind the increased support for the extreme right by using detailed election precinct-level data on number of layoff notifications as proxy for economic distress, and election results for the 2006 and 2010 national elections in Sweden. I construct a Bartik instrument where the local sectoral composition and industry-specific national trends in layoff notifications predicts the number of layoff notifications in each precinct. The main results indicate a positive causal effect of layoff notifications among low-skilled native-born workers on support for the Sweden

Democrats. This effect accounts for 31 percent of the total increase in SD votes between 2006 and 2010. The effect of layoff notifications is substantial: every second low-skilled native-born worker receiving a layoff notification generate, on average, one additional vote for the Sweden Democrats.

The results in this paper shows that layoff notifications among low-skilled native-born workers increase support for anti-immigration parties. These workers attribute changes to their personal economic circumstances to immigration. Theories on the effects of immigration state that native workers of a particular skill are expected to oppose immigration of the same skill due to fear of labor market competition. In addition, concerns regarding strain on public finance and competition for access to welfare services make both high and low-skilled natives more likely to oppose low-skilled immigration. Estimates of the interaction between layoff notifications and the share of high-skilled and low-skilled immigrants in each precinct suggest that changes to economic status is attributed to immigration as a result of labor market concerns. In areas with a high share of low-skilled immigrants, the effect of layoff notifications among low-skilled native-born workers on support for the SD is larger. Conversely, the effect is smaller in neighborhoods with a high share of high-skilled immigrants. For high-skilled native-born workers, the negative effect of layoff notifications becomes less negative in neighborhoods with a large share of high-skilled immigrants, and more negative where the share of low-skilled immigrants is high.

A popular explanation to why low-skilled native-born workers are more likely to support far-right parties is that they are attracted by the anti-globalization and anti-trade policies of these parties. In this paper, I show that layoff notifications among low-skilled native-born workers does not increase voting for the anti-globalization and anti-EU Left Party. As the SD and the Left Party party take similar positions on issues related to the European Union, this implies that layoff notifications do not increase anti-globalization sentiment or salience of issues related to increased international economic integration. Instead, low-skilled voters that experience economic distress are likely to be attracted to immigration policies proposed by far-right parties, as they attribute changes to their personal economic circumstances to immigration.

To understand the channels through which economic distress translates into support for far-right parties, I use theories related to the *salience* of political cleavage dimensions, and these can be summarized as follows. Voters that attribute unemployment risk shocks to immigration are encouraged to increase salience of political dimensions related to conflicts based on ethnic and cultural background. This requires that the voter is expected to compete with immigrants for employment and welfare services and benefits most likely used by immigrants. Increased salience of sociocultural dimensions, where the established parties have been unable to position themselves strategically, benefit far-right parties as it facilitates gaps between voter preferences and platforms announces by the mainstream parties. Thus, economic distress does not necessarily affect anti-immigration attitudes, as shown by Hainmueller and Hiscox (2010).

Using detailed survey data on party preferences, self-reported unemployment risk, and questions related to anti-immigrant sentiment and xenophobia, I examine the validity of the theories discussed in the paper. I show that higher unemployment risk is associated with higher salience of issues related to immigration and probability of voting for the SD *only* among low-skilled respondents. Anti-immigration sentiment is not correlated with self-perceived unemployment risk, and xenophobic and anti-immigrant attitudes have decreased steadily since the early 90s, challenging the belief that the electoral success of far-right parties is caused by a rise in xenophobia. The survey evidence shows that salience of immigration issues is highly correlated with support for far-right parties, and the aggregated precinct-level data suggest that voters are likely to attribute their impaired economic situation to immigration. The effect of layoff notifications estimated in this study is exacerbated by the presence of low-skilled immigrants, which suggests that voters do attribute changing economic conditions to immigration. This interpretation is based on results from aggregated precinct-level data, and future research on when, and why, native-born voters blame immigrants for changes to the local economic environment unrelated to immigration could enhance our understanding of why far-right parties are successful.

References

Arzheimer K, Carter E (2006). "Political opportunity structures and right-wing extremist party success." *European Journal of Political Research*, **45**(3), 419–443.

Autor D, Dorn D, Hanson G, Majlesi K, *et al.* (2016). "Importing Political Polarization? The Electoral Consequences of Rising Trade Exposure." *Technical report*, NBER Working Paper No. 22637.

Bartik TJ (1991). *Who Benefits from State and Local Economic Development Policies?* W.E. Upjohn Institute for Employment Research.

Becker SO, Fetzer T, *et al.* (2016). "Does Migration Cause Extreme Voting." *Technical report*, Competitive Advantage in the Global Economy (CAGE).

Bell D (1972). "The cultural contradictions of capitalism." *Journal of Aesthetic Education*, **6**(1/2), 11–38.

Betz HG (2002). "The divergent paths of the FPÖ and the Lega Nord." In *Shadows over Europe*, pp. 61–81. Springer.

Biggs M, Knauss S (2012). "Explaining membership in the British National Party: A multilevel analysis of contact and threat." *European Sociological Review*, **28**(5), 633–646.

Bodvarsson ÖB, Van den Berg HF, Lewer JJ (2008). "Measuring immigration's effects on labor demand: A reexamination of the Mariel Boatlift." *Labour Economics*, **15**(4), 560–574.

Borjas GJ (2015). "The wage impact of the Marielitos: A reappraisal." *ILR Review*.

Borjas GJ, Freeman RB, Katz LF, DiNardo J, Abowd JM (1996). "Searching for the Effect of Immigration on the Labor Market." *American Economic Review*, **86**(1), 246–251.

Borjas GJ, Freeman RB, Katz LF, DiNardo J, Abowd JM (1997). "How much do immigration and trade affect labor market outcomes?" *Brookings papers on economic activity*, **1997**(1), 1–90.

Borjas GJ, Monras J (2017). "The labour market consequences of refugee supply shocks." *Economic Policy*, **32**(91), 361–413.

Budge I, Robertson D (1987). "Do parties differ, and how? Comparative discriminant and factor analyses." In I Budge, D Robertson, D Hearl (eds.), *Ideology, strategy and party change: Spatial analyses of post-war election programmes in 19 democracies*, pp. 387–416. Cambridge University Press.

Card D (1990). "The impact of the Mariel boatlift on the Miami labor market." *ILR Review*, **43**(2), 245–257.

Clemens MA, Hunt J (2017). "The Labor Market Effects of Refugee Waves: Reconciling Conflicting Results." *Technical report*, NBER Working Paper No. 23433.

Coffé H, Heyndels B, Vermeir J (2007). "Fertile grounds for extreme right-wing parties: Explaining the Vlaams Blok's electoral success." *Electoral Studies*, **26**(1), 142–155.

Colantone I, Stanig P (2016a). "Global Competition and Brexit." *BAFFI CAREFIN Centre Research Paper No. 2016-44*.

Colantone I, Stanig P (2016b). "The Trade Origins of Nationalist Protectionism: Import Competition and Voting Behavior in Western Europe." *mimeo*.

Colussi T, Isphording IE, Pestel N (2016). "Minority Salience and Political Extremism." *IZA Discussion Paper No. 10417*.

Dippel C, Gold R, Heblich S (2015). "Globalization and Its (Dis-) Content: Trade Shocks and Voting Behavior." *Technical report*, NBER Working Paper No. 21812.

Dustmann C, Preston IP (2007). "Racial and economic factors in attitudes to immigration." *The BE Journal of Economic Analysis & Policy*, **7**(1).

Dustmann C, Vasiljeva K, Damm AP (2016). "Refugee migration and electoral outcomes." *CReAM DP*, **19**, 16.

Ekberg J (1999). "Immigration and the public sector: Income effects for the native population in Sweden." *Journal of Population Economics*, **12**(3), 411–430.

Evans WN, Fitzgerald D (2017). "The Economic and Social Outcomes of Refugees in the United States: Evidence from the ACS." *Technical report*, NBER Working Paper No. 23498.

Facchini G, Mayda AM (2009). "Does the welfare state affect individual attitudes toward immigrants? Evidence across countries." *The review of economics and statistics*, **91**(2), 295–314.

Golder M (2003). "Explaining variation in the success of extreme right parties in Western Europe." *Comparative Political Studies*, **36**(4), 432–466.

Goldsmith-Pinkham P, Sorkin I, Swift H (2017). "Bartik instruments: What, when, why and how." *Unpublished Working Paper*.

Göteborgs universitet SOM-institutet (2016). "Super-Riks-SOM 1986-2014. Version 1.0." Svensk Nationell Datatjänst. http://dx.doi.org/10.5878/002826.

Haaland I, Roth C (2017). "Labor Market Concerns and Support for Immigration." *Unpublished Working Paper*.

Hainmueller J, Hiscox MJ (2010). "Attitudes toward highly skilled and low-skilled immigration: Evidence from a survey experiment." *American Political Science Review*, **104**(1), 61–84.

Hainmueller J, Hopkins DJ (2014). "Public attitudes toward immigration." *Annual Review of Political Science*, **17**, 225–249.

Hangartner D, Dinas E, Marbach M, Matakos K, Xefteris D (2017). "Does Exposure to the Refugee Crisis Make Natives More Hostile?" *Stanford-Zurich Immigration Policy Lab Working Paper No. 17-02*.

Harteveld E, Van Der Brug W, Dahlberg S, Kokkonen A (2015). "The gender gap in populist radical-right voting: examining the demand side in Western and Eastern Europe." *Patterns of Prejudice*, **49**(1-2), 103–134.

Inglehart R, Norris P (2016). "Trump, Brexit, and the rise of populism: Economic have-nots and cultural backlash." *Unpublished Working Paper*.

Kitschelt H (1994). *The transformation of European social democracy*. Cambridge University Press.

Kitschelt H (1995). "Formation of party cleavages in post-communist democracies: Theoretical propositions." *Party politics*, **1**(4), 447–472.

Kitschelt H (2007). "Growth and persistence of the radical right in postindustrial democracies: Advances and challenges in comparative research." *West European Politics*, **30**(5), 1176–1206.

Kitschelt H, McGann AJ (1997). *The radical right in Western Europe: A comparative analysis*. University of Michigan Press.

Knigge P (1998). "The ecological correlates of right-wing extremism in Western Europe." *European Journal of Political Research*, **34**(2), 249–279.

Longhi S, Nijkamp P, Poot J (2005). "A Meta-Analytic Assessment of the Effect of Immigration on Wages." *Journal of Economic Surveys*, **19**(3), 451–477.

Lubbers M, Gijsberts M, Scheepers P (2002). "Extreme right-wing voting in Western Europe." *European Journal of Political Research*, **41**(3), 345–378.

Malgouyres C (2014). "The Impact of Exposure to Low-Wage Country Competition on Votes for the Far-Right: Evidence from French Presidential Elections." *European University Institute, Fiesole, Italy*.

Malhotra N, Margalit Y, Mo CH (2013). "Economic explanations for opposition to immigration: Distinguishing between prevalence and conditional impact." *American Journal of Political Science*, **57**(2), 391–410.

Martinsen DS, Pons Rotger G (2017). "The fiscal impact of EU immigration on the tax-financed welfare state: Testing the 'welfare burden'thesis." *European Union Politics*.

Mayda AM (2006). "Who is against immigration? A cross-country investigation of individual attitudes toward immigrants." *The review of Economics and Statistics*, **88**(3), 510–530.

McLaren LM (2003). "Anti-immigrant prejudice in Europe: Contact, threat perception, and preferences for the exclusion of migrants." *Social Forces*, **81**(3), 909–936.

Norris P (2005a). "The 'new cleavage' thesis and the social basis of radical right support." *KSG Working Paper No. RWP05-015*.

Norris P (2005b). *Radical right: Voters and parties in the electoral market*. Cambridge University Press.

Peri G, Yasenov V (2017). "The Labor Market Effects of a Refugee Wave: Synthetic Control Method Meets the Mariel Boatlift." *IZA Discussion Paper No. 10605*.

Pettigrew TF, Tropp LR (2006). "A meta-analytic test of intergroup contact theory." *Journal of Personality and Social Psychology*, **90**(5), 751.

Rink N, Phalet K, Swyngedouw M (2009). "The effects of immigrant population size, unemployment, and individual characteristics on voting for the Vlaams Blok in Flanders 1991–1999." *European sociological review*, **25**(4), 411–424.

Rooth DO, Ekberg J (2003). "Unemployment and earnings for second generation immigrants in Sweden. Ethnic background and parent composition." *Journal of Population economics*, **16**(4), 787–814.

Ruist J (2013). "The labor market impact of refugee immigration in Sweden 1999–2007." *Stockholm University Linnaeus Center for Integration Studies Working Paper No 1*.

Rydgren J (2004a). "Explaining the Emergence of Radical Right-Wing Populist Parties: The Case of Denmark." *West European Politics*, **27**(3), 474–502.

Rydgren J (2004b). *The populist challenge: Political protest and ethno-nationalist mobilization in France*, volume 1. Berghahn Books.

Rydgren J (2005). "Is extreme right-wing populism contagious? Explaining the emergence of a new party family." *European journal of political research*, **44**(3), 413–437.

Rydgren J (2007). "The Sociology of the Radical Right." *Annual Review of Sociology*, **33**, 241–262.

Rydgren J (2008). "Immigration sceptics, xenophobes or racists? Radical right-wing voting in six West European countries." *European Journal of Political Research*, **47**(6), 737–765.

Rydgren J, Ruth P (2011). "Voting for the radical right in Swedish municipalities: Social marginality and ethnic competition?" *Scandinavian Political Studies*, **34**(3), 202–225.

Rydgren J, Ruth P (2013). "Contextual explanations of radical right-wing support in Sweden: socioeconomic marginalization, group threat, and the halo effect." *Ethnic and Racial Studies*, **36**(4), 711–728.

Rydgren J, Tyrberg M (2016). "Social Marginalization, Ethnic Threat, And Radical Right-wing Support in Sweden: A Multilevel analysis." *Department of Sociology (SU) Working Paper Series No 26*.

Schain M, Zolberg A, Hossay P (2002). *Shadows over Europe: The development and impact of the extreme right in Western Europe*. Springer.

Schattschneider EE (1975). *The Semi-Sovereign People: A Realist's View of Democracy in America*. Wadsworth Publishing.

Schneider SL (2008). "Anti-immigrant attitudes in Europe: Outgroup size and perceived ethnic threat." *European Sociological Review*, **24**(1), 53–67.

Seim D (2012). *Job displacement and labor market outcomes by skill level.* Eesti Pank.

Simonovits G, Kézdi G, Kardos P (2017). "Seeing the World Through the Other's Eye: An Online Intervention Reducing Ethnic Prejudice." *American Political Science Review*, p. 1–8. doi:10.1017/S0003055417000478.

Smith JP, Edmonston B (1997). *The new Americans: Economic, demographic, and fiscal effects of immigration.* National Academies Press.

Steinmayr A (2016). "Exposure to Refugees and Voting for the Far-Right: (Unexpected) Results from Austria." *IZA Discussion Paper No. 9790.*

Strömblad P, Malmberg B (2015). "Ethnic segregation and xenophobic party preference: Exploring the influence of the presence of visible minorities on local electoral support for the Sweden Democrats." *Journal of Urban Affairs.*

Swank D, Betz HG (2003). "Globalization, the welfare state and right-wing populism in Western Europe." *Socio-Economic Review*, **1**(2), 215–245.

Tabellini M (2017). "Gifts of the Immigrants, Woes of the Natives: Lessons from the Age of Mass Migration." *Unpublished Working Paper.*

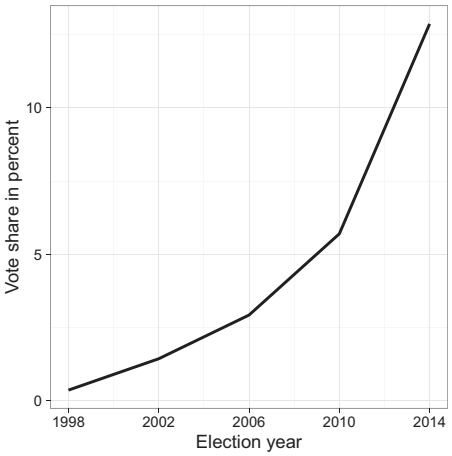
Valdez S (2014). "Visibility and votes: A spatial analysis of anti-immigrant voting in Sweden." *Migration Studies*, **2**(2), 162–188.

Widfeldt A (2008). "Party change as a necessity–the case of the Sweden Democrats." *Representation*, **44**(3), 265–276.

Zaslove A (2004). "The dark side of European politics: unmasking the radical right." *Journal of European Integration*, **26**(1), 61–81.

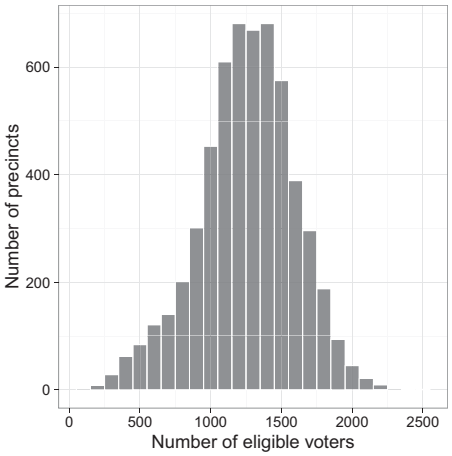
1.7 Appendix

Figure A1.1: SD vote share in national elections, 1998-2014



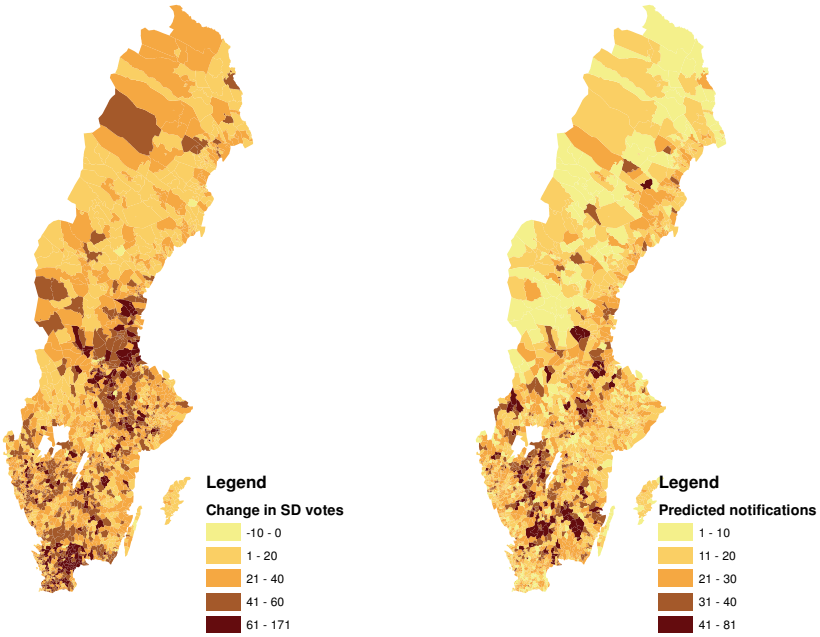
Notes: SD vote share in national elections 1998, 2002, 2006, 2010, and 2014. Source: Statistics Sweden.

Figure A1.2: Eligible voters, 2010 national election



Notes: Histogram of the distribution of precinct-level eligible voters in the 2010 national election.

Figure A1.3: ΔSD and predicted layoff notifications (low-skilled natives)



(a) Change in SD votes, between 2006 and 2010

(b) Predicted layoff notifications among low-skilled natives

Notes: Election precinct-level data on change in SD votes between 2006 and 2010 national elections (a), and number of predicted layoff notifications among low-skilled native-born workers, 2007 to 2010.

Table A1.1: Education level

	Classification	Skill level
1	Compulsory education less than 9 years	Low
2	Compulsory education 9 years	
3	Secondary education maximum 2 years	
4	Secondary education 3 years	
5	Tertiary education less than 3 years	High
6	Tertiary education 3 years or more	
7	Tertiary preparatory education	

Notes: Translated from Swedish to English. Based on variable *Sun2000niva* in *LISA* (Statistics Sweden).

Table A1.2: Description of survey questions, from Riks-SOM*

Variable	Definition	Original Variable Name
Unemp. risk	Concern: "To become unemployed"	gb10c
Vote SD	Takes value 1 if respondent stated Sweden Democrats as most preferred party in the question	cb10
Immigration problem	Mentioned political issue: "Immigration policy, immigrants"	sprob31000
Accept fewer	Suggestion: "Accept fewer immigrants in Sweden"	fc900b
Male	Takes value 1 if respondent is male	sex
Number of issues	Number or political issues named by the respondent"	antalsprobnamnt
Immigrants religion	Statement: "The immigrants in Sweden should be able to freely practice their religion here"	fc10b
Ethnic threat	Statement: "The immigration constitutes a threat towards Swedish culture and Swedish values"	fc20a
Too many immigrants	Statement: "There are too many foreigners in Sweden"	fc10a
Immigrant relative	Statement: "I would not want to have an immigrant married into my family"	fc10e
Immigrant culture	Suggestion: "Immigration policy should enhance the preserving of national culture and traditions"	fc900f
Accept more	Suggestion: "Accept more immigrants in Sweden"	fc900a
Leave EU (voter)	Suggestion: "Sweden should leave the EU"	fb900l
Trust EU comm.	Trust for: "The European Commission"	aa10r
Trust EU parl.	Trust for: "The European Parliament"	aa10s
Preferred party	Question: "Which is your most preferred political party today?"	cb10
Democracy in EU	Question: "How satisfied are you with the democracy in: EU?"	ca100a
Opinion of EU	Question: "In general, what is your attitude towards EU?"	fb10

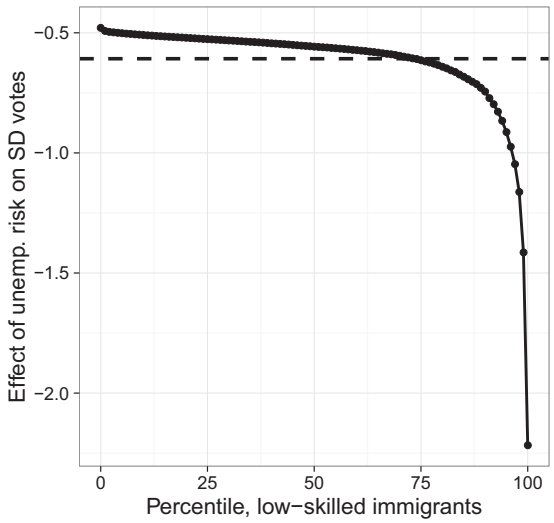
Notes: All questions have been translated from Swedish to English. Some of the variables have been recoded in such matter that they now have the highest/most positive alternative equal to the highest number (usually 4 or 5), and the lowest/most negative alternative equal to 1.
*Riks-SOM is a national survey conducted annually by the *SOM-institute* at *Gothenburg University* every autumn with the purpose to analyze the habits and attitudes of the Swedish population, focusing on society, policies, and media. The data are collected through posted questionnaires.

Table A1.3: Description of survey questions, from Valpejl2010*

Variable	Description/Statement	Original Variable Name
Accept refugees	“No municipality should be allowed to deny receiving refugees"	q_43_flyktingmottagandet
Fewer Asylum	“Fewer asylum seekers should get to stay in Sweden"	q_46_asylsokande
Health illegal	“Illegal immigrants should have access free health care"	q_49_vard_t_papperslosa
Viel in schools	“It should be illegal to wear veil in Swedish schools"	q_52_skolsloja
Racist org.	“Participation in racist organizations should be punishable"	q_157_rasistiska_org
Leave EU (cand.)	“Sweden should leave EU"	q_139_eu
Petrol tax	“The petrol tax should increase"	q_31_bensinskatt
Free museums	“State-owned museums should have free entrance"	q_34_museer
Carers allowance	“The child-care allowance should be abolished"	q_61_vardnadsbidraget
Property tax	“The property tax should increase for villas with assess value over 4.5 millions"	q_64_fastighetsskatten
Wealth tax	“The wealth tax should be reinstated"	q_67_formogenhetsskatten
High income tax	“The tax for high-income earners should increase"	q_70_hoginkomstskatten
Pension tax	“Pension and wages should have equal taxrates"	q_73_beskattn_av_pension
RUT	“The ’RUT-deduction’ should be retained"	q_76_rut
Income tax	“The income tax should decrease"	q_79_arbeteskatten
Health insurance	“The health insurance should be time-limited"	q_97_sjukforsakringen
Welfare comp.	“There should be more competition and freedom of choice in publicly owned businesses"	q_103_konkurrens_i_offentl
Unemp. insurance	“The unemployment insurance should be mandatory"	q_106_obl_akassa
Private health	“Private health care businesses driven by taxes should be able to give profit to their owners"	q_115_privata_vardforetag
Alcohol monopoly	“The alcohol monopoly should be abolished"	q_118_alkoholmonopol
Empl. security	“More difficult to use staffing companies in order to evade the *Employment Protection Act* (LAS)"	q_121_kringga_las
Sell state-owned	“State-owned firms should not be sold"	q_124_utforsaljning

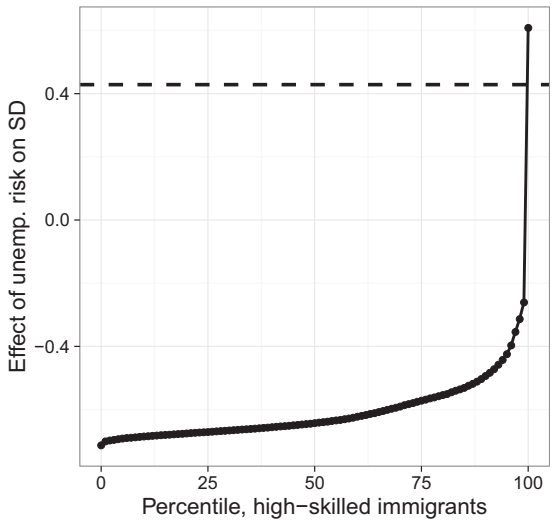
Notes: All questions have been translated from Swedish to English.
*Valpejl2010 is a survey conducted by the Swedish Public Service Broadcaster *Sveriges Television* in 2010 with the purpose to analyze the positions of the political parties and candidates in the 2010 national and local elections.

Figure A1.4: Share of low-skilled immigration and layoff notifications (high-skilled natives)



Notes: Solid black like represents the sum of the main effect and interaction effect of layoff notifications among high-skilled native-born workers and low-skilled immigration on change in SD votes. Dashed line represents the main effect for precincts with share of low-skilled immigration equal to the mean. For election precincts with a share of low-skilled immigrants lower than the mean, the total effect of layoff notifications is smaller than the main effect, and larger than the main effect in election precincts with share of low-skilled immigrants higher than the mean.

Figure A1.5: Share of high-skilled immigration and layoff notifications (high-skilled natives)



Notes: Solid black like represents the sum of the main effect and interaction effect of layoff notifications among high-skilled native-born workers and high-skilled immigration on change in SD votes. Dashed line represents the main effect for precincts with share of high-skilled immigration equal to the mean. For election precincts with a share of high-skilled immigrants lower than the mean, the total effect of layoff notifications is smaller than the main effect, and larger than the main effect in election precincts with share of high-skilled immigrants higher than the mean.

Table A1.4: First PC of industry shares, and observable characteristics

Dep. variable:	PC1, *un* (1)	PC1, *sn* (2)	PC1, *fn* (3)	PC1, *sf* (4)
Low-sk. immigration, stock 2006	-0.508***	-0.022	-1.037***	0.044***
	(0.080)	(0.027)	(0.114)	(0.014)
High-sk. immigration, stock 2006	1.397***	-0.415***	0.029	-1.113***
	(0.261)	(0.122)	(0.101)	(0.063)
Share low-skilled 2006	0.715***	0.946***	0.110	0.045
	(0.152)	(0.188)	(0.078)	(0.032)
Pre-tax median income 2006	0.848***	-0.853***	0.277***	0.109***
	(0.207)	(0.212)	(0.074)	(0.026)
Avg. Education 2006	-15.089***	3.798	4.596*	1.349**
	(4.965)	(4.445)	(2.624)	(0.681)
Eligible voters 2010	0.033***	-0.026***	-0.005***	-0.003***
	(0.004)	(0.001)	(0.001)	(0.001)
Share employed 2006	0.620***	-0.703***	-0.240***	-0.056***
	(0.099)	(0.042)	(0.060)	(0.013)
Share male 2006	41.779**	28.985***	18.393***	12.393***
	(19.968)	(9.604)	(4.898)	(1.688)
Adj. R-square	0.853	0.856	0.891	0.872
Obs.	5663	5663	5663	5663

Notes: OLS estimates of first principal component of industry shares in 2006 regressed on share of immigrants in 2006 (high and low-skilled), share of low-skilled in 2006, pre-tax median income in 2006, mean highest attained education in 2006, number of eligible voters in 2010, share employed (15-74 years) in 2006. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

Table A1.5: Descriptive statistics

Variable	Mean	Median	St. dev.	Min	Max
Panel **A**: Outcomes					
ΔSD	30.218	27.000	19.109	-10.434	171.073
ΔLP	0.882	0.000	14.028	-72.040	117.293
Panel **B**: Measures of economic distress					
Notifications 2007-10	33.028	29.937	16.908	0.000	247.328
Notifications 2007-10, low-sk. native-born	21.298	18.428	13.837	0.000	188.512
Notifications 2007-10, high-sk. native-born	6.644	5.833	4.559	0.000	34.846
Notifications 2007-10, low-sk. foreign-born	3.750	2.009	5.094	0.000	57.061
Notifications 2007-10, high-sk. foreign-born	1.335	0.996	1.535	0.000	14.390
Bartik 2007-10	25.810	24.408	10.635	1.859	110.317
Bartik 2007-10, low-sk. native-born	16.973	15.304	9.290	0.977	80.867
Bartik 2007-10, high-sk. native-born	5.379	4.457	3.579	0.000	30.471
Bartik 2007-10, low-sk. foreign-born	2.585	1.568	3.019	0.000	35.983
Bartik 2007-10, high-sk. foreign-born	0.877	0.640	0.806	0.000	7.122
Panel **C**: Control variables					
Share low-sk. foreign-born 2006	9.876	6.144	11.827	0.000	124.762
Share high-sk. foreign-born 2006	4.428	2.964	4.174	0.000	62.520
Share low-sk. 2006	68.351	72.406	14.288	12.714	93.548
Median pre-tax income 2006	23.024	22.329	2.615	13.692	45.874
Avg. education level 2006	3.735	3.616	0.522	2.645	5.544
Eligible voters 2006	1256.153	1272.000	338.781	121.000	2523.000
Share employed 2006	64.637	65.505	8.772	23.955	86.242
Share male 2006	0.504	0.503	0.021	0.356	0.661

Notes: Descriptive statistics for outcomes, measures of economic distress, and control variables. All variables are described in Table A1.6 in the Appendix.

Table A1.6: Description of variables in regression models

Variables	Definition	Source
Panel **A**: Outcomes		
ΔSD	Change in vote share for the *Sweden Democrats* between 2006 and 2010 national elections	Election Authority
ΔLP	Change in vote share for the *Left Party* between 2006 and 2010 national elections	Election Authority
Panel **B**: Measures of economic distress		
Layoff notifications	Total number of workers receiving layoff notifications, 2007-2010	SCB
Layoff notifications, j	Number of workers from social group j receiving layoff notifications, 2007-2010	SCB
Panel **C**: Control variables		
Eligible voters 2010	Number of eligible voters in the 2010 national election	Election Authority
Share immigrants, 2006	Share of foreign-born individuals in 2006	SCB
Share low-sk. immigrants, 2006	Share of low-skilled foreign-born individuals in 2006	SCB
Share high-sk. immigrants, 2006	Share of high-skilled foreign-born individuals in 2006	SCB
Avg. education 2006	Average of highest attained education level in 2006	SCB
Pre-tax median Income 2006	Pre-tax median income in 2006	SCB
Share employed 2006	Share of employed workers in 2006	SCB

Notes: Data provided by Statistics Sweden (SCB) and the Swedish Election Authority (www.val.se).

Table A1.7: SD votes 2010 and layoff notifications

Dep. variable: SD votes 2010	Panel **A**: 2SLS			
	Native-born		Foreign-born	
	Low-skilled	High-skilled	Low-skilled	High-skilled
	(1)	(2)	(3)	(4)
Notifications	0.458***	-0.474**	0.051	-1.436***
	(0.095)	(0.215)	(0.115)	(0.455)
First stage F-stat.	1610.71	831.64	5068.62	660.90
Obs.	5663	5663	5663	5663
Controls	No	Yes	No	Yes
Dep. variable: SD votes 2010	Panel **B**: OLS			
	Native-born		Foreign-born	
	Low-skilled	High-skilled	Low-skilled	High-skilled
	(1)	(2)	(3)	(4)
Notifications	0.175***	-0.145**	-0.082	-0.326**
	(0.052)	(0.057)	(0.077)	(0.164)
Adj. R-square	0.890	0.890	0.890	0.890
Obs.	5663	5663	5663	5663
Controls	Yes	Yes	Yes	Yes

Notes: 2SLS (Panel **A**) and OLS (Panel **B**) estimates of regression model (1.1) with SD votes in 2010 as outcome, and controlling for SD votes in 2006. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

Table A1.8: ΔSD and layoff notifications, for all skill-origin combinations

Dep. variable: ΔSD	2SLS (1)	OLS (2)
Low-skilled native-born	0.526***	0.183***
	(0.086)	(0.051)
High-skilled native-born	-0.789***	-0.151**
	(0.215)	(0.068)
Low-skilled foreign-born	-0.007	-0.063
	(0.117)	(0.082)
High-skilled foreign-born	-0.407	-0.162
	(0.543)	(0.167)
Adj. R-square	-	0.655
First stage F-stat.	445.64	-
Obs.	5663	5663
Controls	Yes	Yes

Notes: 2SLS and OLS estimates of regression model (1.1), with notifications 2007-2010, where layoff notifications for all social groups have been included. Dependent variable is ΔSD, and is the change in votes between the 2006 and 2010 national elections for the Sweden Democrats. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

Table A1.9: Change in SD vote share and layoff notifications

Dep. variable: ΔSD vote share	Panel **A**: 2SLS			
	Native-born		Foreign-born	
	Low-skilled (1)	High-skilled (2)	Low-skilled (3)	High-skilled (4)
Notifications	0.387***	0.522	0.051	-0.426
	(0.124)	(0.572)	(0.249)	(1.547)
First stage F-stat.	767.78	368.78	2744.28	256.67
Obs.	5663	5663	5663	5663
Controls	Yes	Yes	Yes	Yes
Dep. variable: ΔSD vote share	Panel **B**: OLS			
	Native-born		Foreign-born	
	Low-skilled (1)	High-skilled (2)	Low-skilled (3)	High-skilled (4)
Notifications	0.152***	-0.052	-0.137	-0.438**
	(0.049)	(0.081)	(0.110)	(0.170)
Adj. R-square	0.525	0.523	0.524	0.524
Obs.	5663	5663	5663	5663
Controls	Yes	Yes	Yes	Yes

Notes: 2SLS (Panel **A**) and OLS (Panel **B**) estimates of regression model (1.1) with the change in SD vote shares between 2006 and 2010 as outcome. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

Table A1.10: ΔSD and layoff notifications, skill-level based on SSYK

Dep. variable: ΔSD	Panel **A**: 2SLS			
	Native-born		Foreign-born	
	Low-skilled	High-skilled	Low-skilled	High-skilled
	(1)	(2)	(3)	(4)
Notifications	0.581***	-0.240	0.035	-5.048***
	(0.075)	(0.150)	(0.123)	(1.556)
First stage F-stat.	1880.13	1020.96	4446.85	154.48
Obs.	5663	5663	5663	5663
Controls	Yes	Yes	Yes	Yes
Dep. variable: ΔSD	Panel **B**: OLS			
	Native-born		Foreign-born	
	Low-skilled	High-skilled	Low-skilled	High-skilled
	(1)	(2)	(3)	(4)
Notifications	0.205***	-0.030	-0.067	-0.560**
	(0.054)	(0.068)	(0.069)	(0.245)
Adj. R-square	0.647	0.645	0.645	0.645
Obs.	5663	5663	5663	5663
Controls	Yes	Yes	Yes	Yes

Notes: 2SLS (Panel **A**) and OLS (Panel **B**) estimates of regression model (1.1) with ΔSD as the outcome, where workers' skill-level is based on SSYK codes (see Table A1.11). '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

Table A1.11: Skill level based on occupational classification

1-digit SSYK code (2012)	Name of occupation category	Skill level
0	Armed forces	–
1	Legislators, senior officials and managers	High
2	Professionals	High
3	Technicians and associate professionals	High
4	Clerks	Low
5	Service workers and shop sales workers	Low
6	Skilled agricultural and fishery workers	Low
7	Craft and related trades workers	Low
8	Plant and machine operators and assemblers	Low
9	Elementary occupations	Low

Notes: Description of 1-digit *Swedish Standard Classification of Occupations* (SSYK) occupation categories. Source: Statistics Sweden (SCB).

Table A1.12: ΔSD and layoff notifications, local elections

Dep. variable: ΔSD (local)	Panel **A**: 2SLS			
	Native-born		Foreign-born	
	Low-skilled	High-skilled	Low-skilled	High-skilled
	(1)	(2)	(3)	(4)
Notifications	0.314***	-0.584**	0.181	-0.627
	(0.107)	(0.275)	(0.112)	(0.442)
First stage F-stat.	1679.06	831.99	5071.71	664.44
Obs.	5663	5663	5663	5663
Controls	Yes	Yes	Yes	Yes
Dep. variable: ΔSD (local)	Panel **A**: OLS			
	Native-born		Foreign-born	
	Low-skilled	High-skilled	Low-skilled	High-skilled
	(1)	(2)	(3)	(4)
Notifications	0.138***	-0.088	-0.016	-0.177
	(0.038)	(0.054)	(0.060)	(0.201)
Adj. R-square	0.726	0.725	0.725	0.725
Obs.	5663	5663	5663	5663
Controls	Yes	Yes	Yes	Yes

Notes: 2SLS estimates of regression model (1.1). Dependent variable is the change in votes between the 2006 and 2010 local elections for the SD. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

Table A1.13: Correlation matrix for share of immigrants

	Share immigrants 2006	Share immigrants 2007	Share immigrants 2008	Share immigrants 2009	Share immigrants 2010
Share immigrants 2006	1.000	0.998	0.995	0.990	0.985
Share immigrants 2007	0.998	1.000	0.998	0.994	0.989
Share immigrants 2008	0.995	0.998	1.000	0.998	0.994
Share immigrants 2009	0.990	0.994	0.998	1.000	0.998
Share immigrants 2010	0.985	0.989	0.994	0.998	1.000

Notes: Pearson correlation coefficients for share of foreign-born individuals each year from 2006 to 2010.

Table A1.14: Examples of SD motions to parliament

Year	Motion name	Summary of Motion
2011	Motion 2011/12:K376	Allow the state to recall wrongly granted citizenships
2014	Motion 2014/15:1112	Court defendants in need of interpreter have to cover the cost of their interpreter
2014	Motion 2014/15:1109	End quotas based on immigration for new recruits to the police force and firefighters
2014	Motion 2014/15:2911	Prohibit dual citizenship and only allow individuals who have been Swedish citizens for at least 10 years to run for parliament, or to take any position in the government
2016	Motion 2016/17:790	Ban the Muslim veil
2016	Motion 2016/17:7935	Forbid the Islamic call to prayer

Notes: Examples of motions proposed by the Sweden Democrats in the national parliament, 2011-2016. Source: Riksdagen.se.

Table A1.15: ΔSD, foreign-born layoff notifications, and share of foreign-born (2SLS)

Dep. variable: ΔSD	High-skilled foreign-born		Low-skilled foreign-born	
	(1)	(2)	(3)	(4)
Notifications	0.040	0.009	-1.383***	-1.483***
	(0.125)	(0.124)	(0.515)	(0.531)
Notifications×Immigrants	0.001		-0.006	
	(0.003)		(0.009)	
Notifications×Low-sk. immigrants		0.005		0.121*
		(0.004)		(0.064)
Notifications×High-sk. immigrants		-0.015*		-0.375**
		(0.009)		(0.165)
First stage F-stat.	2536.52	1690.86	336.65	257.32
Obs.	5663	5663	5663	5663
Controls	Yes	Yes	Yes	Yes

Notes: 2SLS estimates of regression model (1.1), with layoff notifications 2007-2010 based on skill level-origin combinations, and interactions with share of high and low-skilled foreign-born in 2006. Dependent variable is ΔSD, and is the change in votes between the 2006 and 2010 national elections for the Sweden Democrats. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

Table A1.16: ΔSD, layoff notifications, and share of foreign-born (OLS)

Dep. variable: ΔSD	Native-born low-skilled		Native-born high-skilled		Foreign-born low-skilled		Foreign-born high-skilled	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Notifications	0.218***	0.172***	-0.152**	-0.179***	-0.098	-0.094	-0.186	-0.307*
	(0.048)	(0.046)	(0.071)	(0.065)	(0.081)	(0.080)	(0.180)	(0.176)
Notifications×Immigrants	0.006***	-	0.009*	-	-0.003	-	-0.002	-
	(0.002)	-	(0.005)	-	(0.002)	-	(0.006)	-
Notifications×Low-sk. immigrants	-	0.012***	-	-0.010**	-	0.002	-	0.009
	-	(0.003)	-	(0.004)	-	(0.002)	-	(0.010)
Notifications×High-sk. immigrants	-	-0.017**	-	0.014	-	-0.010	-	-0.043
	-	(0.007)	-	(0.019)	-	(0.007)	-	(0.030)
Adj. R-square	0.653	0.657	0.650	0.654	0.650	0.653	0.649	0.653
Obs.	5663	5663	5663	5663	5663	5663	5663	5663
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: OLS estimates of regression model (1.1), with layoff notifications 2007-2010 based on skill level-origin combinations, and interactions with share of high and low-skilled foreign-born in 2006. Dependent variable is ΔSD, and is the change in votes between the 2006 and 2010 national elections for the Sweden Democrats. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

Table A1.17: ΔLP and foreign-born layoff notifications (2SLS)

Dep. variable: ΔLP	Low-skilled foreign-born	High-skilled foreign-born
	(1)	(2)
Notifications	0.034	0.728
	(0.080)	(0.549)
First stage F-stat.	5071.71	664.44
Obs.	5663	5663
Controls	No	Yes

Notes: 2SLS estimates of regression model (1.1) with layoff notifications 2007-2010 based on skill level-origin combinations. Dependent variable is ΔLP, and is the change in votes between the 2006 and 2010 national elections for the Left Party. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

Table A1.18: ΔLP and layoff notifications, skill-origin comb. (OLS)

Dep. variable: ΔLP	Native-born		Foreign-born	
	Low-skilled	High-skilled	Low-skilled	High-skilled
	(1)	(2)	(3)	(4)
Notifications	-0.035	0.093	0.173*	0.309
	(0.025)	(0.086)	(0.097)	(0.203)
Adj. R-square	0.241	0.240	0.240	0.240
Obs.	5663	5663	5663	5663
Controls	Yes	Yes	Yes	Yes

Notes: OLS estimates of regression model (1.1) with layoff notifications 2007-2010 based on skill level-origin combinations. Dependent variable is ΔLP, and is the change in votes between the 2006 and 2010 national elections for the Left Party. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

Table A1.19: ΔLP, layoff notifications, and share of foreign-born in 2007 (2SLS)

Dep. variable: ΔLP	Native-born low-skilled		Native-born high-skilled		Foreign-born low-skilled		Foreign-born high-skilled	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Notifications	-0.307***	-0.305***	-0.496	-0.445	0.167	0.043	-0.232	1.109**
	(0.098)	(0.112)	(0.337)	(0.596)	(0.119)	(0.101)	(0.429)	(0.559)
Notifications×Immigrants	0.002		-0.014		-0.001		-0.039***	
	(0.003)		(0.014)		(0.004)		(0.009)	
Notifications×Low-sk. immigrants		0.007		0.019		0.005		-0.020
		(0.006)		(0.037)		(0.006)		(0.096)
Notifications×High-sk. immigrants		-0.017		0.020		-0.041***		-0.050
		(0.024)		(0.058)		(0.015)		(0.265)
First stage F-stat.	866.83	561.56	416.50	293.16	2696.94	1690.86	355.66	257.32
Obs.	5663	5663	5663	5663	5663	5663	5663	5663
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: 2SLS estimates of regression model (1.1), with layoff notifications 2007-2010 based on skill level-origin combinations, and interactions with share of high and low-skilled foreign-born in 2006. Dependent variable is ΔLP, and is the change in votes between the 2006 and 2010 national elections for the Left Party. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10% levels, based on clustered standard errors (290 municipalities and 74 commute zones).

2. The Origins of Common Identity: Division, Homogenization Policies and Identity Formation in Alsace-Lorraine*

2.1 Introduction

The formation of a common group identity at the regional or country level is a highly important, yet poorly understood aspect of human behavior.

* This paper was coauthored with Kai Gehring. We thank Alberto Alesina, Olivia Bertelli, Carles Boix, Konrad Burchardi, Davide Cantoni, Eric Chaney, Melissa Dell, Axel Dreher, Vasilika Fouka, Boris Gershman, Nathaniel Lane, Horacio Larreguy, Raphael Frank, Andreas Madestam, Shom Mazumder, Pierre-Guillaume Méon, Stelios Michalopolous, Nathan Nunn, Per Petterson-Lidbom, Torsten Persson, James Robinson, David Strömberg, Jakob Svensson, Hans-Joachim Voth, Fabian Wahl, and conference participants at the NBER Summer Institute 2017, the CesIFO workshop in Venice 2017, the History Tea (Harvard University), Solvay Business School Brussels 2017, the BBQ 2017 conference at Lago di Garda, the EEA/ESEM 2016 in Geneva, the Silvaplana Workshop in Political Economy 2016, the SSES in Lugano 2016, AEL in Heidelberg 2016, ASWEDE in Gothenburg 2016, the Politics and History Network at Princeton University 2016, the Royal Economic Society Junior Symposium in Brighton 2016, Stockholm University and the University of Freiburg for feedback and great suggestions. The same holds for seminar comments at Barcelona, ETH Zurich, Hannover University, Harvard University, Heidelberg University, and Mannheim University. Excellent research assistance was provided by Janine Albiez, Philipp Kerler, Max Huppertz, Eva Marti, Norah Schmidlin, Alfred Sutter and Lukas Willi. We thank Valerie Baldinger and Michele McArdle for proofreading.

One reason for the difficulty to understand and disentangle the factors influencing the identity formation process is that laboratory experiments can only study groups of limited size and rely on artificial manipulations to some degree. Observational studies almost always sstruggle with distinguishing the effect of certain policies or shocks from other factors which are specific to a certain region or country. This paper aims to provide causal evidence by using a natural experiment that divided historically homogeneous regions in a quasi-exogenous way to study how the associated differences in exposure to repressive policies influenced identity formation.

The emergence of separatist movements all over the world and the negative consequences associated with a lack of common identity, for instance in Africa, clearly demonstrate how important a better understanding of identity formation is. Insufficient alignment of identities and stronger regional, rather than national identity fuel separatism in regions like Catalonia, Belgium, and Scotland. Arbitrarily determined national borders are associated with ethnic identities being strong and common national identity weak in Africa, often leading to violent struggles for autonomy and inferior development in Africa or the Middle East (e.g., Besley and Reynal-Querol 2014; Michalopoulos and Papaioannou 2014, 2016).[1] At the same time, there are culturally seemingly heterogeneous countries like Switzerland or the United States, which exhibit a strong sense of common identity.

Secessionism and separatist conflict can be driven by economic factors (Gehring and Schneider 2016) and cultural factors (e.g., modeled as preference heterogeneity in Bolton and Roland 1997 and Alesina and Spolaore 1997). This paper relates to the latter explanation, aiming to better understand the sources of these cultural differences, more specifically the perceived (mis-)alignment of preferences exemplified in (the lack of) a common identity. It is widely believed that historical shocks and state policies are crucial in explaining identity formation, but conclusive causal

[1] See, for example, Jega (2000) for the importance of identities in explaining the legitimacy problems many African states face when trying to establish and maintain economic and political institutions. Michalopoulos and Papaioannou (2013) provide evidence that pre-colonial institutions matter as well. Rohner *et al.* (2013) show that conflict affects ethnic identities in Uganda.

evidence is lacking. Tilly (1975) thought of war and conflict as a source of state formation, but focused on the cooperation between leaders and capital to form a state.

While group identity and its strength is thought to be influenced by shared history and shared ethnic or social traits, these are neither necessary nor sufficient to form a stable group identity. Recent evidence shows that heterogeneity within groups is on average much larger than heterogeneity between groups (Desmet *et al.* 2017). Social psychology argues for the importance of group members having the collective perception of belonging to a joint group (Turner 1982), created by emphasizing factors that are common to the group. Accordingly, we build on Shayo (2009) and model common identity as the degree to which an individual perceives her preferen using the entire borderces, values and norms to be aligned with her region, nation, or other groups. We then study how the division of the border regions Alsace and Lorraine between France and Germany following the Franco-Prussian War in 1870-71 affected the formation of identity in the occupied (treated) area compared to the untreated area over the long term. People in the treated area experienced a change in nation status twice and were exposed to the suppression of their group identity through intrusive homogenization policies.

To illustrate the channels and potential mechanisms, we use a simple model to describe how a temporary historical shock can lead to persistent differences in regional identity, but not necessarily in national identity. This is in line with prior evidence showing that policies threatening the cultural identity of a group or perceived as discriminatory can lead to a "backlash" (Fouka 2016). In the case of Alsace-Lorraine (AL), historians describe a strong feeling of regional identity, which is seen as a plausible reaction to the intrusive homogenization policies enforced by the German and later the French government between 1870 and the 1950s (Carrol and Zanoun 2011; Höpel 2012; Rothenberger 1975). Although historical evidences emphasizes the role of homogenization policies, other features of the shock (like the alteration in nation-status and occupation) could also contribute to its effect on identity. Our sole assumption is that the combination of these shocks was perceived as a threat to group identity, and that suppression was higher in the treated compared to the untreated départments. We assess whether this led to an "alienation" of the affected

citizens (Goodfellow 1993, p.454) and a potential "backlash". Such a reaction is hypothesized by the *rejection-identification* hypothesis in social psychology (Branscombe *et al.* 1999), but also relates to the theory of "oppositional identities" (Bisin *et al.* 2011) in economics.

Our identification strategy relies on the exogenous division of AL. Both Alsace and Lorraine were integrated into France for more than a century when the peace treaty ending the Franco-Prussian War (July 19, 1870 to May 10, 1871) established the annexation of most of Alsace and parts of Lorraine by the victorious Germans. The annexed part of the region, to which we henceforth refer as Alsace-Lorraine or the treated area, remained German for nearly 50 years, until it became French again after World War I (WWI). During that time AL was exposed to more intrusive homogenization policies by both the German and later the French central state than the counterfactual non-annexed areas of the same regions. Historical evidence clearly documents harsh measures to homogenize and suppress regional associations, parties or newspapers (Callender 1927). Important pillars of these policies were also, among others, the denial of full democratic representation, the continued use of an intrusive "dictatorship paragraph" by the Germans (Carrol 2010), and the imposition of a *Frenchness Commission* after WWI (Harvey 1999), as well as restrictions on the use of local dialects (Callender 1927) by the French government after WWI. More details are provided in, e.g., Carrol and Zanoun (2011); Höpel (2012); Rothenberger (1975); Vajta (2013).

All available evidence suggests that the exact location of the border was exogenous to our outcome, which enables us to isolate the effects of the historical shock on identity formation from possible pre-existing differences. The main reasons for the unexpected final border demarcation were the opposing interests regarding its exact location between the cautious German chancellor Bismarck on the one hand, and his more aggressive military leaders as well as *Kaiser* Wilhelm I on the other hand. Bismarck wanted to restrain territorial expansion to the alemannic-dialect speaking parts of Alsace and Lorraine (Lipgens 1964), while the military lead by the charismatic General Helmuth von Moltke wanted to extend the German territory as far as possible.[2]

[2] The literature indicates that General von Moltke had from the onset of the war planned to march as far into France as possible and capture decisive strategic positions

Figure 2.1: Geographical location of the treated and untreated area

Notes: The map shows national borders and the division of Alsace and Lorraine after 1871. The treated area is shaded in light grey, and the untreated control area in dark grey.

These conflicting interests on the German side and the intense negotiations with the French leader Adolphe Thiers resulted in the compromise spliting Alsace and in particular Lorraine rather arbitrarily (Förster 1990; Lipgens 1964; Messerschmidt 1975; Ziekursch 1930). As an example of the complex nature of these negotiations, Bismarck was willing to "save Metz for France", and considered keeping the French part of Lorraine altogether a "folly of the first order" (Wawro 2005 p.206). Moltke and the Kaiser Wilhelm I refused to return it however, as the military considered taking Metz one of their great achievements and a return a "national humiliation". Moreover, Thiers succeeded in stretching the border a little further towards Germany by offering the German military to hold a vic-

(Förster 1990). The conflict continued when the conditions for the French defeat were negotiated and documented in the peace treaty on February 26, 1871. In line with certain German intellectuals, the military leadership tried to legitimize territorial gains with social-Darwinistic theories which regarded states as species struggling for space with other nations (Heffernan 2001). Another motivation (for the standpoint) of the military was to capture more ground to weaken the arch-enemy in anticipation of the plausible next conflict. Bismarck on the other hand feared that excessive annexations might increase the risk of a new conflict.

tory parade through the Champs Elysees in Paris.[3] We also use evidence from 1789 to show that there were no apparent pre-treatment differences in regional identity. A crucial advantage of the setting is that today and for now more than half a century both treated and control area again belong to the same country.

Using detailed survey evidence, we find that people in the treated area state an overall higher regional identity. This is also exemplified in clear shifts in policy preferences. The treated subjects are, on average, more in favor of shifting policy competences to the regional authorities, giving more autonomy to the regional government and determining education policies at the regional level. Even though there is no particular reason to expect a bias driven by geography, this difference between groups might be biased by other influencing factors that differ between treated and control area and influence regional identity. For that reason, we proceed and use municipal-level voting outcomes in two crucial referenda which would have increased regional autonomy and made it easier for regions to express their identity. As an additional alternative measure, we use household subscription shares of regional newspapers as a signal of regional attachment and as a potential mechanism of persistence. We also test for differences in nationalism and voter turnout to further verify the survey results.

The RDD results support the survey evidence and show about 4 percentage points higher support in the referenda in the treated area compared to the counter-factual non-treated areas. There is also no difference in nationalism at the former border, and turnout is in all cases comparable on both sides of the former border. The difference in the Yes-vote share

[3] After elections in both French and German-occupied parts of France lead to the anti-war conservative party winning 500 out of 676 seats, their leader Adolphe Thiers negotiated with Bismarck for 5 days. The result was in its details unpredictable and the planned border changed frequently during the negotiation process. For example, Bismarck was willing to "save Metz for France", and considered keeping the French part of Lorraine altogether a "folly of the first order" (Wawro 2005 p.206). Moltke and the Kaiser Wilhelm I refused to return it however, as the military considered taking Metz one of their great achievements and a return a "national humiliation" (Wawro 2005 p.206). The final result was a compromise between both positions and it is documented that, at least partly, "Bismarck, [...], quite uncharacteristically wilted under the pressure" (Wawro 2005 p.305). The northern border thus rather arbitrarily divides the former duchy of Lorraine in two parts.

is both sizable and economically significant as it would have changed the majority outcome in the region. The differences remain significant across different bandwidths for both referenda in 1992 and 2005, and are virtually identical when we concentrate only on the within-Lorraine comparison. This is in line with the survey results and further indicates that the intrusive policies trying to suppress regional identity have in fact strengthened it. We find a similarly clear discontinuity in subscription rates to regional newspapers, which we use as an alternative proxy for regional identity. Regional newspapers also display an identifiable conscious investment in regional culture and a relevant transmission mechanism.

The first pitfall is the possibility that even with an exogenous division, the treated area might differ due to, for instance, geographical proximity to Germany, which affects trade, commuting patterns and media exposure. Nevertheless, our results hold when we reduce the bandwidth to 10 kilometers, i.e. when comparing municipalities which are direct neighbors, and also when we control for distance to Germany and major cities. We also address potential overlaps with the historical language border, which divides the formerly German-dialect from the French speaking parts, by geo-referencing the historical language border at the municipal level (Callender 1927; Harp 1998). Excluding all historically German-dialect speaking areas does not affect the estimated causal effect for either of the two referenda and for regional newspapers. We also find no support for other alternative explanations like a permanent change in the socio-economic structure of the population, specific laws in the treated area or religiosity.

Our research adds and relates to different strands of literature. First, the literature on identity economics (e.g, Akerlof and Kranton 2000; Bordalo *et al.* 2016; Kranton 2016) and on the persistence and transmission of culture, identities and values (e.g, Bisin and Verdier 2000, 2010; Gennaioli and Rainer 2007; Giuliano and Nunn 2016; Guiso *et al.* 2016; Nunn and Wantchekon 2011; Voigtländer and Voth 2012 and Tabellini *et al.* 2008). Most existing models consider the case of two groups, a minority and majority group, and the choice whether to transmit certain values to the next generation via parental investment. The minority group in our setting is the treated area as opposed to first the German and then French majority, who both try to assimilate them by force. Bisin *et al.* (2011) explicitly model a mechanism that can explain how oppositional iden-

tities can persist and Fouka (2016) provides a model how both vertical (parental investment) and horizontal (schooling) socialization influence the strength and transmission of a group identity. Our results can be interpreted as in line with both mechanisms, as we also document how a "discriminated" group intensifies their identity as a response.

In addition, there is a large literature on identity in different disciplines of social science, ranging from political science to sociology and social psychology. It is widely accepted that a common identity needs not to be based on objectively aligned preferences, but that the collective perception of social unity can be sufficient to form a group (Turner 1982). This is also the base of the identity definition in Shayo (2009), which we adapt. It can account for strong group identities despite large preference heterogeneity within groups (Desmet *et al.* 2017). In social psychology, the social identity model (Tajfel *et al.* 1971) argues that group identity "has primarily a perceptual or cognitive basis" and that "awareness of a common category membership" is a necessary and sufficient condition for individuals to act as a group. It seems plausible that the intrusive assimilation policies strengthened the awareness of Alsatians and Lorrainians of their cultural distinctiveness.

Leed (1981) argues that fighting together against a common enemy in a conflict induces people to form a common identity, by increasing the perceived importance of connecting experiences and traits. In the case of Alsace-Lorraine, a plausible explanation is that the exposure to intrusive and discriminating policies creates an incentive for parents to invest in teaching regional culture to their children, which persistently increased the salience of attributes common to the inhabitants of the region. The idea that feeling rejected or suppressed by a majority increases group identification also relates to the rejection-identification hypothesis in social psychology (Branscombe *et al.* 1999). It argues that the perceived common identity, between an individual and a group, can be changed not only by changing actual norms or preferences, but also by adapting the importance that an individual assigns to different attributes.

We also relate to an emerging literature in economics examining the use and effect of different policies on identity formation and nation building. Alesina and Reich (2013) model when and which assimilation policies are used to instill a common identity, creating the distinction between

benevolent and intrusive ("odious") policies. Our results are in line with some existing evidence of how intrusive policies can backfire and increase the affected group's identity. Dell and Querubin (2017) use exogenous variation in US bombing patterns in Vietnam, and document that more bombing increased communist military activities, lowered civic engagement and worsened attitudes towards the central government and the US. Carvalho (2013) suggests that banning veils on Muslim women can actually lead to higher religiosity, hence a stronger religious identity.

There is also a related strand of literature studying schooling as a specific mechanism through which the state can influence identity formation (e.g., Bandiera *et al.* 2017; Lott 1999; Ortega and Tangerås 2008). Carvalho and Koyama (2016) provide a model of how an education system that marginalizes a certain identity can cause cultural resistance on part of the marginalized group. Regarding empirical papers, studies of compulsory language laws in schools are closely related in many respects. Aspachs-Bracons *et al.* (2008) and Clots-Figueras and Masella (2013) find that within Catalonia, the forced imposition of Catalan is related to an increase in Catalan identity measured by various proxies. Fouka (2016), in contrast, provides evidence on how the forced imposition of the English language on German pupils in US states after WWI is related to an increase in German identity and a decrease in common identity, as measured via volunteering rates in WWII.

A plausible explanation for these differences is that learning Catalan in schools in Catalonia was not perceived as oppositional to the identity of migrants to the region, whereas in the US case, and in our setting, policies were clearly perceived as discriminatory. This is in line with explaining the below-average school performance of African Americans in the US with the perception of investments in education as acting "white" and opposed to black group identity (Fryer Jr. and Torelli 2010), while for Asian Americans no such effects are observed. Our research design compared to these papers exploits the exogenous border creation within a region, which allows us to compare people who formerly possessed the same identity as a counter-factual.

The long run persistence of the treatment effect in our setting - over more than five decades - is not unusual and in line with other papers documenting persistence in culture over periods stretching more than a

century. These differences are, for instance, associated with outcomes like stated preferences regarding trust (Becker *et al.* 2015) and different proxies of civic capital (Guiso *et al.* 2016), but also with revealed preferences like cheating in a trust game (Lowes *et al.* 2017), follow traditional practices (Giuliano and Nunn 2016), and differences in homicide rates among Scottish-Irish settlers in the US South (Grosjean 2014). Our results provide correlational evidence on stated preferences identity and policy competence allocation, which is in line with causal evidence revealed in two referenda, through regional newspaper subscriptions and mostly in regionalist party success.

The paper is structured as follows. Section 2.2 explains the historical background of Alsace and Lorraine, as well as presenting our theoretical framework and survey evidence. Section 2.3 introduces the municipal-level data and identification strategy, whilst Section 2.4 presents the main results. Section 2.5 discusses potential threats to identification and alternative explanations for our findings, Section 2.6 discusses mechanisms and persistence and Section 2.7 concludes the paper.

2.2 History, theory, and survey evidence

2.2.1 Homogenization policies and the history of Alsace and Lorraine

As John Stuart Mill stated, a certain degree of homogeneity is necessary as "unassimilated democratic states will tend to dissolve into as many democracies as there are nations within them" (cited by Conversi (2004), p.35). Gellner and Breuilly (2008) argue that in an industrial society, different ethnicities, cultures, and in particular languages act as barriers that reduce efficiency, as they increase the costs of communication and reaching agreement. France is a particularly well-suited place to study homogenization policies and attempts to form a common identity. It is nearly universally recognized as the birthplace of nationalism and the first attempts of nation building (Conversi 2008). Starting with French absolutism, the French revolution (see, e.g., Conversi 2004; Hobsbawm 1990, 1994) and Napoleon's systematic attempt to enforce a national identity, France serves as a prime example of the formation of a group identity.

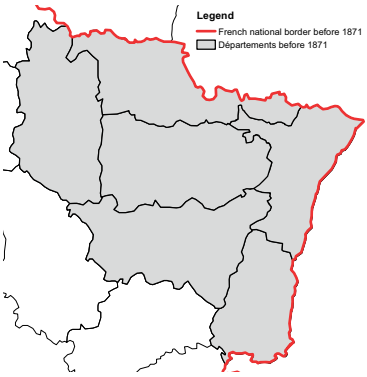
Homogenization policies to build a common identity are still a highly

relevant issue in many modern states today, as Lott (1999) shows in a cross-country and the specific South African context. The central role of language can be traced back to Johan Gottfried Herder (1724-1804), who argued that language is essential to create a common national identity, and is also highlighted by Gellner and Breuilly (2008). Generally, homogenization policies include more benevolent measures like lowering the costs of travel and exchange through institutions and improved infrastructure, but also the imposition of a state religion, the prohibition of regional cultures and in extreme cases genocide and the extermination of certain groups (e.g., Tilly 1975). Conversi (2008, p.1289) describes the nation building process as a "top-down process entailing assimilation and the forced erosion of cultural differences", which can lead to existing ethnic and regional identities being perceived as oppositional to national identity.

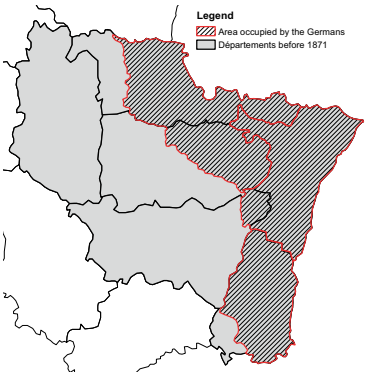
To put our natural experiment into perspective, it is helpful to discuss some important aspects of the history of Alsace and Lorraine. Both regions have been autonomous political entities as far back as the 7th century. After the Treaty of Verdun, Lorraine became a part of Middle Francia and Alsace of East Francia. Under Charles the Bald, all of modern Lorraine became a part of the Duchy of Lotharingia, while Alsace in 929 was incorporated into the Duchy of Swabia in East Francia. From 1542 onwards, the actual administration was in the hands of dukes, counts or fiscal agents called *nuntii camerce*. Over the centuries, both regions thus developed strong common regional identities with specific traditions and norms. After the Thirty Years' War (1618-1648) all of Alsace and the cities of Metz, Verdun and Toul were ceded to France in the Treaty of Westphalia. The rest of Lorraine was given to the French Crown through the Treaty of Vienna (1738) and effectively became French in 1767. At the time of the Franco-Prussian War in 1870/71, Alsace and Lorraine had thus been a part of France for more than a century and were exposed to the same policies by Napoleon and other central French leaders.

The annexed area was incorporated into the German Empire as the *Reichsland Elsass-Lothringen*. In Alsace, the départements already in place during French rule were converted into the German districts of *Oberelsass* and *Unterelsass*, corresponding to the former (and existing) départements Haut-Rhin and Bas-Rhin, respectively. In Lorraine, the

Figure 2.2: Historical maps: before, during and after German occupation



(a) France before German occupation (1870)



(b) France after German occupation (1871)

(c) France after the occupied region was returned (1918)

Notes: Bas-Rhin and Haut-Rhin compose Alsace, and Moselle was the treated part of Lorraine. Meuse and Meurte-et-Moselle are the untreated part of Lorraine and Vosges serves as a counterfactual for Alsace.

district *Lothringen* was created from parts of the former départements *Moselle* and *Meurthe*, and corresponds to today's département *Moselle* (see Figure 2.2). The treated region was never recognized as an integrated part of the German Empire – instead it was an imperial territory under the direct authority of Kaiser Wilhelm I due to the suspicious stance to-

wards the loyalty of the new citizens (Carrol and Zanoun 2011). It had, for instance, no representatives in the *Bundesrat* or the *Reichstag* (Vajta 2013). As part of the "Kulturkampf", government regulations restricted particular types of education (Silverman 1966) and restrictions on the press were not lifted until 1898. The government also kept the French dictatorship paragraph of 1849 in force, that allowed house searches, expelling agitators and prohibiting political organizations (Carrol 2010). In terms of public education policy, Strasbourg University was reopened as "Kaiser-Wilhelm-Universität" with the specific aim to replace regional traditions and assimilate the annexed region (Höpel 2012).

France regained control of the lost provinces after the Treaty of Versailles (1919), which it kept with the exemption of World War II (WWII), when both areas like other parts of France were occupied by Germany. The process of reintegration into France is sometimes described as even more repressive than the German occupation (Anderson 1972; Harvey 1999). It implemented its own intrusive policies in an attempt to realign the preferences and values of the lost citizens. The Germanic dialect, which was the mother tongue of a majority of the population, was no longer allowed to be taught in school, and German was removed as an official language (German as a second language was not taught in schools until the early 1950s). The families of the about 200,000 Germans who had settled in the region after 1871 were deported in order to "remove any trace of German influence" (Carrol and Zanoun 2011, p.469).

Moreover, a special commission, called *Commissions de Triage*, was formed to ascertain the *Frenchness* of the population in the re-annexed area (Carrol and Zanoun 2011). Municipal names, street names and family names were almost all changed to French. Between 1926 and 1930, several newspapers promoting the regional cause were forbidden, and members of regionalist parties were put into jail. Moreover, France consequently replaced bureaucrats and local teachers with external bureaucrats who were not familiar with the local circumstances and traditions. Overall, the treated area experienced repeated occupation and repression, and historians highlight and document the central role of homogenization policies in the process of forming a strong feeling of regional identity. Thus, the treated area was not only once, but twice subject to more intrusive homogenization policies than the non-annexed parts of Alsace and Lor-

raine.

This section introduces a simple model of cultural transmission with multiple identities. Most existing models describe a setting where people have to choose between different, potentially oppositional, identities, but cannot hold more than one identity. Our setting requires a model where everyone possesses multiple identities, for instance, as a citizen of her municipality, region or country. An important feature of these multiple identities is that they are not necessarily substitutes, at least not perfect substitutes. Our model relates to Bisin *et al.* (2011) to the extent that children's identity is influenced by both parents and other outside factors (in their case, peer effects, in our case, public schooling). For tractability reasons, we focus on schooling as one plausible government-led identity transmission mechanism (cf. Lott 1999) and parenting as exemplary for private investments in identity formation. As in Bénabou and Tirole (2011) people care about identity and respond to threats by adjusting their identity investments.

The model will help to explain the way in which an exogenous shock on how the central state, e.g. through public schooling, treats regional identity can lead to persistent differences in identities. Every individual is a member of two groups, her region and a nation. People gain utility from feeling closer to their region, which is their closest reference group, but also from a common national identity with the other regions, which lowers transaction costs. Identity formation is affected by public schooling, which is modeled as an exogenous decision imposed by the nation state and by parental investment. Public schooling can also more generally be thought of as representing the set of state policies that influence identity formation, but cannot be influenced by parents. As in (Doepke and Zilibotti 2017), parents can be thought of as combining Beckerian altruism about the future economic well-being of their children with a paternalistic value assigned to their own (regional) identity. They maximize utility when determining parental investment, weighting the benefits of common identities against the costs of teaching common traditions and norms. We model these costs as a one-time fixed cost. The model could be extended to include variable costs or the time spent on teaching or cover more general functional forms, but this would add another layer of complexity and is not necessary to understand the main mechanisms.

The game then unfolds in three stages.

Stage 1 (until 1870/71): Both areas are exposed to the same public schooling policy. Because they belong to one homogeneous region, there is no reason to expect differences in parental decisions on how much to invest in transmitting traditions and norms to their children.

Stage 2 (1871 – ∼1950): People in the treated area are exposed to intrusive policies and repression, exemplified by a public schooling policy that does not teach regional culture sufficiently. If their utility from regional identity is high enough, they choose to pay the fixed costs of learning how to transmit regional culture to their children themselves.

Stage 3 (after ∼1950): The temporary shock is over and public schooling teaches regional and national culture at similar levels in both areas. However, the optimal level of transmitting regional culture through direct parental investment will be higher in the treated area if parents chose to invest the fixed costs during the treatment period and transmit that skill to their children.

Our approach relates to the literature on the size of nations, which models common identity or the lack of it as preference heterogeneity, as well as to the literature on identity formation (Akerlof and Kranton 2000) and oppositional identities (Bisin *et al.* 2011). We want to emphasize a definition of a common identity that builds on Shayo (2009), and relies on the *perceived* heterogeneity or distance to other members of a group. Hence, the common identity of an individual i and a group $j \in \{R, N\} = \boldsymbol{J}$, with R and N corresponding to *Region* and *Nation*, depends on the perceived distance to the average group member:

$$h^{i,j} = 1 - \left(\sum_{k \in K} \omega_k (p_k^i - p_k^j)^2 \right)^{1/2},$$

where p_k^i represents the preferences (or traditions, values and norms) of individual i regarding an attribute indexed k, p_k^j represents the preferences of the average member of the region or the nation, and K is the set

of all attributes. In our specific case, one item could be thought of as preferences about beverages: in the treated area, there supposedly is a stronger preference for drinking beer, where as in the area that remained French wine is the drink of choice. An important part of this heterogeneity function are the ω_k, which can be understood as attention weights. Higher weights indicate that the tradition, value or norm k has a larger influence on the strength of common identity.

These weights are an important distinction compared to standard models in the size of nations literature. Desmet *et al.* (2017) show using the World Value Surveys that within-group variation in values and preferences, which they term *culture*, is larger than between-group differences. Accordingly, the fact that strong group identities (e.g., regional or ethnic) nevertheless exist is only feasible when recognizing that it is the perception of heterogeneity that matters. The intuition of this approach is easy to understand. People from a region differ in their shared history, in the spoken dialect, local cuisine or music from other regions in the country. The degree to which this affects common national identity, however, depends on how much people emphasize these differences compared to other regions. We make some simplifying assumptions in the following, but this formula links our model and its implications directly to this important literature.

Individuals benefit from a strong common regional identity, as it helps them to feel socially compatible with fellow group members in their region of residence. A higher perceived distance to the average group member of the region lowers individuals' regional identity and can make them feel "isolated". The cost associated with isolation is not only psychological: a lack of social compatibility can also hurt business and/or employment opportunities. The same holds for a common national identity. For instance, if someone does not know how to comply with national traditions, it will be more difficult to find a job in the regional public administration (if that is controlled by the central state) or to trade with other regions.

Assume for simplicity that the attributes in K can be categorized in a number of subsets: K_R, K_N, and K_o. K_R are those attributes that the individual has in common with the other people in his region, for instance speaking the local dialect or in Alsace cooking the local specialty "tarte flambée". The vector $\boldsymbol{\omega_R}$ comprises of the weights for all attributes

belonging to K_R. For these attributes, we assume $p^i - p^R = 0$, meaning that individuals within a region share the attributes.[4] We use the scalar $\omega_R = \sum_{k \in K_R} \omega_k$ as the sum of all weights put on common regional culture.

K_N are the attributes that the individual has in common with the rest of the nation. In France, consider common history or traditions that are widely shared, for instance celebrating the 14th of July, the French language or French cuisine. As with regional attributes, the scalar $\omega_N = \sum_{k \in K_N} \omega_k$ is the sum of all weights put on national culture. The remaining attributes are represented by K_o and are neither clearly aligned with the region nor the nation, for example preferences about social or economic questions that show a lot of variation both within regions and nations. Other identities relating to, for instance, their municipality can also be thought of as based on attributes contained in K_o, but we focus on regional and national identity as the main distinction between treated and control area. All weights sum up so that $\omega_o + \sum_{j \in \boldsymbol{J}} \omega_j = 1$, where ω_o is the sum of the weights put on the remaining attributes.[5]

When deciding how to invest in the education of their children, parents maximize the expected utility their children derive from a joint regional and national identity. We choose a specific form for the sake of easier exposition and drop the i subscript for individuals, as we focus on differences between people in the treated and untreated area, equivalent to using one representative citizen for each area. Hence, we can write the utility of a representative parent based on the weights of their child as

[4] This is a simplifying assumption that makes the following comparisons much clearer. One could instead define the set of common regional or national attributes as those with a distance lower than some positive threshold value.

[5] We assume the p's to be fixed, and only ω to vary. In other words, we assume that perceived distance to other group members rests on underlying differences which an individual herself cannot influence. Of course, there are exceptions in reality but it is also true that many attributes that are crucial for common identities rest on such factors like place of birth, joint mother tongue or skin color. What varies is whether these differences are relevant when individuals assess their degree of common identity with a particular group. Take for instance the controversial case of Crimea in Ukraine: Before the tensions between Russia and the Ukraine there was no strong separatist movement in the region. Russia's claim to the region is based on the existence of a Russian speaking minority and a common history, and an important policy aim was to increase the salience of these attributes among people in the region.

$$U = \omega_R^\alpha + \omega_N^\alpha - C,$$

with $0 < \alpha < \frac{1}{2}$. This means parents assign positive utility to their children sharing their regional identity (ω_R), but they also take into account the potential benefits the children will have from alignment with the rest of the nation (ω_N), as argued above. We assume α to be the same for both identities but this could easily be adapted. Accordingly, both identities are to some degree substitutes, but the optimal choice will usually be to possess some regional and some national identity as $\alpha < \frac{1}{2}$. As we describe below in detail, it is costly for parents to actively be involved in influencing their children's identities. This cost is given by C.

The transmission of weights (ω_R and ω_N) is influenced by parental investment and public schooling. Hence, the ω_j of a child is a function of the traditions the parents chose to transmit and the traditions transmitted via public schooling. Just like parents, public schooling can spend time on teaching both regional and national culture, as well as on other subjects unrelated to identity. The weights of the child when growing up are then formed as $\omega_j = \frac{t_j^P + t_j^S}{2}$ for $j = \{R, N\}$, with t_j^P and t_j^S denoting the time invested by parents and public schooling. Let $t_R^S + t_N^S \leq 1$, but in most situations it is more realistic to think of it as smaller that one as schooling also spends time on teachings subjects like math or sciences. For parents, we assume $t_R^P + t_N^P = 1$ for simplicity if the benefits from teaching regional or national culture exceeds the costs, as discussed below. The total amount of teaching decides the magnitude of the sum of the weights ω_R and ω_N, which translates into the weights children will put on these sets of attributes and the strength of their identities.[6]

When parents choose t_R^P and t_N^P. they weight the benefits of transmitting regional or national culture against a (fixed) costs $C_j^P \tau_j \geq 0$. Take for instance the ability to teach regional music or dances to children. Parents need to learn the text or moves and how to convey this information or skill, which is an important fixed cost. One central, but according to

[6] This means that all attributes belonging to $\boldsymbol{\omega}_j$ (for $j \in \{R, N\}$), receives equal weights of $\omega_j/|K_j|$. The weight put on the remaining attributes is given by $\omega_o = 1 - \omega_R - \omega_N$.

us, plausible assumption is that children who repeatedly experienced a tradition within their own family inherit the ability to teach it to their own children. Accordingly, $\tau_j = 0$ if parents were themselves exposed to $t_j^P > 0$.[7]

The (fixed) cost of teaching for parents is then given by the following cost function:

$$C = C(t_R^P, 1 - t_R^P) = \begin{cases} C_R^P \tau_R & \text{if } t_R^P = 1 \\ C_N^P \tau_N & \text{if } t_N^P = 1 \\ C_R^P \tau_R + C_R^P \tau_R & \text{if } 0 < t_R^P < 1 \\ 0 & \text{if } t_R^P = t_N^P = 0 \end{cases}$$

If time is the limiting factor, teaching one culture also creates opportunity costs reflecting less time spent on transmitting other traditions. With the public schooling parameter exogenously given, plugging in the expressions for the weights into the utility function maximized by the parents gives

$$\begin{aligned} U(t_R^P, 1 - t_R^P) &= \left(\frac{t_R^P + t_R^S}{2} \right)^\alpha + \left(\frac{(1 - t_R^P) + t_N^S}{2} \right)^\alpha - C(t_R^P, 1 - t_R^P) \\ &= B(t_R^P, 1 - t_R^P) - C(t_R^P, 1 - t_R^P), \end{aligned}$$

where $B(t_R^P, 1 - t_R^P)$ is the benefit from teaching. The optimal choice of parents is a function of the degree to which regional and national culture is taught by the public schooling system, the utility they derive from both identities and the costs associated with transmission. This leads to an optimal parental investment of $t_R^{P*} = \left(\frac{1 + t_N^S - t_R^S}{2} \right)$, conditional on being incentive-compatible, i.e. if the utility from teaching the optimal level exceeds the utility from not teaching at all. Let $\tilde{B}(t_R^P, 1 - t_R^P) = B(t_R^P, 1 - t_R^P) - B(0, 0)$ denote this excess utility. The first number in the

[7] The complete notation including the subscript i for individuals is $\tau_j = \mathbf{1}[i \in T], \forall i \in I$ and $T \subset I$. I is the set of all individuals, and T is the subset of individuals that did not inherit the ability to teach j culture. We assume that engaging in a joint tradition as a family has a different effect than being told about a tradition in school. Observing parents and copying behavior arguably has a large influence on education style, notwithstanding exceptions where children deliberately deviate from their parents behavior.

parentheses here and in the following refers to regional traditions, and the second number to national traditions. Consider four different cases:

Case 1 If $\tilde{B}(t_R^{P*}, 1-t_R^{P*}) \geq C(t_R^{P*}, 1-t_R^{P*})$ for $0 < t_R^{P*} < 1$, then $t_R^P = t_R^{P*} = \left(\frac{1+t_N^S-t_R^S}{2}\right)$ and $t_N^P = t_N^{P*} = 1 - \left(\frac{1+t_N^S-t_R^S}{2}\right)$. This means the parents will invest time in learning how to teach and transmit both **regional** and **national** traditions.

Case 2 If $\tilde{B}(t_R^{P*}, 1-t_R^{P*}) < C(t_R^{P*}, 1-t_R^{P*})$ and $U(1,0) > U(0,1)$, and $\tilde{B}(1,0) \geq C(1,0)$, then $t_R^P = 1$ and $t_N^P = 0$. This means the parents will only invest time in learning how to teach and then transmit **regional** traditions.

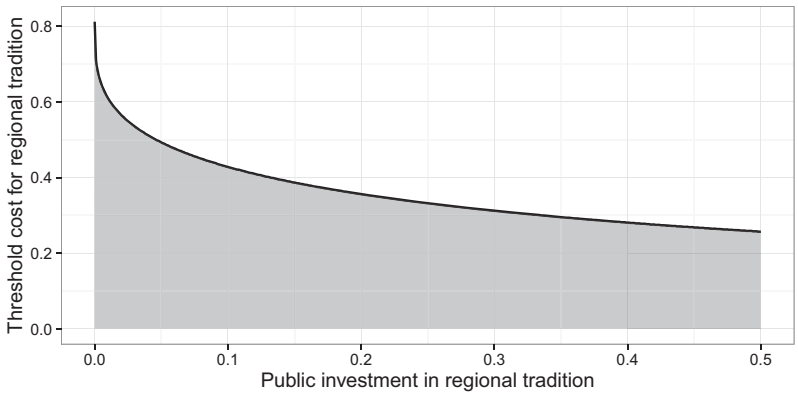
Case 3 If $\tilde{B}(t_R^{P*}, 1-t_R^{P*}) < C(t_R^{P*}, 1-t_R^{P*})$ and $U(1,0) < U(0,1)$, and $\tilde{B}(0,1) \geq C(0,1)$, then $t_R^P = 0$ and $t_N^P = 1$. This means the parents will only invest time in learning how to teach and then transmit **national** traditions.

Case 4 If $U(0,0) = \max U(t_R^P, 1-t_R^P)$, then $t_R^P = t_N^P = 0$. This means the parents will not invest time in learning how to teach and then transmit any traditions.

Figure 2.3 shows the distribution of costs for which it is optimal for parents to invest time in teaching regional traditions and culture. A decrease in t_R^S makes teaching regional traditions the best choice for parents along a larger range of parameter values. We can now use this framework to analyze the natural experiment, which can best be described in the three stages introduced above.

Stage 1 In the first stage, public schooling policy is identical in both areas. Parents decide to teach either regional or national traditions, both traditions, or none of them. The optimal choice of teaching depends on *i)* the public investment in teaching regional and national traditions, and *ii)* the cost of learning to teach regional and national traditions. For public investments $t_{R,stage1}^S$, $t_{N,stage1}^S$, there exist costs $C_R^P > \bar{C}_{R,stage1}^P$ and $C_N^P > \bar{C}_{N,stage1}^P$ such that parents decide not to invest in teaching any traditions, where $\bar{C}_R^P$ and $\bar{C}_N^P$ are the maximum allowed (threshold) costs

Figure 2.3: Threshold costs for teaching regional tradition



Notes: The solid black line indicates the threshold costs $\bar{C}_R^P$ for investments in learning how to teach regional culture and traditions. The gray area represents those parameter constellations where the costs are lower than the threshold costs, so that parents will invest in learning regional traditions. The less regional traditions are taught in public schools, the higher the costs parents are willing to pay to maintain regional culture and traditions.

for parents to invest time in regional and national traditions, respectively. Parents invest time if the costs of doing so are lower than the threshold cost $\bar{C}^P_{R,stage1}$ and $\bar{C}^P_{N,stage1}$ for the respective traditions. We assume that in the first stage, the costs are above the threshold in the treated and control area so that parents decide not to learn and teach privately.

Stage 2 After occupation and reflecting the intrusive policies, public schooling in the treated area does not teach regional traditions any more, so that $t^S_{R,stage2} = 0$ in the treated region. This increases the threshold cost and it is now optimal for parents to invest in teaching regional traditions for a larger range of costs C^P_R. As national traditions are still taught to a high degree by the state, parents decide to spend all their time teaching regional traditions and $t^P_{R,stage2} = 1$. In the control area there was no comparable shock, and public and private investments remain unchanged.

Stage 3 In the third stage, the temporary shock is over and $t^S_{R,stage3}$ reverts to the same level in both the treated and the untreated area. If public investment in regional traditions becomes high enough, for instance comparable to stage 1, parents in the untreated area are not willing to bear

the cost of learning the regional traditions as $C_R^P > \bar{C}_{R,stage3}^P$. However, if regional traditions were taught and transmitted in the treated area during stage 2, parents in the area do not have to bear the fixed costs ($\tau_j = 0$) and they choose $t_R^P = t_R^{P*} > 0$. Accordingly, a higher level of teaching regional culture can persist after the shock is over. This difference persists for the first generation; its long term persistence depends on whether $t_j^P > 0$, i.e. parents put enough value and time on regional culture so that their children acquire and imitate this behavior.

In the first years after French re-annexation, homogenization policies remained focused on eliminating and suppressing regional culture. Nevertheless, after some years, public schooling policy was adapted and permitted the teaching of regional culture and dialect again. We assume that at some point, ω_R^S and ω_N^S became comparable again between the treated and untreated area. As soon as the former treated area Alsace-Lorraine was fully accepted as a part of France, it received the same curriculum and public schooling as the rest of France.[8] That means, children in both areas are taught the same level of French national identity via the public schooling system. It would be misleading to pick a precise date, but it is plausible that the differences disappeared in the period after WWII in the early 1950s.

It appears that France managed to minimize the extent to which French and regional identity are still perceived as oppositional over the years since adapting or stopping intrusive policies. Temporary differences in national identity should thus disappear over time, at least for the generations born after the treatment period (stage 2) ended. The equilibrium level of national and regional identity in both areas depends on the parameters values. There are parameter values and functional forms U and C^P for which it is optimal to give up regional culture altogether and it is possible that some parameters change over time. We focus on the difference between treated and untreated area caused by the shock, hence we assume that changes after the shock affected both areas similarly. This is plausible as school curricula are set by the French central state, and changes are implemented in all of France. Moreover, our identification

[8] The one remaining difference are classes in religion. Students in the treated area still receive a few hours of religious classes in school today. We will demonstrate later that this is orthogonal to our outcome variables.

strategy assumes that prior to the shock (stage 1) people in both the treated (T) and untreated (U) area had comparable identities.

To get a sense of identity before 1871, we make use of the fact that Louis XVI, shortly before the French revolution, felt the need to assess the loyalty of his citizens. These data, known as the "Cahiers de doléances", specifically ask about the relative strength of regional compared to national identity. They were aggregated and transformed to a scale between 1 and 3 originally by Hyslop (1968) and have recently been used to assess the effect of state capacity on identity formation (Johnson 2015). Following Johnson, we exclude the clergy, which was more driven by religious policy, and include the second (nobility) and third (other citizens) estate as well as the category "unified orders". The average response for all four departments within Lorraine is exactly or very close to 2, as Table 2.1 shows, and there is no statistically significant difference between Moselle and the rest of Lorraine.

Table 2.1: National identity in 1789 (Cahiers de doléances)

	Mean	Std. dev.	Obs.
Lorraine	2.021	0.541	24
Moselle	2.000	0.816	7
Meurthe-et-Moselle	2.000	0.598	8
Meuse	2.000	0.000	4
Vosges	2.100	0.224	5
	Difference	Std. dev.[a]	Obs.
Moselle vs. rest	-0.029	0.349	24

Notes: National identity in 1789 based on Cahiers de doléances for each département in Lorraine (and Vosges). The Measures are based on an index created by Hyslop (1934), where the value 3 corresponds to "National patriotism strongest (to King, King and Nation, Nation etc.)", 2 corresponds to "Mixed loyalties: national patriotism combined with regionalism or class spirit, or both.", and 1 corresponds to "Other loyalties, regional, or class, or both, outweigh national patriotism". Hyslop (1934) Created these values at the level of selected importance municipalities to based on more disaggregate reports in verbal form.

[a] Heteroscedasticity-consistent standard errors.

We hypothesized that the historical shock(s) and the associated intrusive and discriminatory policies under German and French rule led to an increase in regional identity. The French adapted their policies after WW2 and mostly stopped the intrusive approach to suppress regional culture in the treated area in the 1950s. To assess the long run effects of

the shock(s), we can rely on large scale survey evidence from the "Observatoire Interégional du Politique" surveys carried out in 1999, 2001 and 2003. We are interested in the perceived common identity of the average individual in the treated area compared to the untreated area. We compute these comparisons for the whole region of Alsace and Lorraine as well as only within Lorraine. In almost all items, the sign and significance of the differences is identical for both comparisons (see Appendix Table A2.7). We condition on age, gender, employment status and education in all comparisons.

Looking at Panel A of Table 2.2, people in the treated area today clearly express a significantly stronger common regional identity. In contrast, there is no difference in common French identity. We also compute the ratio of regional relative to national identity, and standardize this variable to ease interpretation. People in the treated areas of Alsace and Lorraine exhibit a ratio that is 24 percent of a standard deviation higher than in the control areas. In addition, we can use these very detailed surveys to analyze the consequences of these differences in identity in depth. Models on secessionism suggest that besides economic concerns (Boix *et al.* 2011; Gehring and Schneider 2016), (perceived) preference heterogeneity is the major factor influencing preferences for union or secession. The survey provides clear evidence that the identity differences in Alsace-Lorraine also affect policy preferences in line with size-of-nation models. People in the treated area feel better informed about regional policies and have a relatively more positive perception how well regional compared to national democracy works. Asked whether they would be concerned that more regional autonomy would increase inequality between regions, a significantly lower share of people is concerned.

We also create three comprehensive proxy variables regarding the transfer of policy competences to the regional level, more regional autonomy and the allocation of responsibility for education policy. Each proxy is the average of several survey items in the OIP survey, to make sure differences are not caused by different understandings of one particular question. Appendix Figures A2.3 through A2.6 list the individual questions in each sub-category. The average individual in the treated area favors transferring policy competences from the national to the regional level as well as more regional autonomy significantly more often. In

Table 2.2: Survey results

Survey question	Mean, control	Δ	P-value	No. obs.
Panel **A**: Identity				
Feel close to region (Regional identity)	3.362	0.209	<0.001	2617
Feel close to nation (National identity)	3.635	-0.003	0.906	2617
Feel close to the EU (EU identity)	2.722	0.286	<0.001	2586
Regional identity/National identity (standardized)	-0.138	0.226	<0.001	2614
EU identity/National identity (standardized)	-0.225	0.259	<0.001	2585
Panel **B**: Democracy and level of political decision-making				
Survey question	Mean, control	Δ	P-value	No. obs.
Democracy works well in France	2.536	-0.035	0.324	2606
Democracy works well within region	2.630	0.188	<0.001	2575
Well informed about regional policies	2.704	0.172	<0.001	2604
In favor: transfer policy competence to region (avg. 10)	3.031	0.078	0.002	1218
In favor: allow more autonomy at reg. level (avg. 5)	2.134	0.132	<0.001	2619
Educ. policy should be set at reg. level (avg. 5)	2.855	0.124	0.002	1204
Concerned reg. admin. would increase interreg. inequality	3.208	-0.314	<0.001	1204

Notes: Sources are the Observatoire Interrégional du Politique (OIP) 1999, 2001, and 2003, using respondents in all of Alsace and Lorraine. Identity is measures on a 4-point Likert-scale. The Appendix shows similar results for within-Lorraine only. The parameter Δ comes from the equation: $y_i = \pi + \Delta Treatment_i + \Gamma_i'\lambda + \eta_i$, where $Treatment_i = \mathbf{1}$[individual in treated region] and Γ_i comprises of controls for (reported) age, employment status and sex. A positive Δ indicates that people in the treated region agree more with the statement. Avg. "x" indicates that the factor is composed of "x" underlying survey items.

addition, education policy is particularly interesting, as common state education is a major mechanism to impose an identity and influence which and how traditions and culture are taught. Again, treated subject express clearly more favorable views towards setting educational policy and standards at the regional level.

Another interesting result that we will also exploit to verify the causal interpretation of these findings is the difference in European identity. In line with the results for regional identity, subjects in the treated area also express a significantly higher identification with other Europeans. Again, expressed in the ratio of European relative to French national identity, it is 21 percent of a standard deviation higher, almost identical to the difference for regional identity.[9] One plausible explanation is that the exposure to the repressive policies and wars conducted by nation states increases the salience of the peace-keeping dimension of the EU. In this regard, it is important to remember that the European Union in its beginning was, as much as it was an economic project, created to stop the century-old wars between different nations in Europe. Clearly, the historical shock did not directly evoke a preference for the EU itself, which did not exist at that time. Besides a higher salience of maintaining peace, there are other potential explanations. The most important one seems to be that Europe and the EU are perceived to protect and foster the region, its identity and specificities. In this regard, exhibiting a stronger stated preference for Europe is to some degree instrumental and a result of the strengthened regional identity.

It is evident that people in the treated area perceive regional identity as more aligned. However, we cannot clearly distinguish whether this is mostly for instrumental reasons, i.e. whether the EU is perceived as helping the regional cause, or whether the shock had two distinct effects fostering both identities. One argument speaks in favor of a more instrumental interpretation of European identity. Moving policy competences from the nation to the region and allowing more regional autonomy is to some degree at odds with European integration which in the opinion of most requires more centralization. For the following sections, it is sufficient to know that differences in identity between treatment and control

[9] We estimate a highly significant correlation between stating strong regional identity and strong European identity, as shows in Appendix Table A2.8.

area in both identities are largely aligned.

The next section proceeds with municipal-level data on different proxies for regional identity to overcome the two shortcomings in our results so far. First, we so far rely on stated instead of revealed preferences. Second, even though the demarcation line is exogenous to our outcome, omitted factors like the distance to Germany or other factors related to location could bias our results.

2.3 Data and identification strategy

2.3.1 Data

France is divided into 22 regions, which consist of 96 départments. The départments are further divided into 323 arrondisements and 1995 cantons. The latter two sub-units are however of lesser importance, and do not possess the status of a legal entity. We focus on the smallest unit, which is the municipality level. Out of the 3320 municipalities in Alsace and Lorraine, we have data on 3143 obtained from *www.data.gouv.fr*. From the *National Institute of Statistics and Economic Studies* (INSEE), we use data on municipality characteristics like the age composition and education. Electoral data, such as voter turnout and referenda results, are obtained from the *Center for Socio-Political Data* (CDSP). Table 2.3 shows summary statistics for our variables of interest in the full sample of municipalities in Alsace and Lorraine. Appendix Tables A2.2 and A2.9 show definitions and sources, as well as descriptive statistics for the variables.

2.3.2 Identification strategy

We consider a municipality as treated if it is located in the region that was exposed to the repeated change in nation status and the associated more intrusive homogenization policies. This treatment variable is a deterministic function of the geographical location of a municipality, with a discontinuity in treatment at the threshold defined by the former border dividing Alsace and Lorraine. The causal interpretation draws on studying municipalities close to the former border using a RDD approach.

Table 2.3: Descriptive statistics for outcome variables and treatment

Variable	Mean	Std. dev.	Min.	Max.
Treatment	0.52	0.50	0.00	1.00
Yes 92	53.91	11.39	0.00	86.25
Yes 05	45.51	9.96	6.67	81.01
Le Pen 07	15.98	5.36	0.00	55.56
Turnout 92	74.40	6.04	52.44	100.00
Turnout 05	73.28	6.40	50.79	100.00
Turnout 07	86.29	4.16	63.38	100.00

Notes: Descriptive statistics for the binary treatment variable, *Share Yes 1992* and *Share Yes 2005*, in the respective referenda, and *Share Le Pen 2007* is the share of voters voting in favour of Jean-Marie Le Pen in the 2007 presidential election (first round), whereas *Turnout 1992, 2005*, and *2007*, refers to turnout in the respective year.

Formally, we estimate the coefficients from the following regression model:

$$y_c = \alpha + \beta Treatment_c + p(\text{distance to border}_c) + \boldsymbol{z}_c'\boldsymbol{\gamma} + \epsilon_c, \qquad (2.1)$$

where y_i is the outcome variable of interest for municipality c, $Treatment_c$ is a dummy taking the value 1 for municipalities in the formerly occupied region, and $\boldsymbol{z}_c$ is a vector comprising the distances from municipality c to the city of Metz, city of Strasbourg, city of Nancy, and to the current French-German border. The linear term measures the direct distance from the municipality centroid to the former national border. However, given the two-dimensional nature of the spatial data, two municipalities could be on the same side and have the same distance to the border, while being on different latitudinal lines. We include the three distances to the most important cities in the region, and the distance to the French-German border to take these spatial differences into account.[10]

[10] Large agglomeration might also be more open towards European integration for various reasons. Historically, these cities were imperial or free cities. One argument is that the associated enhanced trade opportunities leads to citizens becoming generally more open towards outgroup members. Another argument is that these cities exhibited more democratic features like (in some cases) electing the guild leaderships or governing council. This could affect the outcome, albeit it is not clear in which direction. We find no discontinuities at the threshold for any of these distance measures, suggesting that they are orthogonal to our treatment variable. Excluding them from the regression model does not change our estimates notably, but decreases estimation efficiency (see Appendix Figure A2.8). Dell (2010) also includes a function of the geo-

$p(\cdot)$ is a function of the distance to the border for each municipality. As suggested by Gelman and Imbens (2017), we include a linear term for the distance, allowing its coefficient to vary on either side of the border. In practice, this means that we estimate a local linear regression model according to (2.1) close to the former border, using a uniform kernel density function, for different bandwidths. Appendix Figures A2.7 through A2.15 present estimates across different bandwidths, and also when using higher order polynomials and other alternative specifications.[11] All results are in line with those presented here.

The treatment effect in (2.1), β is given by

$$\beta = \lim_{x_c \to 0^+} \mathbf{E}\left[y_c \,|x_c\right] - \lim_{x_c \to 0^-} \mathbf{E}\left[y_c \,|x_c\right], \tag{2.2}$$

where x_c is the distance to the border normalized at 0, meaning that the distance for municipalities in the treated region is equal to the actual distance, while it is equal to the actual distance multiplied by minus one for municipalities in the untreated region. Under the assumption of the conditional expectation function, $\mathbf{E}\left[y_c \,|x_c\right]$, being continuous, the treatment effect is equal to the difference in outcome at the border between municipalities in the treated and untreated region. Assuming that all other factors relevant in explaining the outcome are continuous at the historical French-German border, the untreated municipalities reasonably close to the border can be treated as counter-factuals for the treated municipalities. We address this potential concern by formally testing for discontinuities in covariates at the border.

In addition, causal identification of the treatment effect assumes that the treatment is orthogonal to potential outcomes. Although histori-

graphical location of the unit of observation, combined with latitude and longitude as main effects and their interaction. Including these in our specification does not alter our estimates substantially (Appendix Figures A2.10 and A2.11.)

[11] Dell (2010) discusses why a semi-parametric approach could be superior when the geospatial data is not precise in terms of geographical location. In our case, we do not have data on individuals and, for instance, their addresses. Instead, our outcome variables measure the municipality level aggregate of individual actions, and we approximate their location in relation to the former border by the distance from the municipality centroid.

cal evidence justifies this assumption, it is desirable to empirically test whether the border coincides with pre-treatment characteristics, which could signal potential problems. Similar to Dell (2010) and Dell *et al.* (forthcoming), we test for discontinuities in geographic factors, which are plausibly not affected by the treatment and thus capture potential pre-treatment imbalances. Specifically, we use the mean of terrain ruggedness, elevation, and soil suitability for production of potatoes and wheat. The data on terrain ruggedness is the same that was used in Nunn and Puga (2012), although we use it on a more disaggregated level.[12] We calculate the average ruggedness index for every municipality polygon. While ruggedness refers to the variance in elevation, we also use raw elevation data from the NASA Shuttle Radat Topography Mission (SRTM) data set.[13]

Data on potato and soil suitability, which we choose as the two crops which are likely to be the most important ones, comes from the Global Agro-Ecological Zones database (GAEZ), provided by the International Institute for Applied Systems Analysis (IIASA) in collaboration with the Food and Agriculture Organization of the United Nations (FAO) (IIASA/FAO, 2012). To best approximate pre-"Green Revolution" growing conditions in 19th and early 20th-century Europe we choose a medium input intensity and irrigation.[14] There is no discontinuity for any of these variables at the border/threshold, as shown in Table 2.4.

2.3.3 Outcome variables

Our main measures of regional identity are municipal-level data on agreement in two referenda in 1992 and 2005, with subscription shares of regional newspapers as an alternative outcome. All measures have some advantages and some disadvantages, but we will show that we find similar results using all measures, which are all in line with the survey results. First, we describe the referenda in 1992 and 2005 and their relation to regional identity in more detail.

[12] The data set and a detailed documentation are available at http://diegopuga.org/data/rugged/.

[13] These data may be accessed at the web page of ESRI.

[14] These data can be accessed at http://www.fao.org/nr/gaez/en/.

Table 2.4: Pretreatment variables balance test

Variable	Ruggedness		Elevation	
	(1)	(2)[a]	(3)	(4)[a]
Treatment	-0.063	0.001	-31.008	-12.694
	(0.174)	(0.149)	(24.888)	(20.052)
Obs.	604	899	604	1071
Dist.	10 km	15.21 km	10 km	18.37 km
Variable	Potato		Wheat	
	(1)	(2)[a]	(3)	(4)[a]
Treatment	39.470	0.743	57.079	7.260
	(72.005)	(52.593)	(110.804)	(77.642)
Obs.	604	1394	604	1450
Dist.	10 km	24.64 km	10 km	25.68 km

Notes: Tests for discontinuities in pre-treatment variables for the whole border. *Ruggedness* is the mean index of the variation in elevation, while *Elevation* is the mean elevation. *Potato* and *Wheat* refer to the soil suitability for potato and wheat production, respectively. Details and sources are provided in the Appendix. Controls included are: distance to Germany (border), distance to Metz, distance to Strasbourg, and distance to Nancy. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

Treaty of Maastricht, 1992

The Maastricht Treaty included several reform proposals about the institutional and political structure of the European Union (EU). Several member states, including France, held a referendum to ratify the treaty. Among others, it created the current three pillars of the EU, introduced a proposed debt limit on member states and a common monetary system. The crucial aspect for us, however, is how it changed the role of regions in the EU by fostering regional decision-making and the expression of regional identity. The treaty was a huge step forward for regions in the institutional landscape in Europe. It formally introduced the principle of subsidiarity, which codified the aim of decision-making at the lowest feasible level of authority in the EU (Treaty on the European Union, 1992), which often meant at the regional instead of the national level. Research in political science demonstrates how it allows regions to "seek a greater voice in EU affairs" and "reignite calls for decentralization and regional autonomy" (Chacha 2013, p.209; Scott *et al.* 1994). Subsidiarity is a "stimuli for regionalism, emboldening regional leaders to assert their territorial autonomy, to travel with the attitude and air of a head of state,

to open quasi-embassies ('information offices') in multiple countries, and to sign high profile agreements with other regions" (Downs 2002, p.73).

The treaty clearly resulted in the shifting of some national powers to subnational authorities (Jeffery 2000), visible in legal rules and political institutions (Mandrino 2008; Tatham 2008). In addition to the subsidiarity principle, the Treaty established a *Committee of the Regions* as part of the European institutional structure. This undermines the dominance of the national level (Jeffery 2015) and "created a political space for regions" (Fitjar 2010, p.528). Moreover, it established "extra-national channels for subnational political activity" (Hooghe and Marks 1996, p.73) like regional embassies directly in Brussels. Overall, the literature and press agrees that "the Maastricht Treaty strengthened the role of subnational authorities by establishing channels for them to influence EU decisions" (Chacha 2013, p.208).

This dimension of the decision was regarded as "one of the most important consequences" (Hooghe and Marks 1996, p.73), and the EU as "moving towards a Europe of the regions" (Chacha 2013, p.208). This attitude was also visible in the reaction of regionalist parties throughout Europe, who "perceive the EU as an ally against the central state" (Jolly, 2007, p.4). EU integration was seen as reducing the costs of regional autonomy (Hooghe and Marks 2008), and allow regions to bypass national governments and deal with Brussels directly (Tatham 2010). For that reason, regionalist parties "favor European integration because it creates a more favorable political opportunity structure for their subnational autonomy movements." (Jolly 2007, p.124) and in "the early 1990s there was a convergence of regional party support for a Europe of the Regions" (Hepburn 2008, p.1). The moderate regionalist Alsatian party *Le parti Alsacien*, for instance, campaigns on its website for an "independent Alsace in a federal European Union".

Constitution for Europe, 2005

The second referendum was about the so-called *Constitution for Europe*. Again, this was perceived as helping regions in their scope of decision-making and possibility to express regional identity. This is perhaps best visible by the official assessments and reactions of the regional and local

authorities associations, which were made publicly available and communicated to voters (CEMR 2004, source of all following citations). They regard the text as a "an achievement for regional and local authorities", which would "increase the involvement of regional and local authorities in the work of the European Union" and "strengthen the role of local and regional governments in the EU's policy and legislative activities". An important point was the reinforcement of the subsidiarity principle and "greater recognition to the role of regional authorities".

This time, the importance of identity was explicitly mentioned, which the regional representative recognized as "respect for regional and local self-government as part of national identities". As a sign of potential ways of regions replacing the nation state in certain dimensions, cross-border regions were introduced as new ways of representing common regional interests formerly divided by nation states. Moreover, the Committee of the Regions was given an institutional right to "bring matters before the European Court of Justice on the basis of a breach of the principle of subsidiarity", and be involved in certain legislative acts of the European Parliament directly to consultation (Principles of Subsidiarity and Proportionality, Article 8.2). Generally, the widespread opinion was still that the European Union and this integration step would establish "the regions and municipalities acting as intermediaries between the individual and the European institutions". The UK Foreign Office, for instance, emphasizes the "stronger role" of regional governments, and the French newspaper *Le Monde* the importance of the subsidiarity principle.[15]

Using these two referenda has several important advantages. The data are available at the municipal level, it provides a continuous outcome measure at the municipal level, and the voting decision was a way to reveal preferences that was open to every citizen. The decision was important and thus has a political cost to it, but there was no binding monetary constraint preventing certain groups or parts of the population to abstain from voting. We use data on voter turnout to examine whether potential discontinuities are representative of the underlying population. One obvious caveat with the referenda is that both decisions obviously cover other important aspects of European integration as well. This could be

[15] See *White paper on the Treaty establishing a Constitution for Europe*, (2004), and *A Bruxelles, les institutions régionales sont favorables à la Constitution* (2005).

problematic for two potential issues.

First, if regional and European identity are systematically misaligned, the final voting decision would necessarily convey useful information about regional identity. Fortunately, this does not seem to be an issue. Several papers in the political science literature have shown that regional and European identity overlaps and strongly positively correlates using data from the European social survey and Eurobarometer (Chacha 2013; Jolly 2007). This is also clearly visible in the support of regionalist parties for the two treaties and the EU in general (Jolly 2007). Fitjar (2010) uses Eurobarometer data to show that "people who support the EU are likely to identify more strongly with their region".

Second, if people in the treated area could profit differentially from these other aspects of European integration. This second issue overlaps with a potential concern regarding the survey results: the treated area is, for instance, geographically closer to Germany, Switzerland and Luxembourg. We address this through the geographical RDD, which in the most rigid specification will compare municipalities that are very close to each other. For that reason, we will argue and show that potential benefits from regional autonomy, European integration and exchange with other countries should not differ between the treated and control municipalities. Finally, we will show results using subscription shares of regional newspapers as an alternative measure of regional identity (available for Lorraine).

National identity/nationalism

In addition, we use the strength of the extreme right-wing populist *Front National* (National Front) candidate Jean-Marie Le Pen at an election close to our two main outcome variables as a proxy variable to verify whether there really are no differences in national identity. Clearly, a stronger national identity does not necessarily lead to higher support for a right-wing party. Nevertheless, for it to be an informative proxy requires only that voters with a stronger national identity are, all else equal, more likely to vote for the nationalistic *Front National*. We use 2007 because for that year we have the first-round data available for all municipalities, for previous elections we could only access it for municipalities larger than

3500 inhabitants. In our robustness section, we use data from tweets supporting the French national team during the World Cup 2014 as an alternative outcome.

Appendix Table A2.10 shows ordinary least squares estimates of β from (2.1), without and with controls, to get a first feel for the data, as well as enabling us to later compare the coefficients with the causal RD specifications, and to assess the external validity of RD estimates. The OLS results suggest a correlation between treated status and a stronger regional identity, a somewhat weaker national identity but no relationship with turnout. Figures A2.1, A2.2 and A2.3 in the Appendix illustrate the election and referenda results as well as turnout in 1992, 2005, and 2007. There is no clear pattern for neither turnout in the 2007 presidential election (Figure A2.1b), nor support for Front National in 2007 (Figure A2.1a). At the same time, Figure A2.2a and A2.3a clearly show that *Share Yes 1992* and *Share Yes 2005* are higher in the treated are, which is to the right side of the former French-German border. For turnout in both referenda, there is no obvious difference (Figures A2.2b and A2.3b).

The next section presents these estimates from the RD specifications to allow a causal interpretation, together with tests for differences in potential confounders. We start out by considering the whole former border dividing Alsace and Lorraine, and then focus on the border segment within Lorraine.

2.4 Main results

2.4.1 Referenda and nationalism

Our baseline RD estimation shows estimated treatment effects on all six outcome variables from Figures A2.1 through A2.3 for bandwidths at 10, 15 and 20 kilometers from the former French-German border. In addition, we include one specification using one half of the optimal IK bandwidth, as explained by Imbens and Kalyanaraman (2011). For all outcomes, this is larger than 20 kilometers, suggesting that smaller bandwidths are rather conservative. The closest choice of 10 kilometers basically compares only municipalities directly at the border with their direct neighbors on the other side of the former border. This should eliminate all concerns re-

garding comparability, as distance to a specific country or city is virtually identical.

Table 2.5 shows that the estimated treatment effect is positive and statistically significant for *Share Yes 1992* and *Share Yes 2005* across all bandwidths (Panel C and E). It ranges from 4.4 percentage points to 5.4 percentage points in 1992, and 3 to 3.9 percentage points in 2005. Figure 2.4 (a, b) shows the discontinuities graphically when fitting a second order polynomial for the whole border: The jump at the border is clearly visible. The coefficient in 1992 is very similar to the OLS estimate; the one in 2005 only somewhat smaller.[16] Accordingly, the simple OLS estimation seems to have overestimated the actual effect, but not by much. This also supports a causal interpretation of the prior survey results that due to a lack of precise geographical information essentially relied on a comparison of group means. Repression and more intrusive homogenization policies trying to suppress regional culture seems to have backfired and strengthened the common regional identity.

With regards to national identity, we find no evidence for differences. The estimated discontinuity in the vote share of nationalist leader Le Pen in the 2007 presidential election at the former border is not significantly different from zero for any of the reported bandwidths. This non-finding again supports the results from the surveys. There are no significant differences in any of the turnout variables (Panel B, D and F). This demonstrates that the significant differences for *Share Yes 1992* and *2005* are not caused by voters systematically abstaining from voting. In the following, we concentrate on the two referenda results.

As mentioned above, the causal interpretation of the coefficients rests on the assumption that the untreated municipalities can be viewed as counter-factuals for the treated communes. One potential concern is that treated Alsace might, for historical and linguistic reasons, be different from the untreated neighboring département of Vosges and the conditional expectation of our outcomes as a function of distance not continuous at the border. Based on the literature on the determinants of voter prefer-

[16] One explanation for the smaller coefficient in 2005 could be that the promises for more regional autonomy were perceived as less credible by some voters in the 2000s compared to the 1990s (Hepburn 2008). However, the coefficient has to be set in relation to average agreement as well, which was lower in 2005.

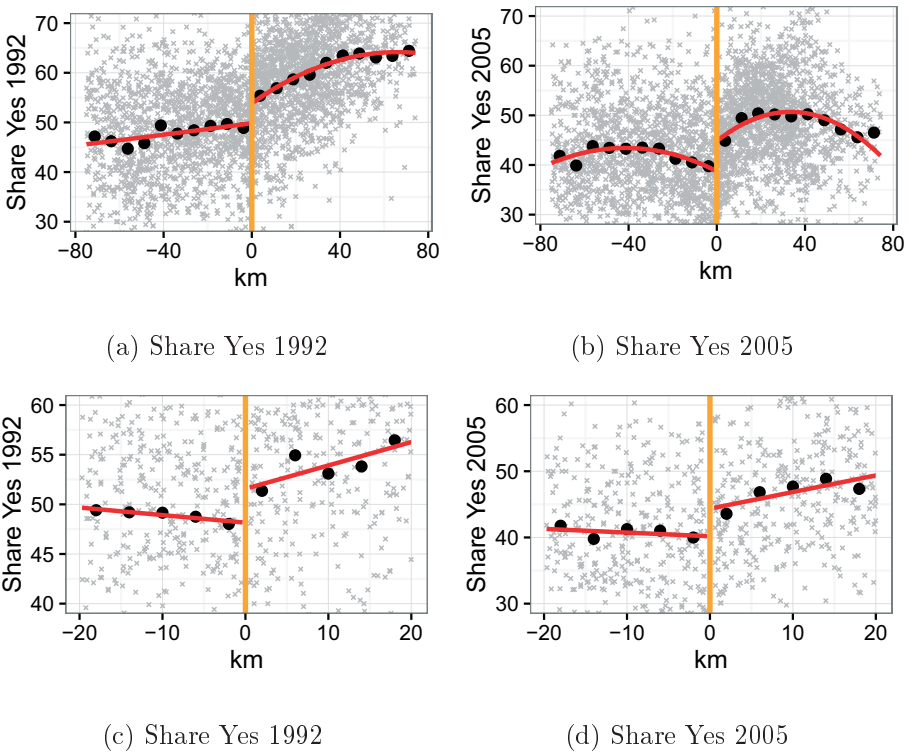
Table 2.5: RD results: whole border

Variable	Panel **A**: Share Le Pen 2007				Panel **B**: Turnout 2007.			
	(1)	(2)	(3)	(4)[a]	(5)	(6)	(7)	(8)[a]
Treatment	-0.236	-0.232	-0.288	-0.267	0.446	0.089	0.232	0.481
	(0.852)	(0.692)	(0.644)	(0.686)	(0.701)	(0.611)	(0.544)	(0.453)
Obs.	603	886	1149	897	603	886	1149	1637
Dist.	10 km	15 km	20 km	15.18 km	10 km	15 km	20 km	29.17 km
Variable	Panel **C**: Share Yes 1992				Panel **D**: Turnout 1992			
	(1)	(2)	(3)	(4)[a]	(5)	(6)	(7)	(8)[a]
Treatment	4.353**	5.546***	5.384***	4.794***	-0.529	-0.288	-0.458	-0.243
	(1.748)	(1.506)	(1.322)	(1.098)	(1.077)	(0.889)	(0.793)	(0.981)
Obs.	604	887	1150	1706	604	887	1150	719
Dist.	10 km	15 km	20 km	30.44 km	10 km	15 km	20 km	12.13 km
Variable	Panel **E**: Share Yes 2005				Panel **F**: Turnout 2005			
	(1)	(2)	(3)	(4)[a]	(5)	(6)	(7)	(8)[a]
Treatment	2.957*	2.956**	3.895***	2.796*	0.219	-0.573	-1.238	-0.475
	(1.742)	(1.478)	(1.348)	(1.438)	(0.994)	(0.874)	(0.801)	(0.732)
Obs.	603	886	1149	970	603	886	1149	1368
Dist.	10 km	15 km	20 km	16.69 km	10 km	15 km	20 km	24.33 km

Notes: RD estimates using bandwidths of 10, 15, and 20 kilometers from the former French-German border. Included controls: distance to Germany (border), distance to Metz, distance to Strasbourg, and distance to Nancy. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

Figure 2.4: RD plots, whole border and within Lorraine



(a) Share Yes 1992

(b) Share Yes 2005

(c) Share Yes 1992

(d) Share Yes 2005

Notes: RD plots, (a) and (b) using all municipalities in Alsace and Lorraine, (c) and (d) using only municipalities within Lorraine. Fitted lines in (a) and (b) are based on 2nd degree polynomial, while (c) and (d) use 1st degree polynomial (see Figure A2.6 in the Appendix for 2nd degree). Black dots represent means using 5 kilometer bins.

ences and turnout (e.g., Franklin 2004), we examine potential discontinuities in income, age, education and occupation, which could plausibly be related to these differences and our outcomes. Note that this is not a test of *pre-treatment differences*. All variables might be affected by the treatment and act as channels via which the treatment affects the outcome. Nonetheless, we can rule out potential confounders in case of non-significant differences.

We present results for yearly median income, mean age, as well as differences in education and occupation, for three comparisons: one for the whole border, one focusing on the southern border between Haut-Rhin and Bas-Rhin as parts of Alsace, and Vosges, and one for the within-

Lorraine comparison with Moselle on one side, and Meurthe-et-Moselle and Meuse on the other. As Appendix Table A2.12 demonstrates, none of the measures exhibit a discontinuity when using the entire border. However, when comparing Alsace with Vosges, there are statistically significant differences in median income and mean age. Accordingly, we focus on the comparisons within Lorraine for the remaining part of the analysis. Table 2.6 demonstrates that there are no discontinuities in any category within Lorraine. This means that any effects we measure are not driven by a different composition of the electorate, possibly due to the treatment, but rather by a direct persistent effect of the more intrusive policies on attitudes and preferences.[17]

Table 2.6: Post-treatment covariate balance test, within Lorraine

Variable	Median income 2008		Mean age 2006	
	(1)	(2)[a]	(3)	(4)[a]
Treatment	0.236	0.086	0.059	0.022
	(1.015)	(0.990)	(0.641)	(0.486)
Obs.	311	387	394	752
Dist.	10 km	12.56 km	10 km	20.23 km
Variable	Education 1999		Occupation 2006	
	(1)	(2)[a]	(3)	(4)[a]
Treatment	0.002	0.004	0.009	0.002
	(0.006)	(0.004)	(0.016)	(0.014)
Obs.	394	1044	394	576
Dist.	10 km	30.04 km	10 km	14.8 km

Notes: Testing for discontinuities in covariates using municipalities in Moselle, Meurthe et Moselle, and Meuse. Education refers to the share of people above 18 with a high school degree and occupation relative to the share of blue-collar workers in the total population (the Appendix provides alternative operationalizations). Included controls: distance to Germany (border), distance to Metz, distance to Strasbourg, and distance to Nancy. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

As we can see from Figure 2.4 (c, d) the RD plot suggests a clear discontinuity when applying a first-order polynomial and looking only at within-Lorraine. Panel A in Table 2.7 also presents the estimated treatment effects on *Share Yes 1992* and *Share Yes 2005* when focusing only

[17] Note that when the sample is restricted to include municipalities only in Moselle, Meurthe et Moselle and Meuse, we do still not find any statistically significant effects on the vote share for Jean-Marie Le Pen or turnout in 1992, 2005, and 2007 (see Appendix Table A2.13.)

on the within-Lorraine comparison. It is interesting to observe that the coefficient estimates do not change much in size compared to Table 2.5, when Alsace was still included. For 1992, it changes for the 10 kilometer bandwidth from 4.353 to 3.752, and for 2005 from 2.957 to 3.810. In both cases they remain significant at the five, respectively ten percent level. Note that when using the still conservative half IK-bandwidth the null-hypotheses of no differences is rejected more clearly at the 1 percent and 5 percent level. Putting this into relation to the average share of yes votes in the whole country, this equates to an increase of about 7 percent and 8 percent in the yes votes. This would have been sufficient to change the average vote from disapproval to approval in the area close to the border.[18] Thus,the positive effect of intrusive homogenization policies on regional identity can still be found nearly a century after legally integrating the department into France, and within a region that shares a common history and culture.

Figure A2.16 in the Appendix depicts the individual coefficients and confidence intervals across bandwidths ranging from 10 to 50 kilometers. The effect size varies little and is always positive. As we would expect, the estimation becomes more precise as we increase the bandwidth, and the coefficient also becomes larger in size. While we do not want to stretch this too far, it is an indication that we need not be too concerned about the local nature of the estimated average treatment effect. Section 2.5 will examine threats to identification and whether differences in the potential other advantages and disadvantages of the 1992 and 2005 referenda might bias their use a measuring causal differences in regional identity. Before that, we provide results using an alternative measure of regional identity.

2.4.2 Regional newspaper subscriptions

An alternative measure of regional identity is useful to confirm our prior results, but also to examine to what degree the strengthening of regional identity was a pure psychological, in other terms unconscious, reaction to the exposure to repression and intrusive policies. This would to some de-

[18] The average percent of yes votes in 1992 in the non-treated area within 10 kilometers from the border is approx. 49. This means the estimated treatment effect would have shifted the balance in favor of more EU integration.

Table 2.7: RD results: within Lorraine

	Panel **A**: Former border							
Variable	Share Yes 1992				Share Yes 2005			
	(1)	(2)	(3)	(4)[a]	(5)	(6)	(7)	(8)[a]
Treatment	3.752**	5.026***	4.346***	4.742***	3.810*	3.757**	4.892***	3.664**
	(1.841)	(1.611)	(1.440)	(1.340)	(2.092)	(1.775)	(1.646)	(1.763)
Obs.	394	583	744	947	394	583	744	627
Dist.	10 km	15 km	20 km	26.61 km	10 km	15 km	20 km	16.43 km
	Panel **B**: Former border (exl. German-speaking communes)							
Variable	Share Yes 1992				Share Yes 2005			
	(1)	(2)	(3)	(4)[a]	(5)	(6)	(7)	(8)[a]
Treatment	4.126**	5.279***	4.574***	4.430***	3.830*	3.774**	4.817***	3.453*
	(1.850)	(1.617)	(1.436)	(1.298)	(2.117)	(1.774)	(1.644)	(2.018)
Obs.	385	553	684	886	385	553	684	410
Dist.	10 km	15 km	20 km	30.98 km	10 km	15 km	20 km	10.74 km

Notes: Panel A: Discontinuity at the former French-German border using municipalities in Moselle, Meurthe et Moselle, and Meuse. Panel B: Discontinuity at the former French-German border using municipalities in Moselle, Meurthe et Moselle, and Meuse, excluding German-dialect speaking communes. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

gree be in contrast to our framing of affected subjects' conscious decision to invest more in maintaining their regional identity. It is altogether plausible that psychology and unconscious changes in attitudes matter, but based on our model we think that deliberate choices play an important part. This is historically supported by the creation of separatist parties during the treatment period, as well as by the foundation of newspapers publishing in the local language and the engagement in civic organizations. All this is clearly a risky and costly behavior, in which people voluntarily engaged to maintain regional identity and traditions. Even today, there is a large range of associations engaged in preserving regional culture. Conceptually, it is of course impossible to completely rule out that an initial psychological shock *caused* a change in preferences, and all following actions are the *result* of this unconscious change. With this caveat in mind, we find it plausible that economically costly decisions can reveal a deliberate choice of citizens to invest in their regional identity.

The literature proposes and uses different measures of identity, depending on the availability of data.[19] Subscriptions to regional newspapers are a suitable proxy for several reasons. First, subscribing to a regional newspaper has a social signaling component towards others about one's interest in the region and its culture. Second, regional newspapers contain sections reporting on events in the region and regional culture that are absent in national newspapers. Accordingly, people with a stronger regional identity and higher interest have more incentives to buy the newspaper. Third, subscriptions are not only another useful proxy for regional identity, but can also help us to understand potential

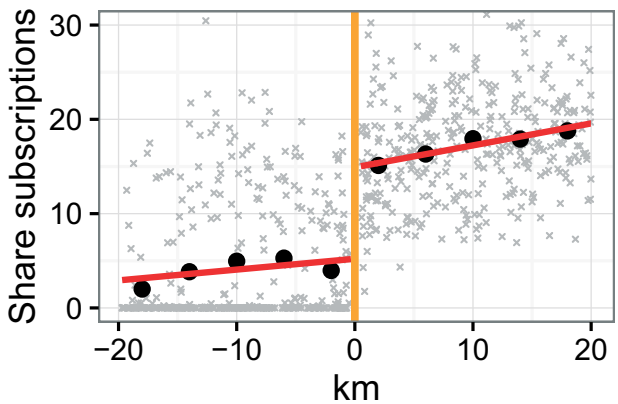
[19] The name choice of parents is often considered a useful proxy for the transmission of identity. In the case of France, however, census data are confidential for hundred years, so that no data after our treatment period exists. We compared the 50 most common names 2014 at the department level between Moselle and the rest of France, and found very few differences. This is in line with anecdotal evidence not suggesting particular Lorrainian names today. Using associations in a systematic way, in an RDD, is not a valid comparison as the rules regarding the registration and documentation of associations differ between the treated and control departments in Lorraine. Local festivities are a potentially interesting idea. The available lists of festivities, however, make it very hard to decide whether a festival is concerned with regional culture or just music or French culture in general. Separatist parties and newspapers existed only in the treated area during the treatment period, so a comparison speaks in favor of the hypothesis, but is econometrically uninformative. We will pick up on this last point later.

Table 2.8: RD results: regional newspaper subscription shares

Variable	Share households with subscription of "Le Republicain Lorraine"			
	(1)	(2)	(3)	(4)[a]
Treatment	10.155***	10.132***	9.872***	9.858***
	(1.417)	(1.234)	(1.129)	(1.106)
Obs.	394	583	744	841
Dist.	10 km	15 km	20 km	23.12 km

Notes: RD estimates using bandwidths of 10, 15, and 20 kilometers from the border between Alsace and Lorraine, and the rest of France. Included controls: distance to Germany (border), distance to Metz, distance to Strasbourg, and distance to Nancy. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.
[a] Estimates from using one half of the optimal IK bandwidth.

Figure 2.5: Share households with subscription of regional newspaper



Notes: RD plot, share of households with subscription of "Le Republicain Lorraine", using only municipalities within Lorraine. Fitted line based on 1st degree polynomial. Black dots represent means using 5 kilometer bins.

mechanisms. Parents interested in having their children developing a regional identity can regard the subscription as an investment, so they can be seen as a proxy for the channel in our model.

The downside is that this kind of data is often not collected at a fine-grained level, and commercially important or confidential. We managed to get access to municipal-level data for subscriptions to the Lorrainian newspaper "Le Republicain Lorraine", but only for the year 2014. This is 10 years after the second referendum and differences might have diminished over time. The newspaper is politically non-partisan, positioned

neither as extreme left or right. A comparison at the former border is valid as citizens in all villages in the region (formerly treated and untreated) today have the possibility to buy this regional or a national newspaper, and the newspaper is sold at the same price everywhere.

Table 2.8 shows a clear discontinuity in subscription rates at the former border. At the 10 kilometer bandwidth, the share of subscribers out of all households is around 10 percentage points higher on the treated side. The result is highly significant at the 1 percent level in all specifications, and the clear discontinuity is also graphically visible in Figure 2.5 and in the map in Appendix Figure A2.4). Appendix Figure A2.13a shows that the effect size is also barely affected by different bandwidth choices and other alterations. As the newspaper seems to have more regional offices in the treated area, we are a bit worried about supply-side explanations (even if supply is also driven by differences in demand). However, we also got access to data on the number of points of sale in 2014, and controlling for this number does not substantially change the results (Appendix Table A2.20). Overall, this finding further increases our confidence that the prior results using the referenda really document differences in regional identity. Nevertheless, we treat it with caution as we do not possess data about the full universe of newspaper subscriptions. The next section continues by examining the robustness of our main results.

2.5 Alternative explanations

So far, we have found a clear causal link between being in the treated area and higher support in two crucial referenda that would have increased regional autonomy as well as more regional newspaper subscriptions. The treatment of being exposed to a period of more repressive policies (including occupation, a change in nation status and intrusive homogenization policies) led to the formation of a stronger regional identity, which as the survey results show led to a preference for more regional decision-making. Nonetheless, it is important to be aware of potential caveats and problems. This section discusses alternative explanations to this interpretation, including threats to identification and the interpretation of what constitutes the treatment. Note that some threats affect regional identity

measured both using the referenda and newspapers, while others only relate to potentially different benefits from other aspects of the referenda, but should not affect the newspaper proxy.

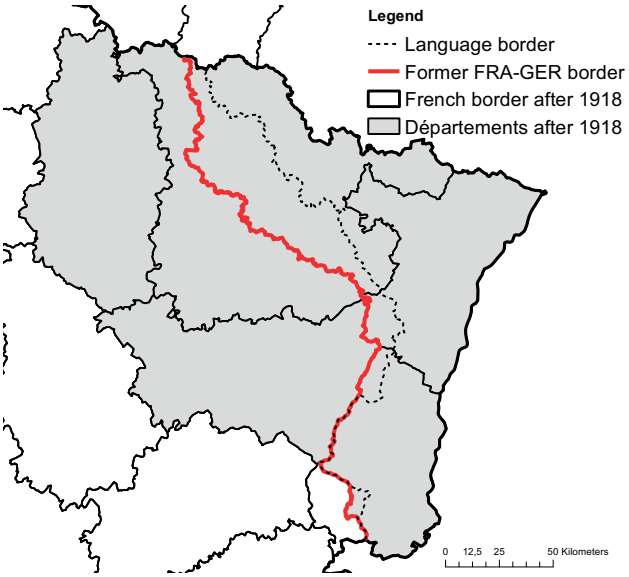
2.5.1 Results are due to linguistic differences

As outlined above all available historical evidence indicates that the exact location of the former border was exogenous to our outcome. Nevertheless, one concern regarding the interpretation of our results is whether the border coincides with differences between German and French dialect speakers. This would be a concern if German dialect speakers were more likely to develop a stronger regional identity due to the linguistic divide between them and the rest of France. German dialect (mostly Alsatian and Moselle Franconian) speakers might also be exposed to a larger extent to German media or exhibit different trading patters (Egger and Lassmann 2015). Although linguists describe the use of the German Alemannic dialect as steadily declining and now being mostly used by older generations (Vajta 2013), it would be reassuring if we could separate the treatment effect from linguistic differences.

For that matter, we trace back the historical language border, which separates Romance and Germanic dialect speaking people. It was formed in the 8th century and was barely moved until well into the 19th century. Callender (1927, p.430) cites the Count Jean de Pange who traces the border back to barbaric invasions and stated that "in Lorraine the limits of the languages bear no relation to the topography of the country. They form an irregular fringe, [...] these limits, arbitrarily traced by historical accident, have not appreciably altered in fifteen centuries." We rely on Harp (1998) and overlay his map with the municipality boundaries to georeference the border along the French municipality boundaries (see also similar maps in Callender 1927; Heffernan 2001). Figure 2.6 shows the resulting language border.[20] It is apparent that for Haut-Rhin in Alsace these two borders coincide for significant parts, whereas this is not the case for Haut-Rhin and Lorraine.

[20] We provide the best approximation of the border without dividing municipalities and creating any systematic errors. In case of a division, we choose the shortest path around the municipality. For another similar depiction of the language border see Dunlop (2013).

Figure 2.6: Linguistic frontier



Notes: Map of Alsace and Lorraine with former French-German border and language border. This demonstrates that the language border did not coincide with the border segment dividing Lorraine.

To address a potential correlation between spoken (or formerly spoken) dialect and agreement as our proxy for regional identity, we exclude all German-dialect speaking municipalities and re-estimate the treatment effect at the former border. The estimates in Panel C of Table 2.7 reinforce our hypothesis of persistently stronger regional identity. In 1992 the effect remains significant at the 5 percent and 1 percent level for the 10 and 20 kilometer bandwidths, and in 2005 at the 10 percent and 1 percent level, respectively. The same holds true for regional newspaper subscriptions (see Appendix Table A2.19). Accordingly, the results hold even when comparing only directly neighboring municipalities in the same historical region speaking the same dialect.

2.5.2 Placebo test: Alsace and Lorraine versus the rest of France

Historical accounts indicate that Alsace and Lorraine were comparably well integrated into France prior to the Franco-Prussian War. The distinction between the treated and control area is then based on differences

in policy exposure between the occupied and non-occupied area within the same regions. We use a *placebo test* with the referenda results at the more Western border of the whole historical regions of Alsace and Lorraine with the rest of France to get an idea of the validity of this approach. If the complete region was already exhibiting a stronger regional identity previously, we might also expect a discontinuity here. Table 2.9 shows no significant differences at any bandwidth, neither in 1992, nor in 2005. In addition, the size of the point estimates is much smaller and the signs change between different bandwidths, indicating no stable relationship. Our main results accordingly seem neither driven by being closer to the next national border, nor by differences existing prior to the treatment.

Table 2.9: Border between Alsace and Lorraine, and the rest of France

Variable	Panel **A**: Share Yes 1992			
	(1)	(2)	(3)	(4)[a]
Treatment	-3.168	-0.649	0.058	-0.591
	(2.040)	(1.728)	(1.465)	(0.777)
Obs.	404	606	814	5340
Dist.	10 km	15 km	20 km	109.34 km
Variable	Panel **B**: Share Yes 2005			
	(1)	(2)	(3)	(4)[a]
Treatment	0.208	1.045	1.496	-1.103
	(2.006)	(1.666)	(1.453)	(0.788)
Obs.	405	608	816	5117
Dist.	10 km	15 km	20 km	104.85 km

Notes: RD estimates using bandwidths of 10, 15, and 20 kilometers from the border between Alsace and Lorraine, and the rest of France. Included controls: distance to Germany (border), distance to Metz, distance to Strasbourg, and distance to Nancy. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

2.5.3 The relative importance of homogenization policies

By design of the experiment we exploit, it is impossible to exactly distinguish the effect of homogenization policies from the effect of occupation and repression in general. It seems plausible that repression itself provokes a backlash, but the historical literature specifically emphasizes the crucial role of homogenization policies steered at suppressing regional identity (e.g. De La Valette 1925; Goodfellow 1993; Harp 1998; Harvey

1999; Heffernan 2001; Zanoun 2009). Even more than German policies, French policies after World War I clearly aimed at eliminating all signs of regional particularities that were deemed dangerous. Many of these policies plausibly affected the Alemanic-dialect speaking areas more severely, for instance repeated prohibitions of specific newspapers and parties associated with the usage of the German language.

As intrusive French homogenization policies comprised the second and more recent part of the treatment period, there could be a stronger treatment effect on the German-dialect speaking part of Lorraine. Panel B in Table A2.16 indeed shows a significantly higher share of yes votes on the German speaking side in both 1992 and 2005. Of course, this heterogeneous treatment effect could partly be driven by other unobserved differences due to language. Accordingly, while keeping the caveats in mind, this is suggestive evidence supporting the important role of homogenization policies in creating the backlash.

2.5.4 The role of World War II

It is not absolutely clear how to interpret the role of WWII. During WWII, the treated and untreated area were occupied by Germany for most of the time. German policies were surely repressive, but the suppression of regional identity and traditions was not the main objective and the suppression of French identity happened in all occupied parts of France. Neither the treated nor control area belonged to the self-governed Vichy part of France, which is good as the border between the Vichy-regime and the occupied zone is related to resistance activities (Ferwerda and Miller 2014) that could have affected common identity. We are thus reluctant to emphasize the role of WWII, even though it was clearly a drastic shock influencing the lives of many people.

Nonetheless, one concern is that this shock was stronger in the treated area, as a sizable number of young men were drafted into the German military and exposed to different and potentially more intense war experiences. This difference in exposure probably led to a final phase of perceived alienation and repression, because the French central government sentenced some of these so-called *malgré-nous* who were in the *Waffen-SS* to death in the Bordeaux Trial in 1953 for their involvement in war crimes.

This punishment was perceived as unfair and caused massive public outrage and protest, because it did not take the historical circumstances into account.[21] It was probably the last major part of a set of policies which was imposed by the national majority in disregard of the local preferences and opinions. By 1964, all French citizens who had collaborated with the Nazis including the convicts from the Bordeaux trials had benefited from a general amnesty, which helped to calm down the tensions and which we regard as the end of the treatment period.

Based on the results in Vlachos (2016) using variation within Alsace, the only outcome correlated significantly with a higher share of war veterans is higher support for candidates of the right-wing National Front. As there is no difference in support for nationalist leader Jean-Marie Le Pen, there does not seem to be a problematic discontinuity with regard to WWII exposure at the border we exploit. Finally, the composition of the population might have been affected differently, but Table 2.6 shows no such a difference.

2.5.5 The influence of Germanization

Although feeling more German would not directly explain a stronger regional identity, being exposed to German ideas, newspapers and institutions for nearly fifty years could affect preferences. In our model, however, there is no reason to expect a persistently stronger German identity after the occupation ended. Although identities based on different levels (regional, national) need not to be substitutes, national identities probably are to some degree. Accordingly we would expect that a stronger German identity is related to a weaker French identity. Although we find no such difference in the survey results, we also code a variable based on tweets issued using Twitter about the French and German national football team during the World Cup in 2014 as a robustness test. When using this as an alternative measure of German and French national identity at the local level within Lorraine, we find no significant difference at the 10 kilometers and at half the optimal IK bandwidth (see Appendix, page 157). The

[21] Nearly all mayors of towns in Alsace attended a public protest walk in Strasbourg. For alternative versions and views about the actions and historical circumstances see http://www.scrapbookpages.com/Oradour-sur-Glane/Story/index.html.

analysis rests on relatively few tweets, but the results are in line with the survey evidence and suggest no difference in German or French national identity.[22]

2.5.6 Migration into and out of the treated area

An concern is the role of migration out of the treated area, and emigration to other parts of France or destinations like the US. Migration mostly happened at two distinct points in time; when Germany annexed the area and when France took it back. First, after 1870, the Germans imposed a requirement that everyone who wanted to remain in the area had to give up her French nationality and opt for German citizenship. Earlier expectations of a large exodus of more than 130,000 people (Vajta 2013) declined to less than 50,000 when it became clear that this would mean having to leave the region. In addition, Germans migrated or were sent to work in the area between 1870 and WWI. However, as mentioned above, a large share of those immigrants were forced to leave again after the French re-annexation (approximately 100,000, Harvey 1999). Nevertheless, a certain share of those Germans or their offspring remain in the area. Conceptually, this should bias against our results as German immigrants are less likely to exhibit a strong Alsatian or Lorrainian identity.

Second, there was a (smaller in magnitude) inflow of French people from other regions after WWI and the re-annexation, to some degree with a similar purpose, which was to take up posts in local administration and schools to replace regional traditions and influence with a strong national identity. Again, as these were French citizens from other regions, they

[22] The historical and sociological literature also argues that although citizens accepted their legal belonging to Germany, they did so "without feeling German themselves" (Höpel 2012, p.37). De La Valette (1925) refers to a disillusioned German journalist saying "Alsace does not want us; the Alsatians are lost to us". Carrol (2010, p.66) cites a government official stating that "Prussian methods had failed to instil alien national sentiments into the minds of a people who were proud of their history". It also seems to be partly misleading to frame the regionalist parties in the 1920s and 30s as pro-German. The "Landespartei" is described as "referring in its manifesto to the right of peoples to self-determination and looked forward to the day when a 'free Alsace- Lorraine' would be the mediator between France and Germany in a United States of Europe" (Anderson 1972). Similarly, the UPR called for "administrative decentralization, a regional elected council and the recognition of bilingualism" rather than for a return to Germany.

should exhibit a weaker regional identity. Accordingly, this would also bias against our main results and is no concern with regard to the correct sign of the point estimates. In terms of migration affecting the composition of the treated and control group, it is reassuring to remember that there are no differences in the socio-economic structure of the population today. Nevertheless, we use a digitized version of census data for the years 1916 to 1946 to estimate changes in population at the municipal level. The results in Table A2.17 show no significant discontinuities for any measure at the border. Still, as the point estimates are negative we also employ the population changes as additional control variables in our main specification. Table A2.18 shows that this does not affect our results.

2.5.7 Local laws and their effects

The treated areas in Alsace and Lorraine enjoy, to a slight and diminishing degree, the freedom to deviate from certain rules imposed by the central state. These exceptions are known as the *local laws* and were first made permanent in 1924 as part of the French central government attempts to appease the hostile atmosphere after re-annexing the area. Certain forms of German law were also superior to the existing French rules (Glenn 1974), and French law then actually incorporated particular parts of the German system. More details are provided by Chemin and Wasmer (2009). Some differences still exist with regard to a small number of welfare policies (including payments to sick employees), which are still more generous in Alsace-Lorraine and include two additional days of vacation. Other differences exist with regard to personal bankruptcy law and voluntary associations.

The sheer existence of this set of local rules works as a mechanism to maintain regional identity. In terms of our model, they could increase the salience of items that all people in the treated area have in common. A potential concern for our results would be if the local laws decisively influence a third factor which drives the measured differences in regional identity instead of suppression. However, Glenn (1974, p.772) stated already that "local doctrine is generally of declining importance. There are few, if any, local jurists remaining [...] and the local law is taught only

in two or three optional courses [...]" Moreover, French courts refused to make any reference to German jurisprudence and interpret local laws according to French standards and principles. Accordingly, the visibility of the laws and their potential influence on the salience of regional "uniqueness" was most likely much higher for the first generations after WWII than for more recent generations.

To test the extent to which the remaining exceptions led to potentially problematic differences in the socio-economic environment, we examine potential discontinuities at the former border in variables for which we have measures at the local level and that could plausibly be influenced by the local laws. This includes items in the categories occupation, economic activity, public goods and population density. In a second step, we assess how these are correlated with our main outcome in the RDD. Table A2.11 shows that for the about 25 tests of covariates, only one turns out to be significant when using the 10 kilometer bandwidth: There seems to be a somewhat smaller number of industrial companies in the treated area. The last two columns show that industrial companies are positively correlated with agreement in the referenda; even significantly so for the 1992 referendum. Accordingly, while the one significant difference might well be by chance only, it would bias against our main results.[23]

2.5.8 Support driven by urban agglomerations

Another potential concern is whether the effect is driven by outliers. More specifically, it might be driven by urban agglomerations for two potential reasons. Historically, cities enjoyed greater autonomy and might have developed a stronger local identity relative to national identity. Moreover,

[23] Another potentially biasing factor in the referenda could be differences in European Union fund receipts if the treated area would receive significantly more money which could directly affect the likelihood to vote yes or indirectly through potential growth effects (Becker *et al.* 2010). However, the funds are allocated to regions, not departments (the respective categories in the 2014-2020 period are "Lorraine et Vosges - ERDF/ESF" and "Lorraine - Rural Development"). The whole region is responsible for the within-region allocation and there is no reason to assume that municipalities just right of the former border in the treated area would be awarded more funds. In the 2007-2013 period, neither Lorraine nor Alsace were eligible under the convergence, competitiveness or employment objective. For the 2000-2006 period receipts per capita in the treated part of Alsace Lorraine were 100 euros compared to 180 euros in the untreated area.

cities today attract people from a diverse set of places, who could on average be more likely to support the EU. A visual inspection of the maps in Figures A2.1 and A2.2 suggests that the area surrounding Metz does in fact feature high shares of yes votes. We test whether this is a problem by excluding municipalities belonging to the metropolitan area as defined by INSEE (Appendix Table A2.14 uses 5 or 10 kilometers from Metz as an alternative cut-off). Depending on bandwidth length, this means that between 30 and 38 municipalities are excluded. Table 2.10 presents the results for the analysis within Lorraine for share of yes votes in 1992 (Panel A), and 2005 (Panel B). Compared to the results in Table 2.7, the point estimates are very similar and still statistically significant.

Table 2.10: Excluding Metz

Variable	Panel **A**: Share Yes 1992			
	(1)	(2)	(3)	(4)[a]
Treatment	4.082**	4.928***	3.953***	3.458**
	(1.940)	(1.672)	(1.481)	(1.372)
Obs.	355	516	646	789
Dist.	10 km	15 km	20 km	26.89 km
Variable	Panel **B**: Share Yes 2005			
	(1)	(2)	(3)	(4)[a]
Treatment	4.283**	3.455**	4.409***	3.461*
	(2.087)	(1.723)	(1.596)	(1.811)
Obs.	355	516	646	453
Dist.	10 km	15 km	20 km	13.11 km

Notes: Excluding all municipalities in Metz agglomeration, comparing only within Lorraine and excluding German-dialect speaking communes. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.
[a] Estimates from using one half of the optimal IK bandwidth.

2.5.9 Religiosity and EU support

One distinct feature in which the local laws strongly differ from the rest of France is with regard to religion. Historically, the church played a larger role in the average citizens life in the treated area until after WWI, and still does to some degree until today. In contrast to the rest of France, pupils in the area are still subjected to compulsory religious classes at school (usually two hours per week). This is not uncommon in other European countries, for instance, many of the southern German states fea-

ture a similar policy. Usually these classes are not dogmatic, but transmit information about religions in general, of course still with an emphasis on Christianity. If religion or religious denomination is related to a more favorable attitude towards the EU, part of the effect we measure and attribute to differences in exposure to intrusive policies might be driven by differences in religious identity.

However, the available literature indicates no direct relationship between religious attachments and European integration and "even indirect effects of religion on Euroscepticism are small or appear to cancel each other out"(Boomgaarden and Freire, 2009, p.1). To the opposite, albeit minimally, it is argued that "actors such as religious parties and the churches have strayed from the integrationist path and contributed to Euroscepticism" (Minkenberg 2009, p.1190).

To make sure this is really no concern, we examine the purported relationship in a more systematic way as well. In the specific French context, there are no municipal-level measures on religious affiliation and the share of people who consider themselves secular, due to the specific secular constitution and approach in France. Nonetheless, we can use outcomes aggregated at the department level for all of France to assess the relationship between religion and voting in the EU referendum. Table A2.15 in the Appendix shows results for two variables that measure the intensity of religiousness and religious denomination. *Attendance* measures how often subjects attend religious services, both as a continuous variable and coded as a set of dummies with *never attending* as the reference category. Denomination relates to the share of people who perceive themselves as *Roman Catholic*, *Protestant*, *Christian Orthodox*, *Jewish*, *Moslem* or *other faiths*, with *no religious affiliation* as the reference category.

The results show no difference for *Attendance* in both 1992 and 2005. With *Attendance* coded as individual dummies, there is also no stable relationship. Only very enthusiastic churchgoers have a marginally significant positive correlation compared to those who never attend in 2005, but not in 1992. The pattern is similar for denomination. The only positive correlation which is significant at the 10% level is with *Protestant* in 1992, but it also disappears in 2005. Overall, this supports the existing literature that religion does not play a major role for attitudes towards

the EU. Thus, the concern that religious differences would contaminate our main results appears unfounded.

2.5.10 Differences in benefits from trade

One of the main benefits of more integration that is usually mentioned is increased gains from trade stemming from lower trade costs (Alesina and Spolaore 1997). Accordingly, we need to assume that these benefits are comparable close to the border. Clearly, distance to the respective neighboring states correlates with trade costs; municipalities that are closer to the country borders could benefit more from increased trade and thus exhibit higher agreement to more EU integration. At the same time, relying less on trade with the rest of France and more on exports could also foster a stronger regional relative to national identity. There are two ways to evaluate whether this is problematic in our cases.

Firstly, our smallest bandwidth is 10 kilometers only, so that it seems implausible that the relatively small additional distance between treated and control municipalities affects trade costs sufficiently to explain the results. Moreover, our estimates are robust to controlling for distance to the German as well as to other borders. Secondly, the point estimates of the treatment effect barely change when we increase the bandwidths and include more municipalities (Figure A2.16). Thirdly, if distance to the border has a significant effect, we would expect to see a significant, or at least positive difference between former Lorraine and the rest of France as well. As the differences in Table 2.8 are neither always positive, nor significant, differences in trade benefits do not seem to be problematic.

2.6 Mechanisms and persistence

2.6.1 Persistence and regionalist parties

After examining the causal interpretation and robustness of our results, we are reassured by the fact that we find comparable results using expressive survey evidence, yes vote shares in two different referenda and a discontinuity in regional newspaper subscriptions. Important remaining questions are the persistence of the differences and potential mechanisms.

Regarding persistence, based on the detailed historical evidence, it is plausible that the "treatment period" (the treated area being exposed to more intrusive policies) ends after WWII in the 1950s. The Bordeaux Trial in 1953, with the convictions of soldiers from Alsace-Lorraine who fought for the German side, can be thought of as potentially reactivating memories of the past suppressive policies. Most historians agree that policies largely converged and there was no further specific suppression or discrimination against people in the treated area in the following years. The measurement of our main outcome, in contrast, is in 1992 and 2005. Although there is no historical evidence of it, other events taking place between the end of the treatment and the other measurements could explain our results.

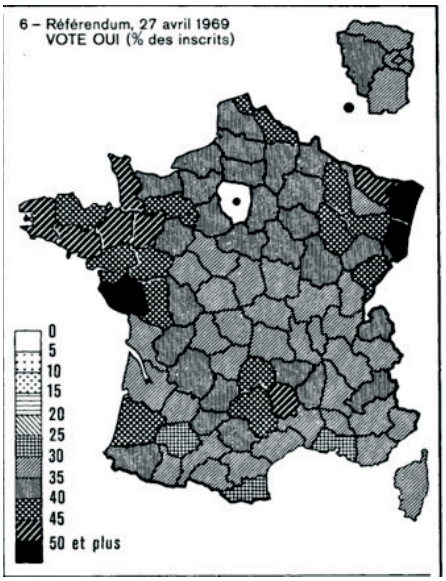
We remedy this concern in two ways. First, we can exploit the fact that President Charles De Gaulle hold a referendum in 1969, which was explicitly about decentralization and establishing the regions as an important political unit in the constitution (Bon 1970. Regions were supposed to take control of public utilities, housing and urbanization and enabled to borrow money. Furthermore, they would be independent contractual parties, set up public organizations, and be part of an adapted second chamber representing the territorial collectivities. In the end, 52.4 percent of French voters rejected the proposal and De Gaulle resigned immediately afterwards.

We found two reliable sources of results at the department level. The yes-vote share out of all eligible voters shown in Figure 2.7 in Alsace was above 50 percent of eligible voters, and between 40 and 45 percent in neighboring Vosges. In treated Moselle it was between 45 and 50 percent, and in the untreated neighboring Meurte-et-Moselle only between 30 and 35 percent. Even though not at the municipal-level data, the differences are apparently striking and strongly suggest a difference in regional identity already in 1969. Lancelot and Lancelot (1970) show no differences in abstentions and no comparable difference in the legislative elections one year before.[24]

Second, we examine whether the observable differences are a result of

[24] Another referendum in 1972 about EU enlargement shows a similar pattern, suggesting that the perceived role of the EU as fostering regional autonomy was already visible in the 1960s (see Leleu 1976).

Figure 2.7: Referendum about establishing regions as political entity, 1969



Notes: Referendum on creating regions as political entity (1969). Vote shares out of all eligible voters, i.e. out of yes votes, no votes, blanks and abstentions. There is no comparable map showing only the yes share out of valid votes, but the Appendix shows maps of abstentions that do not differ between departments. *Source:* Lancelot and Lancelot (1970).

the complete treatment period, which would make them quite specific, or if shorter periods of intrusive policies are already sufficient to create a "backlash". There is some anecdotal evidence that suppressive policies already contributed to the creation of a stronger regional identity prior to WWII (Goodfellow 1993; Harvey 1999). This was visible in periods of public protest, the establishment of regional organizations and newspapers (Callender 1927), but also politically. Regionalist parties are also interesting to answer whether there already was a stronger regional identity during the treatment period, but also as a potential mechanism of persistence. Conceptually, although our model focuses on investments by parents in the tradition of economic models like Bisin and Verdier (2000), an extended model could also include regional political parties as a means for citizens to both express and transmit regional identity.

Regionalist parties emerged and enjoyed great electoral success during German occupation. In particular in the first years of very intrusive

policies, but also still after 1890, with a vote share of between 30.2 percent and 56.6 percent (Hiery 1870). After the end of WWI, the regional parliament proclaimed a sovereign state of Alsace-Lorraine on November 11, 1918, which was however not accepted by France. The interwar period under French rule also featured successful regionalist parties in the treated area, but not in the control areas. Historians and political scientists classify most of these parties after WWI as aiming for more regional autonomy, rather than for a return to Germany (Rothenberger 1975). The Independent Regional Party for Alsace-Lorraine, for instance, received 11.5 percent of the votes in Bas-Rhin in 1928. Zanoun (2009) suggests that "autonomists were also present in the Moselle and like their Alsatian counterparts they demanded autonomy for Alsace-Lorraine". It is hard to assess to which degree this was based on facts, but support for regionalist parties collapsed before World War II, as the parties were perceived as being associated with Nazi-Germany. These accusations seem to have been more widespread in Lorraine and less in Alsace, where a larger share suffered under the intrusive French language policies and saw regionalist parties as fighting to reestablish bilingualism.

Up until today, political regionalism is much stronger in Alsace than in Lorraine, where support for regionalist parties never recovered to prewar levels. Alsace features two regionalist parties, the right-wing "Alsace d'abord" and the moderate "Le Parti Alsacien/Unser Land". Both are rather successful, the former winning about 9 and the latter around 15 percent of the votes in the 2010 regional elections, while the party "Vosges d'abord" in the neighboring untreated département has enjoyed little electoral success. In upper Lorraine, the "Parti des Mosellans" and the more established "Parti Lorrain" are the remaining regionalist parties, campaigning for a strong Lorraine region in a "Europe of the Regions". Within Moselle, the combined average vote share was low at 2.1 percent, but still nearly twice as much compared to the 1.1 percent in the untreated neighboring Meurte-et-Moselle.

We can also evaluate these average differences more systematically for the 2015 regional elections, where all moderate regionalist parties in Alsace and Lorraine ran on a joint list. Within Lorraine, the differences in the averages are also visible in a RDD. Using a bandwidth of 15 kilometers or half the efficient bandwidth yields a causal effect of about 0.4-0.5

percentage points. It becomes insignificant with the 10 kilometer bandwidth, possibly due to the overall tiny vote shares within Lorraine. When taking account of Alsace as well, the differences are much larger, between 1.2 and 2.3 percentage points, and significant at least at the five-percent level at all bandwidth. This further supports our prior results, including the survey answers about more regional political autonomy. The fact that the differences are much larger when including Alsace suggest a role of parties in maintaining identity differences or reflects the more distinct Alsatian culture.

Table 2.11: Vote share for regionalist parties

Variable	Panel **A**: Alsace and Lorraine			
	(1)	(2)	(3)	(4)[a]
Treatment	1.153**	2.340***	2.232***	2.181***
	(0.583)	(0.535)	(0.496)	(0.518)
Obs.	604	887	1150	994
Dist.	10 km	15 km	20 km	17.01 km
Variable	Panel **B**: Within Lorraine			
	(1)	(2)	(3)	(4)[a]
Treatment	0.082	0.429*	0.421**	0.484***
	(0.262)	(0.230)	(0.214)	(0.183)
Obs.	394	583	744	1105
Dist.	10 km	15 km	20 km	32.71 km

Notes: Results from the 2015 regional elections. Discontinuity at the former border including all municipalities in both Alsace and Lorraine (Panel **A**), and municipalities only within Lorriane (Panel **B**). ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

2.6.2 Regional identity over time

In contrast to studies assessing the effect of, for instance, exposure to the rule of law (Lowes *et al.* 2017), differences in regional identity should not generally result in strong discrepancies in policy preferences. An exception are preferences about the level of political decision-making, which was reflected in the survey results about more regional decision-making. Conditional on there being on average no discontinuities in other observable variables, this leads to the question which mechanisms caused the differences to persist over time. One factor could be the local laws. Al-

though not associated with systematic observable differences today, their mere existence can serve as a symbol distinguishing the region from the rest of the country. Secondly, as we argued above, regional newspapers are an important transmission channel, providing, for instance, more information about regional culture and events celebrating regional traditions and values.[25]

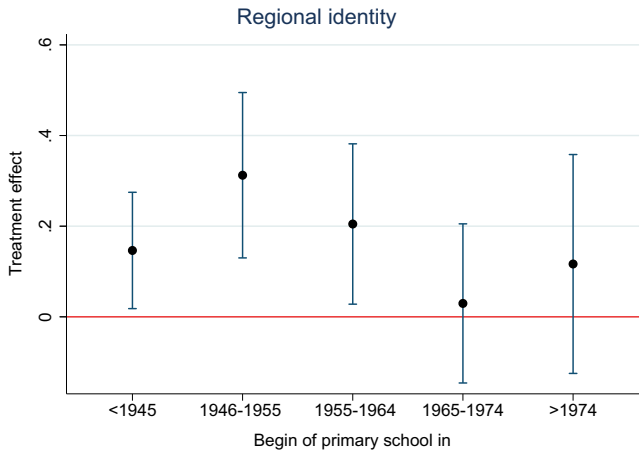
In our model, treated citizens were more likely to privately build up the skills to teach their own children regional traditions during the treatment period,; after public schooling returns back to similar levels, this leads to a difference in regional identity. To understand this mechanism and persistence over time better, and as the RDD provides no reason to expect a systematic bias, we return to the survey results from section 61. We re-estimate regression models on regional identity, but now interact the treatment effect with dummy variables for different age cohorts, with the untreated subjects as the left-out reference category. The age cohorts are selected so that the second group started primary schooling after WWII. The model makes no clear predictions regarding the net difference for those experiencing the treatment period themselves (Fouka 2017 suggests that reactions during a period of suppression can differ from its long term effects). We can assume that public schooling returns to comparable levels in the control and treated area starting with the second group, and the differences should begin to emerge or become stronger.

Figure 2.8a shows that the treatment effects on regional identity for the group who began primary schooling prior to 1945, and thus experienced repression themselves, are already positive. The effect is statistically significant at conventional levels for regional identity, and borderline significant in relation to the strength of national identity. It becomes stronger and clearly significant for the following age cohorts who began attending primary school between 1946 and 1964 and then weakens for age cohorts who began primary schooling later.

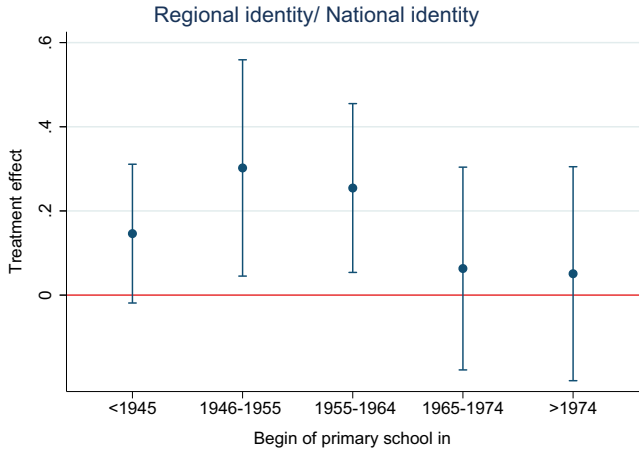
A potential dynamic extension of the model, where parents also face a variable cost of teaching with a time-varying α parameter for the relative

[25] Ochsner and Roesel (2017) suggests that war memorials and statues also function as a technology to transmit a common history. There are some well-known statues in Lorraine that might reactivate the memory of repressive policies, but they are mostly also related to WWI or WWII which makes a distinction difficult.

Figure 2.8: Identity differences by age cohort



(a)



(b)

Notes: The treatment effects refer to the parameter Δ_g from the regression model $y_{ig} = \pi + \sum_g \Delta_g \times Age_{ig} \times Treatment_{ig} + \Gamma'_{ig}\lambda + \eta_{ig}$, where $Treatment_{ig} = \mathbf{1}$[individual in treated region] and Γ_{ig} comprises controls for (reported) age, employment status and sex. g indicates to which age cohort an individual belongs, the group of untreated participants act as the baseline category. The age cohorts are selected so that the second group started schooling after the end of the treatment and the end of WWII. A positive Δ_g indicates that people in the treated region exhibit a higher value compared to the control area. Sources are the Observatoire Interrégional du Politique (OIP) 1999 and 2001, using respondents only in Lorraine.

return to identity, could integrate this. If parents reduce the value they assign to regional culture over time, it can become no longer optimal to teach it at home even without the fixed costs component: the differences between treated and control area would disappear over time. Reasons could, for instance, be a larger share of children moving out of the region to study or compete on the national job market, i.e. increasing economic returns to national identity. The differences are still much more clearly visible when also looking at younger survey participants in Alsace (Figure A2.17), potentially reflecting the stronger status of regionalist parties or the more distinct Alsatian culture.

2.7 Concluding remarks

Our paper uses a natural experiment, which is rather unique in offering variation in exposure to suppressive policies within historically homogeneous regions, where both treated and control area are again today observable in a comparable institutional environment. We show evidence using both stated preferences from a large scale survey, as well as revealed preferences in overall three different referenda, regional newspaper subscriptions and regionalist party support. People who themselves or whose ancestors were more likely exposed to occupation and repressive policies express a stronger regional identity today and stronger preferences for regional decision-making. There are potential alternative explanations, but we argue and provide extensive evidence that the most plausible interpretation is a backlash against repressive policies trying to suppress regional identity.

This shows that the suppression of a group identity can achieve the opposite of what the policies aimed for: Strengthening the common identity of the suppressed group. It supports and complements Fouka (2016)'s study on the negative effect of intrusive homogenization policies on German immigrants in the United States, which lead to less intergroup marriages and a lower likelihood to volunteer for the US Army. Similarly, we provide the first causal evidence at the regional level that exposure to state suppressions of a regional group leads to a stronger regional identity and a preference for more regional decision-making. Obviously, this

is only evidence for one case particularly suitable for a causal empirical analysis. Still, we hope the insights can help us to better understand a much larger number of cases, historically and today, where data limitations or a lack of variation does not allow causal inference.

What can we learn from these results for policies and future research? It is important to take into account whether identities are perceived as aligned or misaligned, and to what degree they constitute substitutes. In our case, people with a stronger regional identity do not necessarily state a weaker national identity. This can be easily modeled using our adapted conceptualization of common identity, which relies on the salience or weights put on attributes that an individual has in common with the rest of the group. This definition can also account for the fact that overall within group heterogeneity is found to be larger than between group differences (Desmet *et al.* 2017), but nonetheless we observe strong existing group identities. When people hold multiple identities, whether the state can impose a new identity depends on the degree to which it is perceived as oppositional to the existing identity (relating to, e.g., Benjamin *et al.* 2010; Carvalho and Koyama 2016). Our simple theoretical model highlights investments in teaching and maintaining regional identity as one mechanism of persistence. A more detailed investigation of those mechanisms is an important avenue for future research.

These results are also important for analyzing separatism and the number and size of nations. In the most prominent economic models (Alesina and Spolaore 1997), separatist tendencies are fueled by economic (e.g. regional resources Gehring and Schneider 2016) and by culture reasons relating to preference heterogeneity. We argue that common group identity is best understood as perceived preference homogeneity in such a setting, and is an important factor in explaining separatism. In line with this, survey participants with a stronger regional identity also want more regional independence and decision-making. Cases like Catalonia, where central government policies are perceived as discriminatory or repressive towards a particular region and fuel existing separatist tendencies suggest a similar mechanism.

Finally, it is important to stress that the strengthening of group identity is not necessarily the deterministic outcome or natural reaction to suppressive policies. Our model provides some guidance in that respect.

Whether parents or generally members of the suppressed groups are willing to invest in the skills to maintain their traditions depends on the relative utility they derive from their group identity and from an overarching common national identity. Policies can be so intrusive or the disadvantages of not teaching children the national identity instead can be so high that existing group identities disappear. To end on a more positive note, our results suggest that a joint identity embracing existing groups can be built up without necessarily replacing existing identities. This however, requires the central authority to accept sub-identities and an institutional setup which allows for enough regional autonomy.

References

Akerlof GA, Kranton RE (2000). "Economics and Identity." *The Quarterly Journal of Economics*, **115**(3), 715–753.

Alesina A, Reich B (2013). "Nation Building." *NBER Working Paper No. 18839*.

Alesina A, Spolaore E (1997). "On the Number and Size of Nations." *The Quarterly Journal of Economics*, **112**(4), 1027–1056.

Anderson M (1972). "Regional Identity and Political Change: The Case of Alsace from the Third to the Fifth Republic." *Political Studies*, **20**(1), 17–30.

Aspachs-Bracons O, Clots-Figueras I, Costa-Font J, Masella P (2008). "Compulsory Language Educational Policies and Identity Formation." *Journal of the European Economic Association*, **6**(2-3), 434–444.

Bandiera O, Mohnen M, Rasul I, Viarengo M (2017). "Nation-Building Through Compulsory Schooling During the Age of Mass Migration." *mimeo*.

Becker SO, Boeckh K, Hainz C, Woessmann L (2015). "The Empire is Dead, Long Live the Empire! Long-run Persistence of Trust and Corruption in the Bureaucracy." *The Economic Journal*.

Becker SO, Egger PH, Von Ehrlich M (2010). "Going NUTS: The Effect of EU Structural Funds on Regional Performance." *Journal of Public Economics*, **94**(9-10), 578–590.

Bénabou R, Tirole J (2011). "Identity, Morals, and Taboos: Beliefs as Assets." *The Quarterly Journal of Economics*, **126**(2), 805–855.

Benjamin DJ, Choi JJ, Strickland AJ (2010). "Social Identity and Preferences." *American Economic Review*, **100**(4), 1913–1928.

Besley T, Reynal-Querol M (2014). "The Legacy of Historical Conflict: Evidence from Africa." *American Political Science Review*, **108**(02), 319–336.

Bisin A, Patacchini E, Verdier T, Zenou Y (2011). "Formation and Persistence of Oppositional Identities." *European Economic Review*, **55**(8), 1046–1071.

Bisin A, Verdier T (2000). "A Model of Cultural Transmission, Voting and Political Ideology." *European Journal of Political Economy*, **16**(1), 5–29.

Bisin A, Verdier T (2010). "The Economics of Cultural Transmission and Socialization." *Handbook of Social Economics*, **1**, 339–416.

Boix C, Codenotti B, Resta G (2011). "War, Wealth and the Formation of States." In *Political Economy of Institutions, Democracy and Voting*, pp. 45–74. Springer.

Bolton P, Roland G (1997). "The Breakup of Nations: A Political Economy Analysis." *The Quarterly Journal of Economics*, **112**(4), 1057–90.

Bon F (1970). "Le Référendum du 27 avril 1969: Suicide Politique ou Necessité Stratégique?" *Revue Francaise de Science Politique*, **20**.

Boomgaarden HG, Freire A (2009). "Religion and Euroscepticism: Direct, Indirect or no Effects?" *West European Politics*, **32**(6), 1240–1265.

Bordalo P, Coffman K, Gennaioli N, Shleifer A (2016). "Stereotypes." *The Quarterly Journal of Economics*, **131**(4), 1753–1794.

Branscombe NR, Schmitt MT, Harvey RD (1999). "Perceiving Pervasive Discrimination among African Americans: Implications for Group Identification and Well-being." *Journal of Personality and Social Psychology*, **77**(1), 135.

Callender H (1927). "Alsace-Lorraine Since the War." *Foreign Affairs*, **5**(3), 427–437.

Carrol A (2010). "Socialism and National Identity in Alsace from Reichsland to République, 1890-1921." *European History Quarterly*, **40**(1), 57–78.

Carrol A, Zanoun L (2011). "The View from the Border: A Comparative Study of Autonomism in Alsace and the Moselle, 1918–29." *European Review of History*, **18**(4), 465–486.

Carvalho JP (2013). "Veiling." *The Quarterly Journal of Economics*, **128**(1), 337–370.

Carvalho JP, Koyama M (2016). "Resisting Education." *GMU Working Paper in Economics No. 13-18*.

CEMR (2004). "Hearing on the Draft Treaty Establishing a Constitution for Europe in the European Parliment's Committee on Constitutional Affairs." *Technical report*, European Associations representing regional and local authorities (AEBR, AER, CEMR, CPMR, EUROCITIES, CALRE and REGLEG).

Chacha M (2013). "Regional Attachment and Support for European Integration." *European Union Politics*, **14**(2), 206–227.

Chemin M, Wasmer E (2009). "Using Alsace-Moselle Local Laws to Build a Difference-in-Differences Estimation Strategy of the Employment Effects of the 35-hour Workweek Regulation in France." *Journal of Labor Economics*, **27**(4), 487–524.

Clots-Figueras I, Masella P (2013). "Education, Language and Identity." *The Economic Journal*, **123**(570), F332–F357.

Conversi D (2004). *Ethnonationalism in the Contemporary World: Walker Connor and the Study of Nationalism*, volume 21. Psychology Press.

Conversi D (2008). ""We Are All Equals!" Militarism, Homogenization and "Egalitarianism" in Nationalist State-building (1789-1945)." *Ethnic and Racial Studies*, **31**(7), 1286–1314.

De La Valette J (1925). "The Absorption of Alsace and Lorraine." *Journal of the British Institute of International Affairs*, **4**(1), 30–46.

Dell M (2010). "The Persistent Effects of Peru's Mining Mita." *Econometrica*, **78**(6), 1863–1903.

Dell M, Lane N, Querubin P (forthcoming). "The Historical State, Local Collective Action, and Economic Development in Vietnam." *Econometrica.*

Dell M, Querubin P (2017). "Nation Building Through Foreign Intervention: Evidence from Discontinuities in Military Strategies." *Quarterly Journal of Economics, 1, 64.*

Desmet K, Ortuño-Ortín I, Wacziarg R (2017). "Culture, Ethnicity and Diversity." *American Economic Review, 107(9), 2479-2513.*

Doepke M, Zilibotti F (2017). "Parenting With Style: Altruism and Paternalism in Intergenerational Preference Transmission." *Econometrica*, **85**(5), 1331–1371.

Downs WM (2002). "Regionalism in the European Union: Key Concepts and Project Overview." *Journal of European Integration*, **24**(3), 171–177.

Dunlop CT (2013). "Mapping a New Kind of European Boundary: The Language Border Between Modern France and Germany." *Imago Mundi*, **65**(2), 253–267.

Egger PH, Lassmann A (2015). "The Causal Impact of Common Native Language on International Trade: Evidence from a Spatial Regression Discontinuity Design." *The Economic Journal*, **125**(584), 699–745.

Ferwerda J, Miller NL (2014). "Political Devolution and Resistance to Foreign Rule: A Natural Experiment." *American Political Science Review*, **108**(03), 642–660.

Fitjar RD (2010). "Explaining Variation in Sub-state Regional Identities in Western Europe." *European Journal of Political Research*, **49**(4), 522–544.

Förster S (1990). "General-Feldmarschall Helmuth von Moltke und die kriegsgeschichtlichen Folgen des deutsch-französischen Krieges." *Pariser Historische Studien*, **29**, 86–91.

Fouka V (2016). "Backlash: The Unintended Effects of Language Prohibition in US Schools After World War I." *Stanford Center for International Development Working Paper No. 591.*

Fouka V (2017). "How do Immigrants Respond to Discrimination? The Case of Germans in the US During World War I." *Technical report*, Mimeo.

Franklin MN (2004). *Voter Turnout and the Dynamics of Electoral Competition in Established Democracies Since 1945.* Cambridge University Press.

Fryer Jr RG, Torelli P (2010). "An Empirical Analysis of Acting White." *Journal of Public Economics*, **94**(5-6), 380 – 396.

Gehring K, Schneider S (2016). "Regional Resources and Democratic Secessionism." *ETH and University of Zurich CIS Working Paper Series No. 90.*

Gellner E, Breuilly J (2008). *Nations and Nationalism.* Cornell University Press.

Gelman A, Imbens G (2017). "Why High-order Polynomials Should not be Used in Regression Discontinuity Designs." *Journal of Business & Economic Statistics, (forthcoming).*

Gennaioli N, Rainer I (2007). "The Modern impact of Precolonial Centralization in Africa." *Journal of Economic Growth*, **12**(3), 185–234.

Giuliano P, Nunn N (2016). "Understanding Cultural Persistence and Change." *NBER Working Paper No. 23617.*

Glenn HP (1974). "Local Law of Alsace-Lorraine, A Half Century of Survival." *Int'l & Comp. LQ*, **23**, 769–781.

Goodfellow S (1993). "From Germany to France? Interwar Alsatian National Identity." *French History*, **7**(4), 450–471.

Grosjean P (2014). "A History Of Violence: The Culture Of Honor And Homicide In The US South." *Journal of the European Economic Association*, **12**(5), 1285–1316.

Guiso L, Sapienza P, Zingales L (2016). "Long-term Persistence." *Journal of the European Economic Association*, **14**(6), 1401–1436.

Harp SL (1998). *Learning to be Loyal: Primary Schooling as Nation Building in Alsace and Lorraine, 1850-1940*. De Kalb: Northern Illinois University Press.

Harvey DA (1999). "Lost Children or Enemy Aliens? Classifying the Population of Alsace After the First World War." *Journal of Contemporary History*, **34**(4), 537–554.

Heffernan M (2001). "History, Geography and the French National Space: The Question of Alsace-Lorraine, 1914-18." *Space and Polity*, **5**(1), 27–48.

Hepburn E (2008). "The Rise and Fall of a 'Europe of the Regions'." *Regional & Federal Studies*, **18**(5), 537–555.

Hiery H (1870). "Wahlen und Wahlverhalten im Reichsland Elsaß-Lothringen." *Angelo Ara/Eberhard Kolb (Hg.): Grenzregionen im Zeitalter der Nationalismen: Elsaß-Lothringen/Trient–Triest*, **1914**, 71–89.

Hobsbawm E (1990). *Myths and Nationalism Since 1780: Programme, Myth, Reality*. Cambridge: Cambridge University Press.

Hobsbawm E (1994). "The nation as invented tradition." *Nationalism*, pp. 76–82.

Hooghe L, Marks G (1996). ""Europe with the Regions": Channels of Regional Representation in the European Union." *Publius: The Journal of Federalism*, **26**(1), 73–92.

Hooghe L, Marks G (2008). "European Union?" *West European Politics*, **31**(1-2), 108–129.

Höpel T (2012). "The French-German Borderlands: Borderlands and Nation-building in the 19th and 20th Centuries." *European History Online (EGO)*.

Hyslop BF (1968). *French Nationalism in 1789, According to the General Cahiers*. New York: Octagon Books, 1968 [c1934].

Imbens G, Kalyanaraman K (2011). "Optimal Bandwidth Choice for the Regression Discontinuity Estimator." *The Review of Economic Studies*, p. rdr043.

Jeffery C (2000). "Sub-National Mobilization and European Integration: Does it Make any Difference?" *JCMS: Journal of Common Market Studies*, **38**(1), 1–23.

Jeffery C (2015). *The Regional Dimension of the European Union: Towards a Third Level in Europe?*, chapter Bullmann, U.: The politics of the third level. Routledge, London:.

Jega A (2000). *Identity Transformation and Identity Politics Under Structural Adjustment in Nigeria*. Nordic Africa Institute.

Johnson ND (2015). "Taxes, National Identity, and Nation Building: Evidence from France, mimeo." *GMU Working Paper in Economics No. 15-33*.

Jolly SK (2007). "The Europhile Fringe? Regionalist Party Support for European Integration." *European Union Politics*, **8**(1), 109–130.

Kranton RE (2016). "Identity Economics 2016: Where Do Social Distinctions and Norms Come From?" *American Economic Review: Papers and Proceedings*, **106**(5), 405–09.

Lancelot MT, Lancelot A (1970). "Atlas des élections françaises de 1968 et 1969." *Revue française de science politique*, pp. 312–328.

Leed EJ (1981). *No Man's Land: Combat and Identity in World War 1*. Press Syndicate of the University of Cambridge.

Leleu C (1976). "The French Referendum of April 23, 1972." *European Journal of Political Research*, **4**(1), 25–46.

Lipgens W (1964). "Bismarck, die öffentliche Meinung und die Annexion von Elsaß und Lothringen 1870." *Historische Zeitschrift*, **199**(JG), 31–144.

Lott Jr JR (1999). "Public Schooling, Indoctrination, and Totalitarianism." *Journal of Political Economy*, **107**(S6), S127–S157.

Lowes S, Nunn N, Robinson JA, Weigel JL (2017). "The Evolution of Culture and Institutions: Evidence From the Kuba Kingdom." *Econometrica*, **85**(4), 1065–1091.

Mandrino C (2008). "The Lisbon Treaty and the New Powers of Regions." *European Journal of Law Reform*, **10**, 515.

Messerschmidt M (1975). *Militär und Politik in der Bismarckzeit und im Wilhelminischen Deutschland*, volume 43. Wiss. Buchges.

Michalopoulos S, Papaioannou E (2013). "Pre-colonial Ethnic Institutions and Contemporary African Development." *Econometrica*, **81**(1), 113–152.

Michalopoulos S, Papaioannou E (2014). "National Institutions and Subnational Development in Africa." *The Quarterly Journal of Economics*, **129**(1), 151–213.

Michalopoulos S, Papaioannou E (2016). "The Long-run Effects of the Scramble for Africa." *American Economic Review*, **106**(7), 1802–1848.

Minkenberg M (2009). "Religion and Euroscepticism: Cleavages, Religious Parties and Churches in EU member States." *West European Politics*, **32**(6), 1190–1211.

Nunn N, Puga D (2012). "Ruggedness: The Blessing of Bad Geography in Africa." *Review of Economics and Statistics*, **94**(1), 20–36.

Nunn N, Wantchekon L (2011). "The Slave Trade and the Origins of Mistrust in Africa." *The American Economic Review*, **101**, 3221–3252.

Ochsner C, Roesel F (2017). "Activating History – The Turkish Sieges of Vienna, Anti-Turkish Campaigns, and the Rise of Right-wing Populism." *mimeo*.

Ortega J, Tangerås TP (2008). "Unilingual versus Bilingual Education: a Political Economy Analysis." *Journal of the European Economic Association*, **6**(5), 1078–1108.

Rohner D, Thoenig M, Zilibotti F (2013). "Seeds of Distrust: Conflict in Uganda." *Journal of Economic Growth*, **18**(3), 217–252.

Rothenberger KH (1975). *Die Elsass-lothringische Heimat- und Autonomiebewegung Zwischen den Beiden Weltkriegen*, volume 42. Herbert Lang.

Scott A, Peterson J, Millar D (1994). "Subsidiarity: A Europe of the Regions v. the British Constitution?" *Journal of Common Market Studies*, **32**(1), 47–67.

Shayo M (2009). "A Model of Social Identity With an Application to Political Economy: Nation, Class, and Redistribution." *American Political Science Review*, **103**(02), 147–174.

Silverman DP (1966). "Political Catholicism and Social Democracy in Alsace-Lorraine, 1871-1914." *The Catholic Historical Review*, **52**(1), 39–65.

Tabellini G, *et al.* (2008). "The Scope of Cooperation: Values and Incentives." *The Quarterly Journal of Economics*, **123**(3), 905–950.

Tajfel H, Billig MG, Bundy RP, Flament C (1971). "Social Categorization and Intergroup Behaviour." *European Journal of Social Psychology*, **1**(2), 149–178.

Tatham M (2008). "Going Solo: Direct Regional Representation in the European Union." *Regional & Federal Studies*, **18**(5), 493–515.

Tatham M (2010). ""With or without you"? Revisiting territorial state-bypassing in EU interest representation." *Journal of European Public Policy*, **17**(1), 76–99.

Tilly C (1975). "Reflections on the History of European State-making." *The Formation of National States in Western Europe*, **38**.

Turner JC (1982). "Towards a Cognitive Redefinition of the Social Group." *Social Identity and Intergroup Relations*, pp. 15–40.

Vajta K (2013). "Linguistic, Religious and National Loyalties in Alsace." *International Journal of the Sociology of Language*, **2013**(220), 109–125.

Vlachos S (2016). "The Legacy of War Exposure on Political Radicalization." *mimeo*.

Voigtländer N, Voth HJ (2012). "Persecution Perpetuated: The Medieval Origins of Anti-Semitic Violence in Nazi Germany." *The Quarterly Journal of Economics*, **127**(3), 1339–1392.

Wawro G (2005). *The Franco-Prussian War: The German Conquest of France in 1870-1871*. Cambridge University Press.

Zanoun L (2009). *Interwar Politics in a French Border Region: the Moselle in the Period of the Popular Front, 1934-1938*. Ph.D. thesis, The London School of Economics and Political Science (LSE).

Ziekursch J (1930). *Politische Geschichte des Neuen Deutschen Kaiserreiches: Bd. Das Zeitalter Wilhelms II., 1890-1918*, volume 3. Frankfurter Societäts-Druckerei.

2.8 Appendix

Twitter

There are two ways in which Twitter users indicate their geographic location:

1. **User-provided georeferencing:** User can tag a location in their tweet directly. This type of tweet is unreliable for research, because the location tagged doesn't necessarily coincide with the location of the person tweeting.

2. **GPS-provided georeferencing:** The GPS function in mobile phones allows Twitter messages sent via the phone to contain the coordinates of the user's location. Due to the optionality of the GPS function, only 2- 3% of all Twitter users can be georeferenced this way. Due to the abundance of tweets, this method still generates a large number of possible observations.

Availability of data

It is possible to collect a random selection of tweets at any given point in time via Twitter's API (Application Programming Interface).

Twitter data Lorraine

The relevant tweets were identified and analyzed in a three-step process.

1. Over the period of the Football World Cup 2014 a random sample of tweets was obtained via Twitter's API. This method resulted in 18,278 observations.

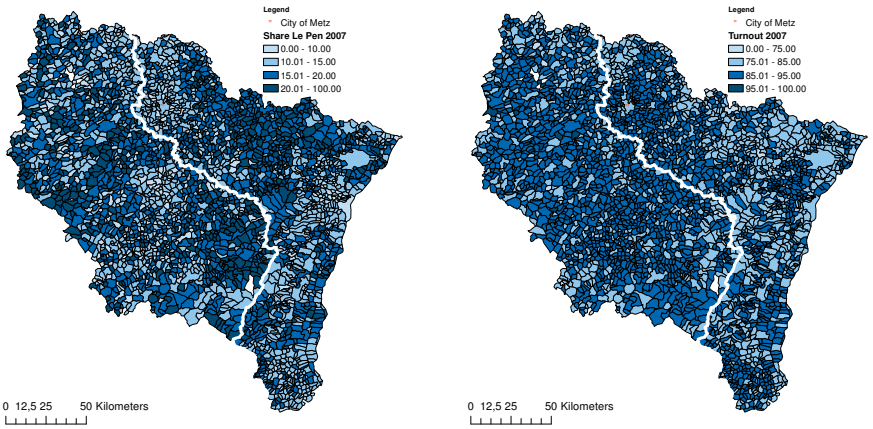
2. Because Twitter only allows for data selection in geographic areas of rectangular shape, ArcGIS was used to identify the tweets specifically located in Lorraine.

3. The content of the selected tweets were then analyzed based on a selection of keywords about the German and French national football teams. The lists of keywords are displayed in Table A2.1

Table A2.1: List of Twitter Keywords

List France		List Germany	
les Bleus	#BLEUS	mannschaft	allemagne
#SPAFRA	#FRA	DFB_Team	#GER
#ESPFRA	#UKRFRA	#GERPOL	#FRAGER
#SWEFRA	#SUIFRA	#FRADEU	#FRAALL
#SWIFRA	#ECUFRA	#TeamGermany	#DEU
Landreau	Lloris	#ALL	#HOLDEU
Ruffier	Debuchy	#NEDGER	#NEDALL
Digne	Evra	#DENDEU	#DANDEU
Koscielny	Mangala	#DANGER	#DENGER
Sagna	Sakho	#DANALL	#DENALL
Varane	Cabaye	#USAGER	#USAALL
Matuidi	Mavuba	#USADEU	#BRADEU
Pogba	Schneiderlin	#BRAALL	#BRAGER
Sissoko	Valbuena	Neuer	Wiese
Benzema	Cabella	Zieler	Badstuber
Giroud	Griezmann	Boateng	Höwedes
Rémy	Deschamps	Hummels	Lahm
Carrasso	Mandanda	Mertesacker	Schmelzer
Clichy	Mexès	Bender	Götze
Rami	Réveillère	Gündogan	Khedira
Arfa	Diarra	Kroos	Özil
M'Vila	Malouda	Reus	Schweinsteiger
Marvin Martin	Nasri	Gomez	Klose
Ribéry	Valbuena	Müller	Podolski
Ménez	Blanc	Schürrle	Löw
Boghossian	Gasset	Flick	Köpke
Raviot		Weidenfeller	Durm
		Großkreutz	Mustafi
		Draxler	Ginter
		Kramer	

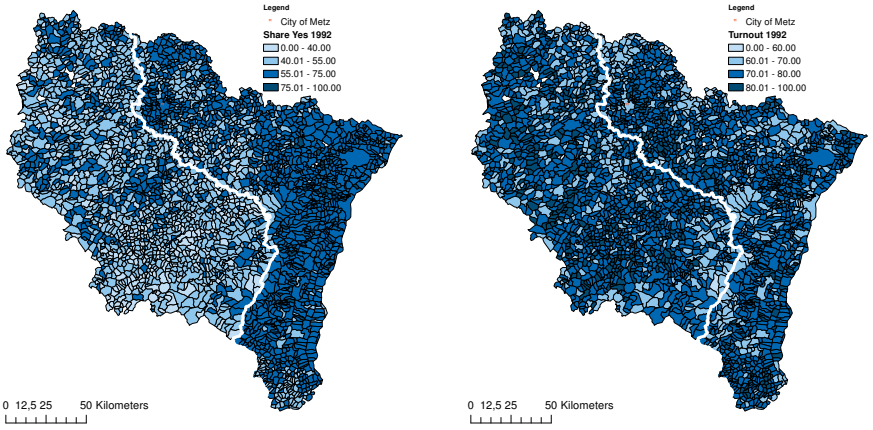
Figure A2.1: Maps of outcomes, 2007 presidential election



(a) Share Le Pen 2007 (b) Turnout 2007

Notes: Municipal-level averages for share of votes for Le Pen and turnout in 2007. The white solid line indicates the former border dividing the region. Darker shades reflect higher values in the outcomes.

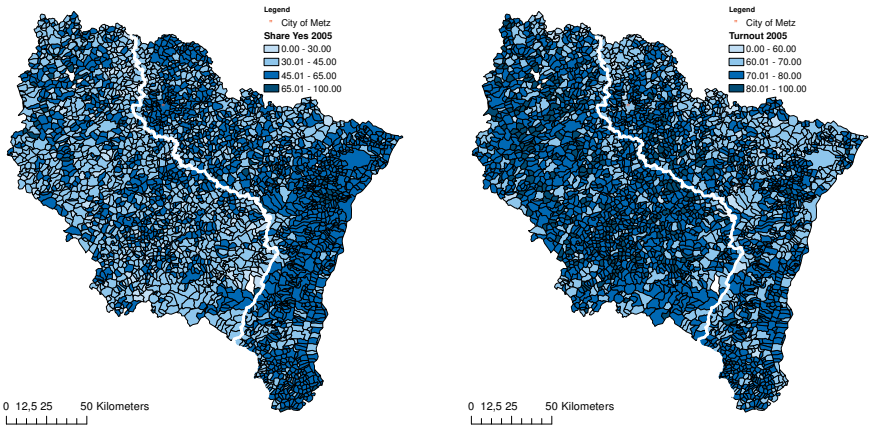
Figure A2.2: Maps of outcomes, 1992 referendum



(a) Share Yes 1992 (b) Turnout 1992

Notes: Municipal-level averages for share of yes votes and turnout in 1992 and 2005. The white solid line indicates the former border dividing the region. Darker shades reflect higher values in the outcomes.

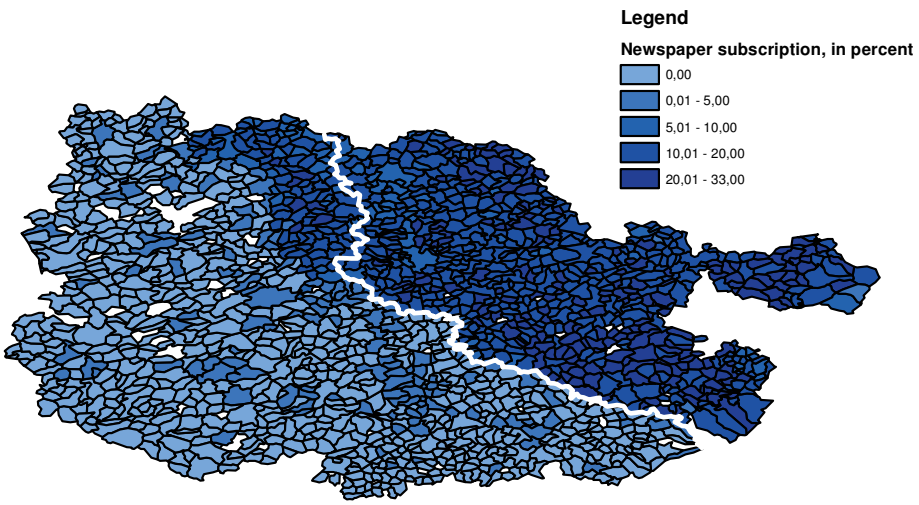
Figure A2.3: Maps of outcomes, 2005 referendum



(a) Share Yes 2005 (b) Turnout 2005

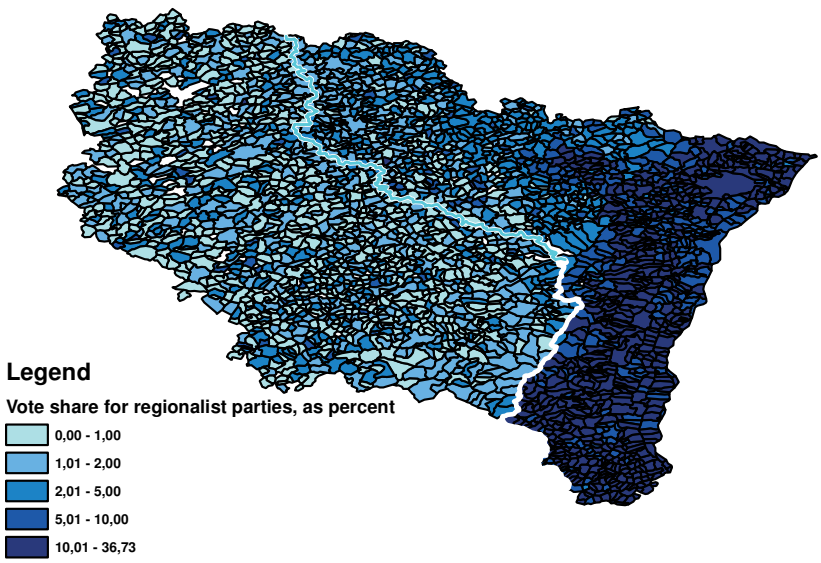
Notes: Municipal-level averages for share of yes votes and turnout in 1992 and 2005. The white solid line the former border dividing the region. Darker colors reflect higher values in the outcomes.

Figure A2.4: Newspaper subscription shares



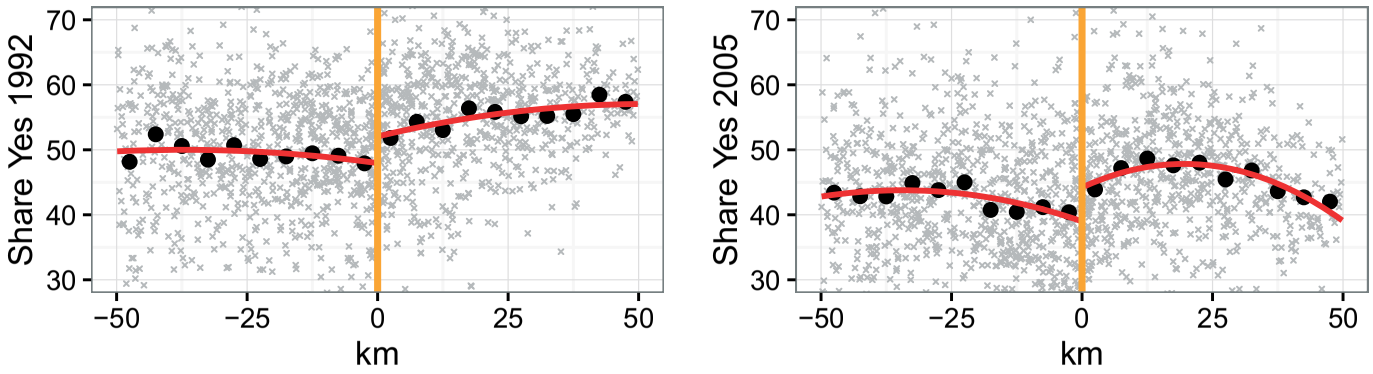
Notes: Municipal-level averages share of newspapers subscribers to *Le Republicain Lorraine*. The white solid line the former border dividing the region. Darker colors reflect higher shares, and indicate a higher regional identity.

Figure A2.5: Vote shares for regionalist parties



Notes: Municipal-level vote shares for the list "Non à l'ACAL, Oui à nos régions!" in the 2015 regional elections. The list comprised of the parties "Unser Land", "Parti des Mosellans", and "Parti Lorrain". The white solid line represents the former border dividing the region. Darker colors reflect higher shares, and indicate a higher regional identity.

Figure A2.6: RD plots, within Lorraine



(a) Share Yes 1992

(b) Share Yes 2005

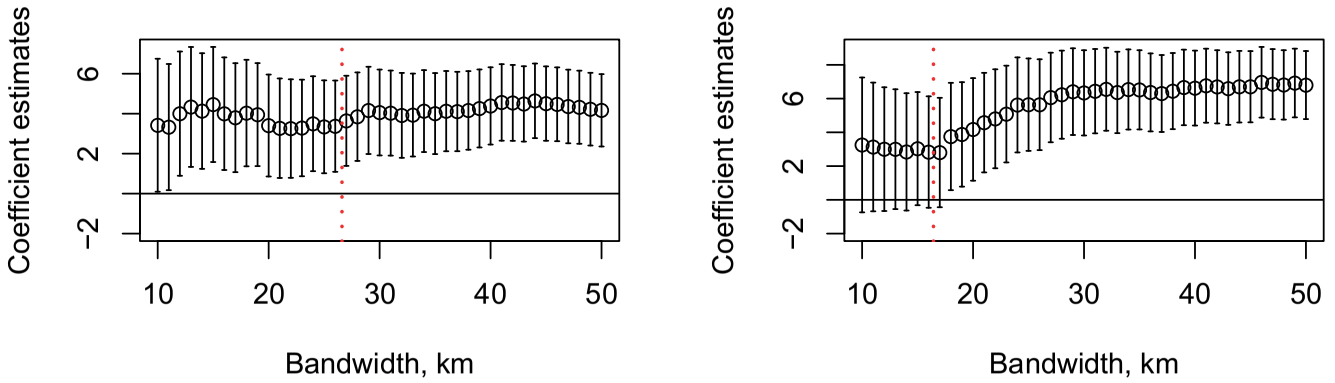
Notes: RD plots, within Lorraine. Fitted line based on 2nd degree polynomial. Black dots represent means using 5 kilometer bins. Our main specifications are based on local linear models, the fitted lines are for illustrative purposes here.

Figure A2.7: Estimation plots, whole border

(a) Referendum 1992 (b) Referendum 2005

Notes: Estimates of treatment effect, bandwidthsvarying between 10 to 50 kilometres, for the whole border. Local linear regressions, i.e. using a 1st degree polynomial. Dashed vertical line at one half of the IK bandwidth. Solid vertical lines represent 90% confidence intervals (based on Conley standard errors).

Figure A2.8: Estimation plots, no controls

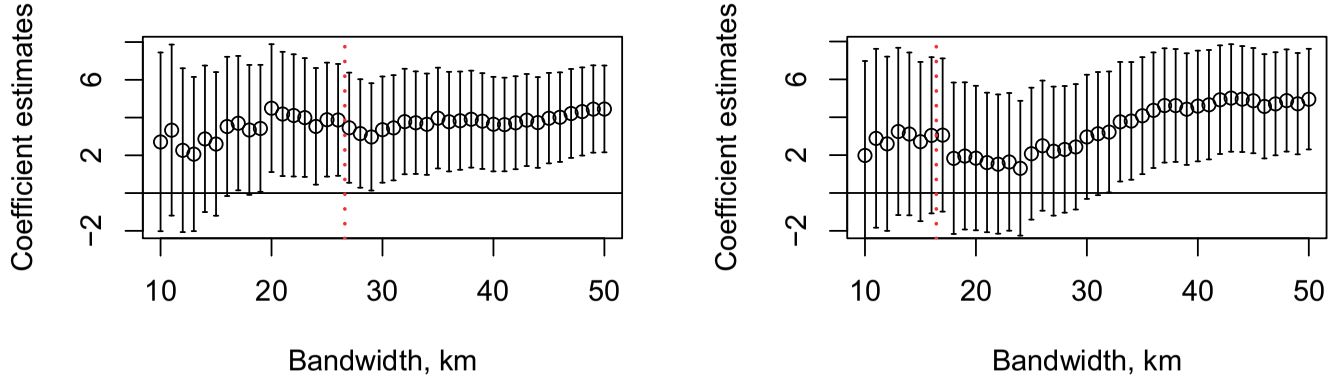


(a) Referendum 1992

(b) Referendum 2005

Notes: Estimates of treatment effect, bandwidth of 10 to 50 kilometres, within Lorraine. Local linear regressions, i.e. using a 1st degree polynomial. This specification is including no controls to show that these are not driving our main result. Dashed vertical line at one half of the IK bandwidth. Solid vertical lines represent 90% confidence intervals (based on Conley standard errors).

Figure A2.9: Estimation plots, 2nd degree polynomial

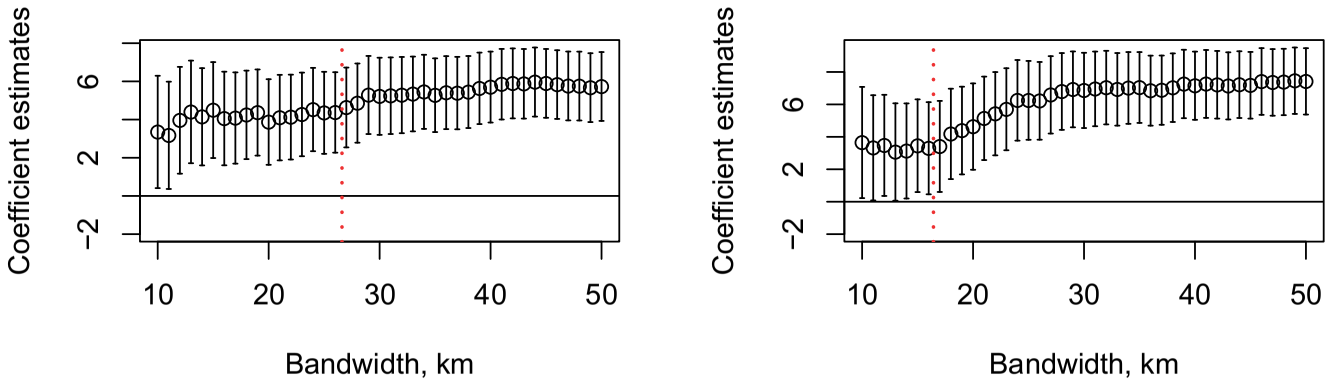


(a) Referendum 1992

(b) Referendum 2005

Notes: Estimates of treatment effect, bandwidth of 10 to 50 kilometres, within Lorraine. These regressions are based on a 2nd degree polynomial. Dashed vertical line at one half of the IK bandwidth. Solid vertical lines represent 90% confidence intervals (based on Conley standard errors). Our preferred specification chooses a very small bandwidth, and the local linear regression design. These graphs show that for larger bandwidths we get comparable results using higher order polynomials. The coefficient estimates are similar and results become significant with larger bandwidths at conventional levels as we would expect.

Figure A2.10: Estimation plots, controlling for longitude and latitude

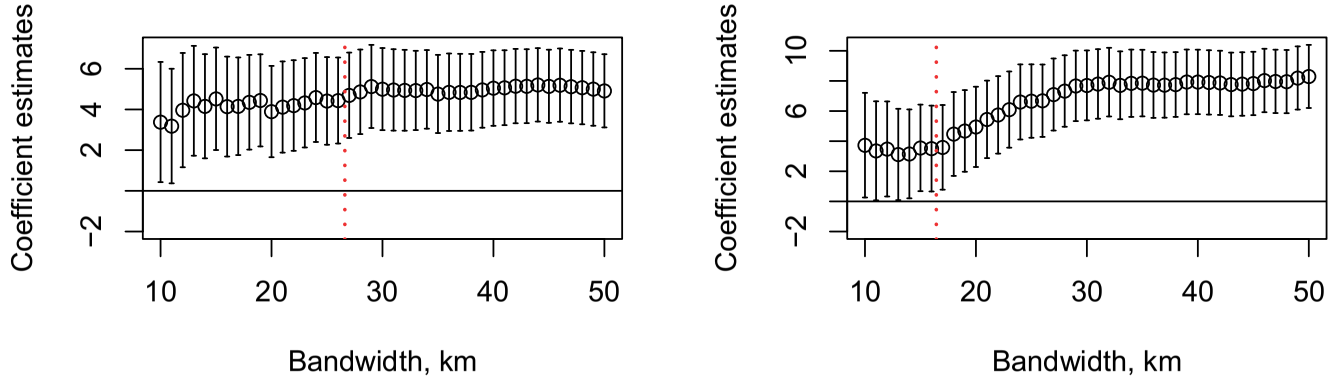


(a) Referendum 1992

(b) Referendum 2005

Notes: Estimates of treatment effect, bandwidth of 10 to 50 kilometres, within Lorraine. These specifications are in addition controlling for longitude and latitude. Dashed vertical line at one half of the IK bandwidth. Solid vertical lines represent 90% confidence intervals (based on Conley standard errors). As the graphs clearly show that the results are not substantially altered by the inclusion.

Figure A2.11: Estimation plots, controlling for longitude, latitude and their interaction

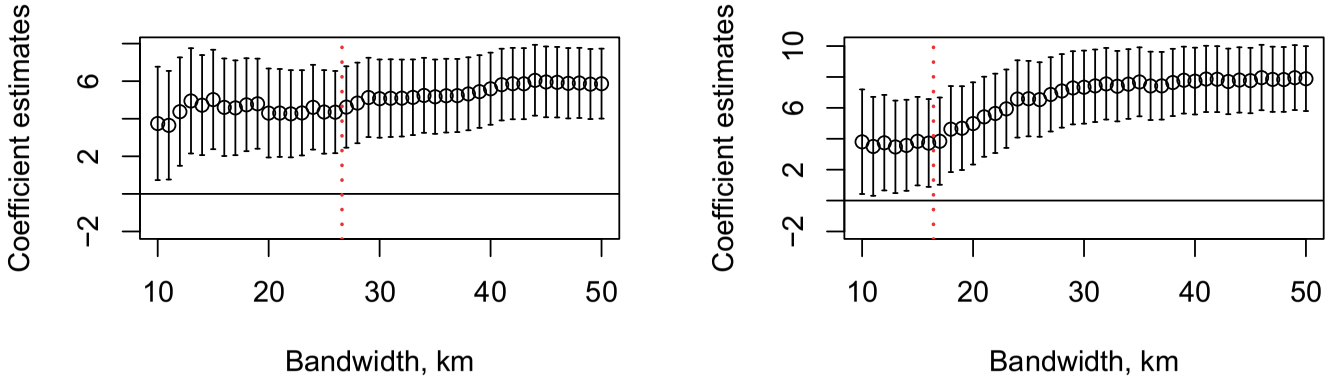


(a) Referendum 1992

(b) Referendum 2005

Notes: Estimates of treatment effect, bandwidth of 10 to 50 kilometres, within Lorraine, controlling for longitude, latitude and their interaction. Dashed vertical line at one half of the IK bandwidth. Solid vertical lines represent 90% confidence intervals (based on Conley standard errors). It is debated whether these controls should be included in these kind of regressions, but as the graphs clearly show our results are not depending on it.

Figure A2.12: Estimation plots, controlling for distance to language border

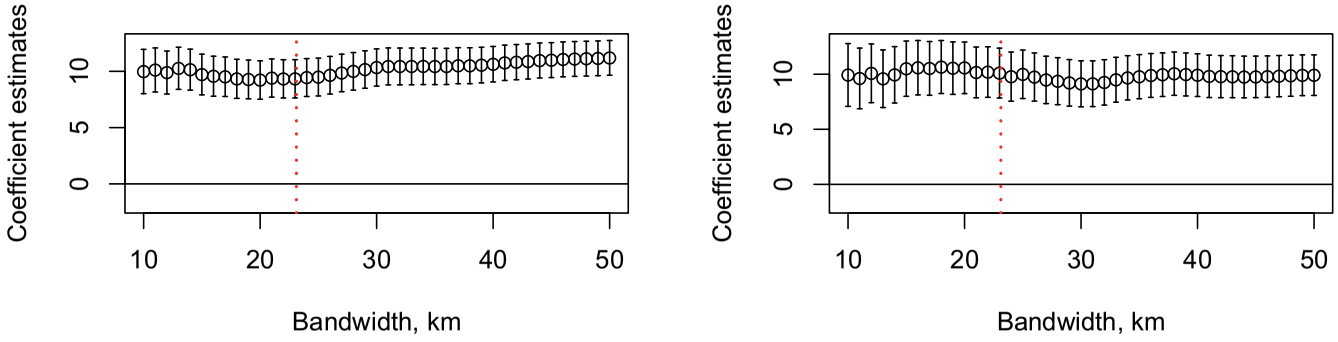


(a) Referendum 1992

(b) Referendum 2005

Notes: Estimates of treatment effect, bandwidth of 10 to 50 kilometres, within Lorraine, controlling for distance to the former/historical language border. Dashed vertical line at one half of the IK bandwidth. Solid vertical lines represent 90% confidence intervals (based on Conley standard errors). In addition to omitting municipalities that were formerly German-speaking, this is an additional test that our results are not driven by linguistic differences. It is also an indication that the border within Lorraine was truly exogenous to our outcome (and not endogenous to pre-existing linguistic differences) as the coefficients are barely affected by including the distance.

Figure A2.13: Estimation plots, newspaper subscription shares, 1st and 2nd degree polynomial

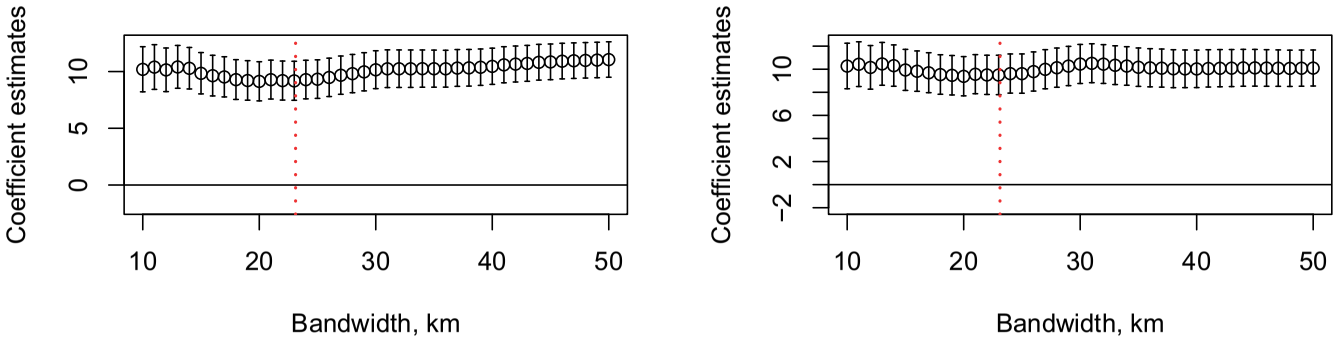


(a) 1st degree polynomial

(b) 2nd degree polynomial

Notes: Estimates of treatment effect, bandwidth of 10 to 50 kilometres, within Lorraine. These regressions are based on a 1st degree polynomial (a) and 2nd degree polynomial (b). Dashed vertical line at one half of the IK bandwidth. Solid vertical lines represent 90% confidence intervals (based on Conley standard errors). Our preferred specification chooses a very small bandwidth, and the local linear regression design. These graphs show that for larger bandwidths we get comparable results using higher order polynomials. The coefficient estimates are similar and results become significant with larger bandwidths at conventional levels as we would expect.

Figure A2.14: Estimation plots, newspaper subscription shares, controlling for longitude and latitude

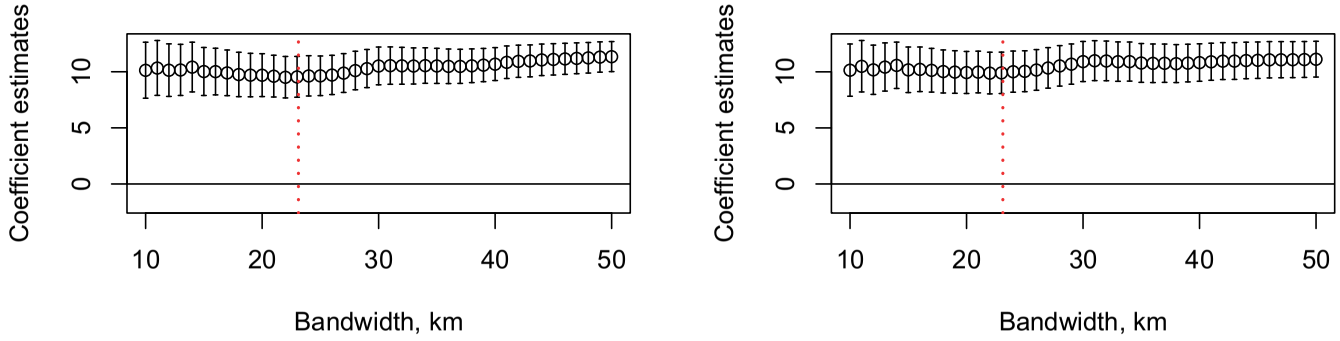


(a) Controlling for longitude and latitude

(b) Controlling for longitude and latitude, and interaction

Notes: Estimates of treatment effect, bandwidth of 10 to 50 kilometres, within Lorraine, controlling for longitude, latitude and their interaction. Dashed vertical line at one half of the IK bandwidth. Solid vertical lines represent 90% confidence intervals (based on Conley standard errors). It is debated whether these controls should be included in these kind of regressions, but as the graphs clearly show our results are not depending on it.

Figure A2.15: Estimation plots, newspaper subscription shares, controlling for distance to language border

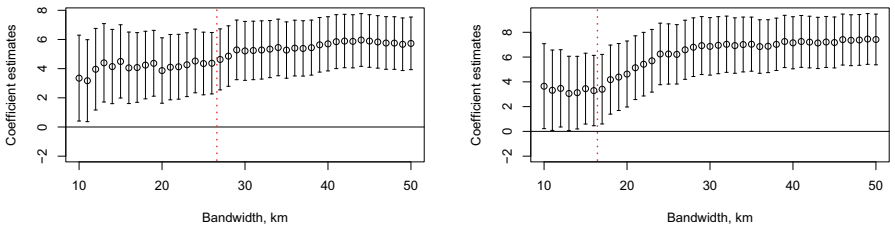


(a) No controls

(b) Controlling for distance to language border

Notes: Estimates of treatment effect, bandwidth of 10 to 50 kilometres, within Lorraine, controlling for distance to the former/historical language border. Dashed vertical line at one half of the IK bandwidth. Solid vertical lines represent 90% confidence intervals (based on Conley standard errors). In addition to omitting municipalities that were formerly German-speaking, this is an additional test that our results are not driven by linguistic differences. It is also an indication that the border within Lorraine was truly exogenous to our outcome (and not endogenous to pre-existing linguistic differences) as the coefficients are barely affected by including the distance.

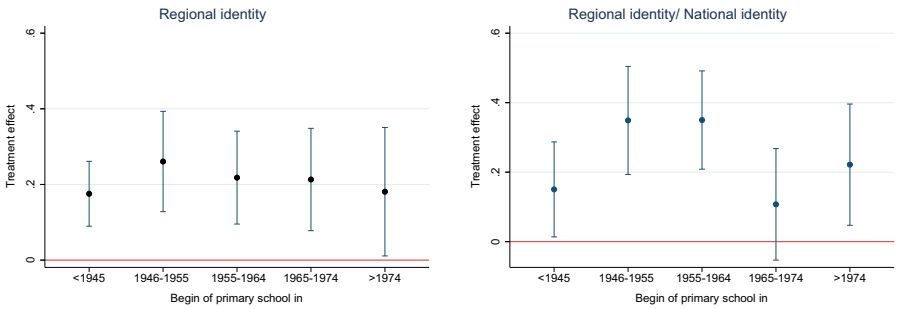
Figure A2.16: Estimation plots (within Lorraine)



(a) Referendum 1992 (b) Referendum 2005

Notes: Estimates of treatment effect, bandwidths ranging between 10 and 50 kilometers, within Lorraine. 1st degree polynomial. Dashed vertical line at one half of the IK bandwidth. Solid vertical lines represent 90 percent confidence intervals (based on Conley standard errors).

Figure A2.17: Identity differences by age cohort, Alsace and Lorraine



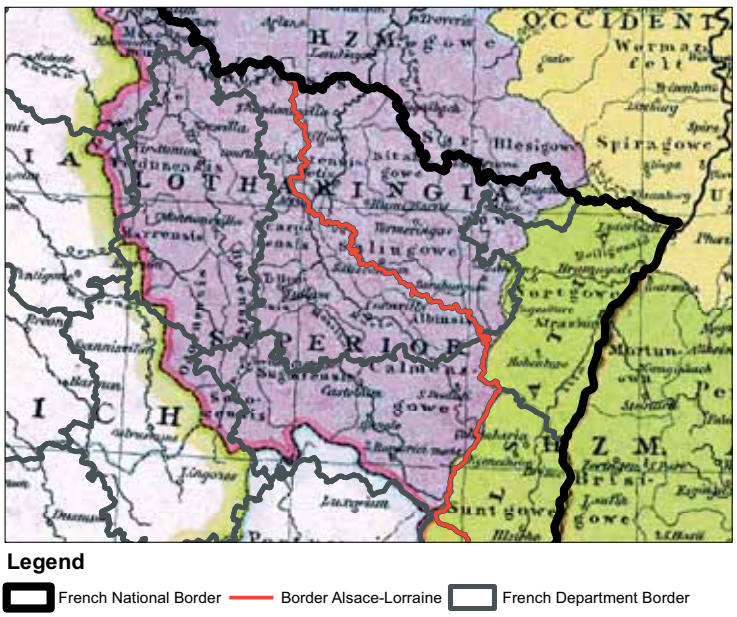
(a) (b)

Notes: Using survey results for all of Alsace and Lorraine. The treatment effects refer to the parameter Δ_g from the regression model $y_{ig} = \pi + \sum_g \Delta_g \times Age_{ig} \times Treatment_{ig} + \Gamma'_{ig}\lambda + \eta_{ig}$, where $Treatment_{ig} = \mathbf{1}$[individual in treated region] and Γ_{ig} comprises controls for (reported) age, employment status and sex. g indicates to which age cohort an individual belongs. The age cohorts are selected so that the second group started schooling after the end of the treatment and the end of WWII. A positive Δ_g indicates that people in the treated region exhibit a higher value compared to the control area. Sources are the Observatoire Interrégional du Politique (OIP) 1999 and 2001, using respondents in Alsace and Lorraine.

Figure A2.18: Map of Lotharingia around 1000 A.D.

Notes: Map depicting the former Duchy of Lotharingia, around 1000: Pink= Lower Lorraine, Purple = Upper Lorraine, Orange = Frisia (effectively detached from Lotharingia). This map is used in the *Allgemeiner historischer Handatlas* by Gustav Droysen in 1886. Alsace was a part of the duchy of Swabia at that time.

Figure A2.19: Map of Lotharingia around 1000 A.D., with 1870 border

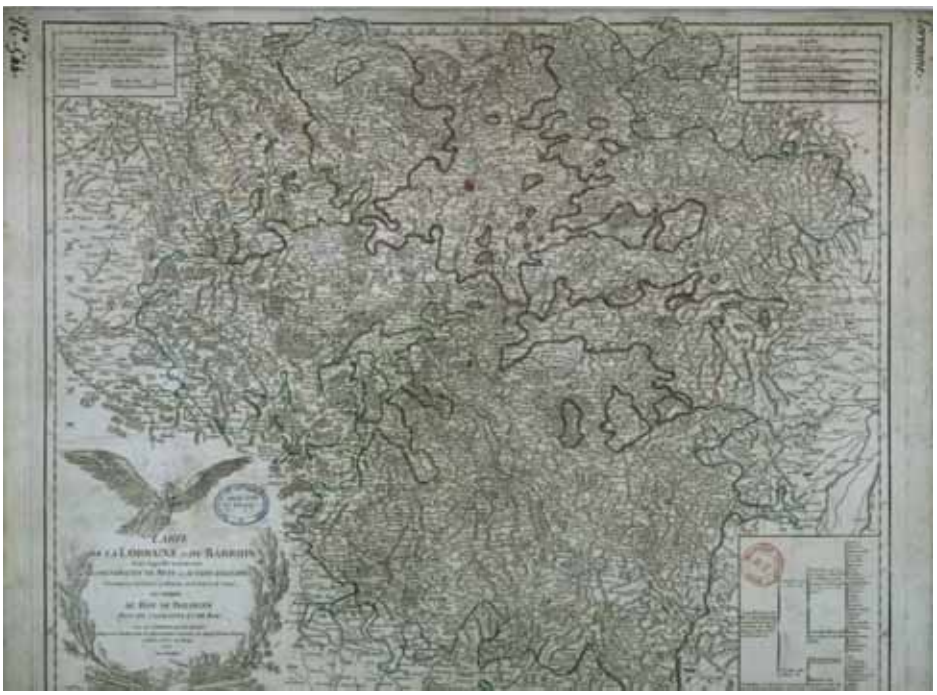


Notes: Map depicting the former Duchy of Lotharingia, around 1000: Pink= Lower Lorraine, Purple = Upper Lorraine, Orange = Frisia (effectively detached from Lotharingia). This map is used in the *Allgemeiner historischer Handatlas* by Gustav Droysen in 1886. Alsace was a part of the duchy of Swabia at that time.

Figure A2.20: Map of Lorraine in the 1378 century

Notes: Map of Lorraine in the 14th century. This is a modified extract from the map *Deutschland beim Tode Karl IV.* by Karl Wolf in Meyers Lexikon 6. Auflage. The red line shows the border from the Franco-Prussian war, clearly not following the pre-existing borders and cutting through historical entities. Created from authors' own version of the map.

Figure A2.21: Map of Lorraine in the 17th century



Notes: Map of Lorraine in 1790. The map is an extract from *Carte de la Lorraine, du Barrois et des Trois Evêchés de Metz, Toul et Verdun. Divisée par Baillages, Dans laquelle se trouve Comprise la Généralité de Metz* created by Robert de Vaugondy, Didier (1723-1786) Dezauche, Jean-Claude (1745-1824) in 1756. The original is in the *Bibliothèque nationale de France, département Cartes et plans, GE C-9972.* A scanned online version is accessible at http://gallica.bnf.fr/ark:/12148/btv1b7710337x. It shows the duchy of Lorraine as well as the area of the partly independent enclaves Metz, Verdun and Toul. Although it is admittedly hard to distinguish which area belongs to which, it is apparent that the borders do not coincide with the border drawn after the Franco-Prussian war (another version is available at http://gallica.bnf.fr/ark:/12148/btv1b53099747j/f1.item.zoom). It is also apparent that partly independent enclaves existed on both sides of the border which we use to distinguish in a treatment and control area.

Figure A2.22: Subscription page Le Republicain Lorraine (1)

Notes: This is from the subscription page of the newspaper. We use the number of all subscriptions, but our source suggested that almost all subscriptions were still print subscriptions in 2014.

Figure A2.23: Subscription page Le Republicain Lorraine (2)

Notes: This is from the subscription page of the newspaper. We use the number of all subscriptions, but our source suggested that almost all subscriptions were still print subscriptions in 2014.

Figure A2.24: Homepage (main) Le Republicain Lorraine

Notes: This screenshot shows a random example of the main news contained in the newspaper (Date: 2017.19.10).

Figure A2.25: Homepage (regional) Le Republicain Lorraine

Notes: This screenshot shows an example of the regional news contained in the newspaper (Date: 2017.19.10).

Table A2.2: Variable description and sources

Variable	Definition	Source
Dependent Variables		
Share Yes 1992	Share of Yes votes in the 1992 referendum (Maastricht Treaty)	Centre de données socio-politiques (CDSP)
Share Yes 2005	Share of Yes votes in the 2005 referendum (European Constitution Treaty)	Centre de données socio-politiques (CDSP)
Share of Le Pen votes, 1992	Share of votes for Jean-Marine Le Pen in the 2007 presidential election (first round)	Centre de données socio-politiques (CDSP)
Turnout, 1992	Voter turnout in the 1992 referendum (Maastricht Treaty)	Centre de données socio-politiques (CDSP)
Turnout, 2005	Voter turnout in the 2005 referendum (European Constitution Treaty)	Centre de données socio-politiques (CDSP)
Turnout, 2007	Voter turnout in the 2007 presidential election (first round)	Centre de données socio-politiques (CDSP)
Subscription regional newspaper	Subscriptions to "Le Republicain Lorraine"/No.households in 2014	*Le Republicain Lorraine*
Share Tweets Germany	Number of tweets about Germany during the 2014 World Cup	*Twitter*
Share Tweets France	Number of tweets about France during the 2014 World Cup	*Twitter*
Pre-treatment variables		
Ruggedness	Index of variance of elevation in each commune	Global elevation data set
Elevation	Raw elevation data	NASA SRTM data set
Potato	Soil suitability for production of potatoes (medium input intensity and irrigation)	IIASA/FAO, 2012
Wheat	Soil suitability for production of wheat (medium input intensity and irrigation)	IIASA/FAO, 2012
Covariates		
Median income	Median income in 2008	INSEE
Mean age	Mean age in 2006	INSEE
Education	Share of people with a high school degree	INSEE
Occupation	Share of blue-collar workers	INSEE
Workers, 2006	Share of workers in 2006	INSEE
Farmers, 2006	Share of farmers in 2006	INSEE
Artisans, 2006	Share of artisans in 2006	INSEE
Executives, 2006	Share of executives in 2006	INSEE
Intermediate prof., 2006	Intermediate professionals in 2006	INSEE
Companies, 2011	Number of companies per capita in 2011	INSEE
Commercial est., 2011	Number of commercial establishments per capita in 2011	INSEE
Industrial est., 2011	Number of industrial establishments per capita in 2011	INSEE
Building est., 2011	Number of building establishments per capita in 2011	INSEE
Public est., 2011	Number of public establishments per capita in 2011	INSEE
Theatre rooms, 2013	Number of theatre rooms per capita in 2013	INSEE
Athletic centers, 2013	Number of athletic centers per capita in 2013	INSEE
Multisport fac., 2013	Number of multisport facilities per capita in 2013	INSEE
Swimming fac., 2013	Number of swimming facilities per capita in 2013	INSEE
Psychiatric est., 2013	Number of psychiatric establishments per capita in 2013	INSEE
Service houses, 2013	Number of service houses per capita in 2013	INSEE
Health care, 2013 (short)	–	INSEE
Health care, 2013 (medium)	–	INSEE
Health care, 2013 (long)	–	INSEE
Post offices, 2013	Number of post offices per capita in 2013	INSEE
Elementary schools, 2013	Number of elementary schools per capita in 2013	INSEE
High schools, 2013	Number of high schools per capita in 2013	INSEE
Vocational training, 2013	Number of secondary schools with vocational training per capita in 2013	INSEE
Tech. vocational training, 2013	Number of secondary schools with technical vocational training per capita in 2013	INSEE

Notes: Variable description and source for all variables used in the paper.

Table A2.3: Survey questions (I)

Variable	Question	Categories/Scale	Source
Regional identity	"Could you tell me whether you feel very attached, rather attached, not very attached or not attached at all to [name of region]?"	4 = very attached; 3 = rather attached; 2 = not very attached; 1 = not attached at all	OIP 99/2001 Q2a3
National identity	"Could you tell me whether you feel very attached, rather attached, not very attached or not attached at all to France?"	4 = very attached; 3 = rather attached; 2 = not very attached; 1 = not attached at all	OIP 99/2001 Q2a2
European identity	"Could you tell me whether you feel very attached, rather attached, not very attached or not attached at all to Europe?"	4 = very attached; 3 = rather attached; 2 = not very attached; 1 = not attached at all	OIP 99/2001 Q2a1
Regional relative to National identity (standardized)		Relation of two identities, standardized with standard deviation 1 and mean 0	OIP 99/2001
European relative to national identity (standardized)		Relation of two identities, standardized with standard deviation 1 and mean 0	OIP 99/2001
Democrazy works well within France	"Personally, do you reckon the democracy in France to function very well, fairly well, not very well or not well at all?"	4 = very well; 3 = fairly well; 2 = not very well; 1 = not well at all	OIP 99/2001 Q4
I feel well informed about regional policies	"You personally, do you think that you are well or badly informed about the actions of the regional council of [name of region]?"	4 = very well; 3 = rather well; 2 = rather badly; 1 = very badly	OIP 99/2001 Q14
Democary works well within the region	"And in [name of region], do you reckon the democracy to function very well, fairly well, not very well or not well at all?"	4 = very well; 3 = fairly well; 2 = not very well; 1 = not well at all	OIP 99/2001 Q5
I am concerned regional administration would increase interregional inequality	"If the region takes action in all those domaines instead of the state, are you concerned about the development of interregional inequality?"	4 = Yes, very much so; 3 = Yes, somewhat; 2 = No, not very much; 1 = No, not at all	OIP 2003 Q11a2

Notes: Description of survey questions from the Observatoire Interrégional du Politique (OIP) 1999 and 2001. The values of the categories are reversed compared to the original question categories. Questions were originally in French and have been translated.

Table A2.4: Survey questions (II)

Variable	Question	Categories/Scale	Source
Power_Transfer_Region	**"Are you in favor of the transfer of all the power and means of the state to the regions?" (Average across 10 policy dimensions)**	Value between 1 and 4. 1 = "Strongly in favor" and 4 = "Strongly against"	
1	"Are you in favor of the transfer of all the power and means of the state to the regions regarding the choice in setting up high schools?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2001 Q36a1
2	"Are you in favor of the transfer of all the power and means of the state to the regions regarding the management of high school teachers?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2001 Q36a2
3	"Are you in favor of the transfer of all the power and means of the state to the regions regarding the management of administrative personnel in high schools?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2001 Q36a3
4	"Are you in favor of the transfer of all the power and means of the state to the regions regarding the definition of school programmes and certificates?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2001 Q36a4
5	"Are you in favor of the transfer of all the power and means of the state to the regions regarding the choice in setting up university centers in the region?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2001 Q36a5
6	"Are you in favor of the transfer of all the power and means of the state to the regions regarding the choice of high school creation?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2001 Q36a6
7	"Are you in favor of the transfer of all the power and means of the state to the regions regarding evironmental policies like water policy?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2001 Q36a7
8	"Are you in favor of the transfer of all the power and means of the state to the regions regarding cultural policies like heritage conservation?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2001 Q36a8
9	"Are you in favor of the transfer of all the power and means of the state to the regions regarding sport policies?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2001 Q36a9
10	"Are you in favor of the transfer of all the power and means of the state to the regions regarding the support of social housing?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2001 Q36a10

Notes: Description of survey questions from the Observatoire Interrégional du Politique (OIP) 2001. The values of the categories are reversed compared to the original question categories. Questions were originally in French and have been translated.

Table A2.5: Survey questions (III)

Variable	Question	Categories/Scale	Source
Autonomy_Region	**"Could you tell me whether reforms empowering the regional councils are a very good thing, a rather good thing, a rather bad thing or a very bad thing for the years to come?" (Average across 5 areas)**	Value between 1 and 4. 1 = "It's a very bad thing." and 4 = "It's very good thing."	
1	"Here are a certain number of reforms that are under way or under discussion. Could you tell me, for each one of these, whether it is a very good thing, a rather good thing, a rather bad thing or a very bad thing for the years to come? - Authorizing the regional councils to adapt the national laws and regulations in their respective regions, under the control of the Parliament."	4 = A very good thing; 3 = A rather good thing; 2 = A rather bad thing; 1 = A very bad thing	OIP2001 Q35a1
2	"Here are a certain number of reforms that are under way or under discussion. Could you tell me, for each one of these, whether it is a very good thing, a rather good thing, a rather bad thing or a very bad thing for the years to come? - Authorizing the regional councils to negotiate and manage the European funding without state involvement."	4 = A very good thing; 3 = A rather good thing; 2 = A rather bad thing; 1 = A very bad thing	OIP2001 Q35a2
3	" Here are a certain number of reforms that are under way or under discussion. Could you tell me, for each one of these, whether it is a very good thing, a rather good thing, a rather bad thing or a very bad thing for the years to come? - Giving the regional councils more freedom in deciding over their financial resources without depending on the state."	4 = A very good thing; 3 = A rather good thing; 2 = A rather bad thing; 1 = A very bad thing	OIP2001 Q35a3
4	"Here are a certain number of reforms that are under way or under discussion. Could you tell me, for each one of these, whether it is a very good thing, a rather good thing, a rather bad thing or a very bad thing for the years to come? - Developing the study of regional languages at school."	4 = A very good thing; 3 = A rather good thing; 2 = A rather bad thing; 1 = A very bad thing	OIP2001 Q35a4
5	"Here are a certain number of reforms that are under way or under discussion. Could you tell me, for each one of these, whether it is a very good thing, a rather good thing, a rather bad thing or a very bad thing for the years to come? - Assigning new fields of competence to the regional councils."	4 = A very good thing; 3 = A rather good thing; 2 = A rather bad thing; 1 = A very bad thing	OIP2001 Q35a5

Notes: Description of survey questions from the Observatoire Interrégional du Politique (OIP) 2001. The values of the categories are reversed compared to the original question categories. Questions were originally in French and have been translated.

Table A2.6: Survey questions (IV)

Variable	Question	Categories/Scale	Source
Education_Region	**"Are you in favor of the transfer of all the power and means of the state to the regions regarding education policy and standards?" (Average across 5 questions)**	Value between 1 and 4. 1 = "Strongly against" and 4 = "Strongly in favor"	
1	"Are you in favor of the transfer of all the power and means of the state to the regions in the following field: - The choice in setting up high schools?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2003 Q12a1
2	"Are you in favor of the transfer of all the power and means of the state to the regions in the following field: - The management of high school teachers?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2003 Q12a2
3	"Are you in favor of the transfer of all the power and means of the state to the regions in the following field: - The management of administrative personnel in high schools?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2003 Q12a3
4	"Are you in favor of the transfer of all the power and means of the state to the regions in the following field: - The definition of school programmes and certificates?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2003 Q12a4
5	"Are you in favor of the transfer of all the power and means of the state to the regions in the following field: - The choice in setting up university centers in the region?"	4 = Strongly in favor; 3 = Somewhat in favor; 2 = Somewhat against; 1 = Strongly against	OIP2003 Q12a5
Proud of French history	"How proud are you of the History of France?"	1 = Very proud to 4 = Not proud at all	ISSP 2003 – National Identity II
Proud of French sport achievements	"How proud are you of France's achievements in sports?"	1 = Very proud to 4 = Not proud at all	ISSP 2003 – National Identity II
Proud of French science/technology	"How proud are you of France's scientific and technological achievements?"	1 = Very proud to 4 = Not proud at all	ISSP 2003 – National Identity II
More power to UN	"Thinking about the United Nations, which comes closest to your view?"	1 = The UN has too much power to 3 = The UN has too little power	ISSP 2004, Citizenship
Intervention of the UN	"Which of these two statements comes closer to your view?"	1 = If a country seriously violates human rights, the UN should intervene, 2 = Even if human rights are seriously violated, the country's sovereignty must be respected, and the UN should not intervene	ISSP 2004, Citizenship

Notes: Description of survey questions from International Social Survey Programme (ISSP) 2003, National Identity (II), and ISSP 2004, Citizenship, and the Observatoire Interrégional du Politique (OIP) 2003. The values of the categories are reversed compared to the original question categories. Questions were originally in French and have been translated.

Table A2.7: Survey results, within Lorraine

Panel **A**: Identity				
Survey question	Mean, control	Δ	P-value	No. obs.
Feel close to region (Regional identity)	3.362	0.154	<0.001	1314
Feel close to nation (National identity)	3.635	0.028	0.409	1313
Feel close to the EU (EU identity)	2.722	0.143	0.003	1299
Regional identity/National identity (standardized)	-0.138	0.138	0.011	1311
EU identity/National identity (standardized)	-0.225	0.115	0.030	1298
Panel **B**: Democracy and policy competences				
Survey question	Mean, control	Δ	P-value	No. obs.
Democracy works well in France	2.536	-0.023	0.616	1316
Democracy works well within region	2.630	0.111	0.008	1290
Well informed about regional policies	2.704	0.089	0.021	1308
In favor: transfer policy competence to region (avg. 10)	3.031	0.092	0.005	605
In favor: allow more autonomy at reg. level (avg. 5)	2.134	0.108	0.025	1315
Educ. policy should be set at reg. level (avg. 5)	2.855	0.112	0.024	574
Concerned reg. admin. would increase interreg. inequality	3.208	-0.172	0.037	574

Notes: Sources are the Observatoire Interrégional du Politique (OIP) 1999, 2001, and 2003, using respondents in Lorraine (the table in the main text includes both Alsace and Lorraine). The parameter Δ comes from the equation: $y_i = \pi + \Delta Treatment_i + \Gamma_i'\lambda + \eta_i$, where $Treatment_i = \mathbf{1}$[individual in treated region] and Γ_i comprises of controls for (reported) age, employment status and sex. A positive Δ indicates that people in the treated region agree more with the statement.

Table A2.8: OIP Survey results: European and regional attachments

Dep. Var: Attachment: Europe	Within Lorraine		All of France	
Variable	(1)	(2)	(3)	(4)
Attachement: Region	0.186***	0.185***	0.097***	0.097***
	(0.030)	(0.031)	(0.007)	(0.007)
Obs.	1388	1388	25602	25602
Controls	No	Yes	No	Yes

Notes: Observatoire Interrégional du Politique (OIP) survey results from 1999 and 2001, asking question on how strong respondents attachment is to Europe, and respondent's region. Attachment is based on a 1-4 scale, with 1 corresponds to *Disagree strongly*, and 4 corresponds to *Strongly agree*. Controls are age, sex, employment status, and survey year. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on heteroscedasticity-consistent standard errors.

Table A2.9: Descriptive statistics for control and pre-treatment variables

Variable	Mean	Std. dev.	Min.	Max.
Distance to Metz	83.47	44.39	1.60	203.16
Distance to Strasbourg	107.53	50.32	0.02	223.02
Distance to Nancy	73.97	34.89	0.06	164.98
Distance to Germany	50.87	35.48	0.33	141.55
Elevation	300.51	119.71	110.12	1045.90
Ruggedness	0.73	0.68	0.01	5.18
Potato	7091.57	474.12	3665.80	7848.00
Wheat	6104.37	326.52	3873.60	6687.00
Median income 2008	31.56	6.00	17.69	53.55
Mean age 2006	39.60	3.01	28.26	63.07
Education 1999	0.20	0.07	0.00	0.58
Occupation 2006	0.19	0.07	0.00	0.50

Notes: Descriptive statistics for variables used as covariates (for variables used in the main paper) and pretreatment variables. Distances are in kilometers. Potato and wheat refer to the suitability of the soil to grow the respective crop, based on FAO data. Other variables were chosen with the aim to have the date date closest to our main outcome variables.

Table A2.10: OLS estimates (all municipalities in Alsace and Lorraine)

	A: Share Le Pen 2007		**B**: Turnout 2007	
Variable	(1)	(2)	(3)	(4)
Treatment	-0.691**	-0.969**	-1.412***	0.223
	(0.236)	(0.450)	(0.175)	(0.313)
Controls	No	Yes	No	Yes
Obs.	3142	3142	3142	3142
	C: Share Yes 1992		**D**: Turnout 1992	
Variable	(1)	(2)	(3)	(4)
Treatment	11.941***	4.865***	-0.652**	2.081***
	(0.473)	(0.789)	(0.262)	(0.470)
Controls	No	Yes	No	Yes
Obs.	3137	3137	3137	3137
	E: Share Yes 2005		**F**: Turnout 2005	
Variable	(1)	(2)	(3)	(4)
Treatment	6.990***	6.185***	-3.115***	-0.023
	(0.434)	(0.855)	(0.276)	(0.470)
Controls	No	Yes	No	Yes
Obs.	3141	3141	3141	3141

Notes: OLS estimates using whole sample of municipalities in all départements in Alsace and Lorraine. Included controls: distance to Germany (border), distance to Metz, distance to Strasbourg, distance to Nancy. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

Table A2.11: Covariate balancing

Variable	$\widehat{\beta}_{10km}$	$\widehat{\beta}_{1/2IK}$[a]	Dep. var: Yes 92	Dep. var: Yes 05
Occupation				
Workers, 2006	0.009	0.002	-10.519***	-9.359***
	(0.016)	(0.014)	(0.923)	(0.913)
Farmers, 2006	0.003	-0.001	-24.457***	30.485***
	(0.009)	(0.007)	(1.237)	(1.249)
Artisans, 2006	-0.002	-0.003	-4.197**	2.824
	(0.005)	(0.003)	(2.112)	(2.013)
Executives, 2006	-0.007	-0.005	29.686***	58.089***
	(0.008)	(0.007)	(1.487)	(1.527)
Intermediate prof., 2006	-0.006	-0.013	9.230***	11.015***
	(0.010)	(0.009)	(1.096)	(1.039)
Economic activity				
Companies, 2011	-3.729	1.461	0.020**	0.041***
	(3.715)	(2.950)	(0.008)	(0.011)
Commercial est., 2011	-0.855	7.146***	-0.008	0.020**
	(2.921)	(2.409)	(0.007)	(0.009)
Industrial est., 2011	-3.344***	-1.916**	0.037***	0.012
	(1.230)	(0.930)	(0.011)	(0.010)
Building est., 2011	1.028	-0.105	-0.053***	-0.100***
	(1.607)	(1.206)	(0.011)	(0.012)
Public est., 2011	-0.699	0.694	0.043***	0.003
	(0.761)	(0.618)	(0.013)	(0.012)
Public goods				
Theatre rooms	-0.003	-0.000	-0.334	-0.116
	(0.003)	(0.002)	(0.407)	(0.218)
Athletic centers	-0.025	0.059	0.129	0.025
	(0.050)	(0.040)	(0.151)	(0.134)
Multisport fac.	-0.615	-0.840**	0.467***	0.196***
	(0.417)	(0.392)	(0.041)	(0.040)
Swimming fac.	-0.007	-0.022	-0.010	-0.137
	(0.014)	(0.028)	(0.082)	(0.085)
Psychiatric est.	0.003	0.006	1.433	0.968**
	(0.013)	(0.009)	(1.103)	(0.473)
Service houses	-0.017	-0.018**	-0.271	0.052
	(0.011)	(0.009)	(0.309)	(0.549)
Healthcare (short)	-0.002	0.003	0.433	0.122
	(0.005)	(0.004)	(2.167)	(1.719)
Healthcare (medium)	-0.007	-0.002	0.684**	1.004***
	(0.020)	(0.017)	(0.287)	(0.259)
Healthcare (long)	-0.002	-0.000	2.227	1.669*
	(0.019)	(0.012)	(1.471)	(0.946)
Post offices	-0.074	-0.012	0.504***	-0.919***
	(0.056)	(0.034)	(0.121)	(0.117)
Elementary schols	-0.205	0.011	0.842***	0.381***
	(0.203)	(0.134)	(0.054)	(0.052)
Highschools	-0.002	0.011	2.351**	1.496
	(0.007)	(0.008)	(0.954)	(1.051)
Vocational training	0.001	-0.002	2.141***	0.485
	(0.009)	(0.007)	(0.652)	(0.492)
Tech. vocational training	0.002	0.004	0.265	0.942***
	(0.002)	(0.003)	(0.231)	(0.287)
Demographics				
Population density	-77.246	147.944*	0.001***	0.000***
	(72.426)	(84.000)	(0.000)	(0.000)

Notes: Testing for discontinuities in covariates. The time period chosen are partly determined by data availability. All estimations include the same distance controls as our main specification. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors. There are on average no systematic differences. In the cases where we do find a difference, it would bias us against our main result as the third and fourth column show.

[a] Estimates from using one half of the optimal IK bandwidth.

Table A2.12: Covariate balance test: 4 categories

	Panel **A**: Alsace and Lorraine							
	Median income 2008		Mean age 2006		Education 1999		Occupation 2006	
Variable	(1)	(2)[a]	(3)	(4)[a]	(5)	(6)[a]	(7)	(8)[a]
Treatment	1.138	1.133	-0.353	-0.408	0.002	0.001	0.009	0.006
	(0.947)	(0.873)	(0.541)	(0.366)	(0.005)	(0.004)	(0.014)	(0.011)
Obs.	507	744	604	1338	604	1311	604	950
Dist.	10 km	14.96 km	10 km	23.57 km	10 km	23.17 km	10 km	16.27 km
	Panel **B**: Alsace vs. Vosges							
	Median income 2008		Mean age 2006		Education 1999		Occupation 2006	
Variable	(1)	(2)[a]	(3)	(4)[a]	(5)	(6)[a]	(7)	(8)[a]
Treatment	4.627***	4.009***	-1.414*	-0.932*	0.010	0.018***	0.016	0.013
	(1.135)	(0.910)	(0.841)	(0.561)	(0.008)	(0.005)	(0.026)	(0.020)
Obs.	196	374	210	504	210	796	210	332
Dist.	10 km	19.3 km	10 km	24.77 km	10 km	36.03 km	10 km	16.59 km
	Panel **C**: Within Lorraine							
	Median income 2008		Mean age 2006		Education 1999		Occupation 2006	
Variable	(1)	(2)[a]	(3)	(4)[a]	(5)	(6)[a]	(7)	(8)[a]
Treatment	0.236	0.086	0.059	0.022	0.002	0.004	0.009	0.002
	(1.015)	(0.990)	(0.641)	(0.486)	(0.006)	(0.004)	(0.016)	(0.014)
Obs.	311	387	394	752	394	1044	394	576
Dist.	10 km	12.56 km	10 km	20.23 km	10 km	30.04 km	10 km	14.8 km

Notes: Panel **A** tests for discontinuities in covariates using all départements in Alsace and Lorraine, Panel **B** uses only municipalities in Bas-Rhin, Haut-Rhin, and Vosges, while Panel **C** uses municipalities within Lorraine. Education refers to the share of people above 18 with a high school degree and occupation to the share of blue-collar workers in the total population. Controls: distance to Germany (border), distance to Metz, distance to Strasbourg, and distance to Nancy. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors. Strong differences would indicate problems in the exogenous nature of our treatment assignment, or the comparability of our treatment and control group. There are no clear or significant differences in these main variables.

[a] Estimates from using one half of the optimal IK bandwidth.

Table A2.13: Le Pen and Turnout (within Lorraine)

	A: Share Le Pen 2007				**B**: Turnout 2007			
Variable	(1)	(2)	(3)	(4)[a]	(5)	(6)	(7)	(8)[a]
Treatment	-0.486	-0.385	-0.482	-0.600	0.387	-0.173	-0.552	-0.666
	(0.961)	(0.808)	(0.774)	(0.816)	(0.862)	(0.763)	(0.694)	(0.674)
Obs.	394	583	744	562	394	583	744	786
Dist.	10 km	15 km	20 km	14.56 km	10 km	15 km	20 km	21.14 km
	C: Turnout 1992				**D**: Turnout 2005			
Variable	(1)	(2)	(3)	(4)[a]	(5)	(6)	(7)	(8)[a]
Treatment	-0.861	-1.145	-1.646*	-0.934	0.804	-0.650	-2.413**	-1.777
	(1.229)	(1.056)	(0.967)	(1.132)	(1.222)	(1.124)	(1.092)	(1.128)
Obs.	394	583	744	470	394	583	744	652
Dist.	10 km	15 km	20 km	12.1 km	10 km	15 km	20 km	17.29 km

Notes: RD estimates for within Lorraine. Controls added. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

Table A2.14: Excluding Metz (within Lorraine)

A: Excluding communes within 5 kilometers from Metz								
	Share Yes 1992				Share Yes 2005			
Variable	(1)	(2)	(3)	(4)[a]	(5)	(6)	(7)	(8)[a]
Treatment	3.822**	5.130***	4.335***	4.774***	4.000*	3.832**	4.875***	4.325**
	(1.850)	(1.620)	(1.445)	(1.382)	(2.082)	(1.770)	(1.643)	(1.731)
Obs.	392	577	737	878	392	577	737	671
Dist.	10 km	15 km	20 km	24.53 km	10 km	15 km	20 km	17.86 km
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B: Excluding communes within 10 kilometers from Metz								
	Share Yes 1992				Share Yes 2005			
Variable	(1)	(2)	(3)	(4)[a]	(5)	(6)	(7)	(8)[a]
Treatment	3.940**	4.864***	3.834***	3.639**	4.450**	3.415**	4.157***	4.951***
	(1.889)	(1.647)	(1.478)	(1.442)	(2.033)	(1.699)	(1.567)	(1.477)
Obs.	372	548	693	766	372	548	693	783
Dist.	10 km	15 km	20 km	22.41 km	10 km	15 km	20 km	22.99 km
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Metropolitan areas might have a different history, or a very different composition of the population today. Metz is the largest metropolitan area in the Lorraine region. These specifications exclude all communes within 5 and 10 kilometres from Metz. Controls added. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

Table A2.15: Share of Yes votes and religion

	Dep. Variable: Share of Yes votes 1992			Dep. Variable: Share of Yes votes 2005		
	(1)	(2)	(3)	(4)	(5)	(6)
Attend (mean)	-1.84			-1.77		
	(1.32)			(1.11)		
Attend: Weekly		0.11			0.10	
		(0.08)			(0.07)	
Attend: 2-3 times a month		0.00			0.02	
		(0.10)			(0.09)	
Attend: Once a month		-0.05			-0.10	
		(0.11)			(0.07)	
Attend: Sev. times a year		0.06			0.05	
		(0.04)			(0.04)	
Attend: Less freq.		0.04			-0.00	
		(0.04)			(0.04)	
Roman Catholic			0.03			0.00
			(0.03)			(0.03)
Protestant			0.35*			0.15
			(0.18)			(0.15)
Christian Ortodox			0.12			0.27
			(0.59)			(0.49)
Jewish			0.85			1.09
			(0.53)			(1.00)
Islam			-0.09			0.01
			(0.12)			(0.15)
Other Religions			-0.15			0.01
			(0.23)			(0.28)
Obs.	94	94	94	94	94	94

Notes: This table tests whether there is a clear relationship between religious affiliation and voting in the pool referenda. OLS estimates using aggregate survey results on département-level. *Attend* refers to how often the respondents attend religious services. *Never attending* is the omitted reference category for attendance, *no religious denomination* is the omitted reference category for religion. Controls: Sex, Age, Years of schooling, Urban vs Rural, Union membership, Degree, Income, and Household size. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on heteroscedasticity-consistent standard errors. There is no systematic effect of religion, which is reassuring as the areas in former Alsace-Lorraine has a slightly different history with regard to schooling. Accordingly, these differences and schooling should not explain our results.

Table A2.16: Heterogeneous treatment effect

	Panel **A**: Share Yes 1992			
Variable	(1)	(2)	(3)	(4)[a]
Treatment	2.033	3.454***	4.738***	3.453***
	(1.399)	(1.247)	(1.101)	(1.221)
Obs.	534	733	954	760
Dist.	10 km	15 km	20 km	15.6 km
	Panel **B**: Share Yes 2005			
Variable	(1)	(2)	(3)	(4)[a]
Treatment	2.622**	4.360***	4.552***	2.789**
	(1.075)	(0.976)	(0.902)	(1.161)
Obs.	535	734	955	446
Dist.	10 km	15 km	20 km	7.94 km

Notes: RD estimates using bandwidths of 10, 15, and 20 kilometers from the language border within Moselle. Included controls: distance to Germany (border), distance to Metz, distance to Strasbourg, and distance to Nancy. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

Table A2.17: Population changes between 1916-1946 (within Lorraine)

	Panel **A**: Population difference 1916 to 1926			
Variable	(1)	(2)	(3)	(4)[a]
Treatment	-5.980	-2.309	-0.494	-0.007
	(6.117)	(6.747)	(6.582)	(6.489)
Obs.	394	581	740	855
Dist.	10 km	15 km	20 km	23.56 km
	Panel **B**: Population difference 1936 to 1946			
Variable	(1)	(2)	(3)	(4)[a]
Treatment	-4.525	-4.018	-3.866	-4.543*
	(3.632)	(2.894)	(2.571)	(2.725)
Obs.	393	581	741	654
Dist.	10 km	15 km	20 km	17.4 km
	Panel **C**: Population difference 1916 to 1946			
Variable	(1)	(2)	(3)	(4)[a]
Treatment	-13.061	-6.966	-2.662	-6.173
	(10.206)	(11.342)	(11.130)	(11.220)
Obs.	393	580	739	879
Dist.	10 km	15 km	20 km	24.48 km

Notes: All estimates include population differences for communes only within Lorraine. Included controls: distance to Germany (border), distance to Metz, distance to Strasbourg, distance to Nancy. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

Table A2.18: Controlling for population change (within Lorraine)

	Panel **A**: Share Yes 1992			
Variable	(1)	(2)	(3)	(4)[a]
Treatment	3.619**	4.957***	4.355***	4.721***
	(1.809)	(1.604)	(1.437)	(1.338)
Obs.	393	581	741	944
Dist.	10 km	15 km	20 km	26.61 km
	Panel **B**: Share Yes 2005			
Variable	(1)	(2)	(3)	(4)[a]
Treatment	3.640*	3.580**	4.804***	3.498**
	(2.101)	(1.785)	(1.653)	(1.773)
Obs.	393	581	741	625
Dist.	10 km	15 km	20 km	16.43 km

Notes: Discontinuity at the former French-German border using municipalities in Moselle, Meurthe et Moselle, and Meuse. Included controls: distance to Germany (border), distance to Metz, distance to Strasbourg, distance to Nancy, and municipal-level population change 1936 to 1946. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

Table A2.19: Newspaper subscription shares: additional analysis

	Panel **A**: Former border: excluding Metz			
Variable	(1)	(2)	(3)	(4)[a]
Treatment	7.980***	7.667***	6.927***	8.145***
	(1.527)	(1.361)	(1.315)	(1.538)
Obs.	259	365	455	257
Dist.	10 km	15 km	20 km	9.86 km
	Panel **B**: Language border			
Variable	(1)	(2)	(3)	(4)[a]
Treatment	-0.763	0.088	0.110	-0.464
	(0.954)	(0.804)	(0.801)	(0.981)
Obs.	291	394	490	262
Dist.	10 km	15 km	20 km	8.86 km
	Panel **C**: Former border: excl. German-speaking municipalities			
Variable	(1)	(2)	(3)	(4)[a]
Treatment	10.000***	9.815***	9.777***	9.733***
	(1.421)	(1.247)	(1.149)	(1.191)
Obs.	385	553	684	608
Dist.	10 km	15 km	20 km	17.16 km

Notes: Discontinuity in newspaper subscription shares at the former French-German border using municipalities in Moselle, Meurthe et Moselle, and Meuse, and at the language border using municipalities in Moselle. Panel **A** excludes all municipalities in the Metz agglomeration, panel **B** tests for discontinuities at the language border, and panel **C** excludes all German-speaking municipalities. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

Table A2.20: Newspaper subscription shares controlling for sales points

	Share households with subscription of "Le Republicain Lorraine"			
Variable	(1)	(2)	(3)	(4)[a]
Treatment	9.880***	9.958***	9.979***	10.026***
	(1.376)	(1.218)	(1.112)	(1.090)
Obs.	394	583	744	841
Dist.	10 km	15 km	20 km	23.12 km

Notes: RD estimates using bandwidths of 10, 15, and 20 kilometers from the border between Alsace and Lorraine, and the rest of France. Included controls: distance to Germany (border), distance to Metz, distance to Strasbourg, distance to Nancy, and number of sales points where the newspaper can be bought locally. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

Table A2.21: Twitter data, within Lorraine

Dep. Variable:	Share Tweets Germany		Share Tweets France	
Variable	(1)	(2)[a]	(3)	(4)[a]
Treatment	2.955	0.023	0.092	-0.526
	(2.103)	(0.947)	(0.570)	(0.833)
Obs.	169	267	169	307
Dist.	10 km	15.64 km	10 km	19.12 km

Notes: Testing for discontinuities in the share of tweets about teh German and French national football team using municipalities in Moselle, Meurthe et Moselle, and Meuse. The dependent variable is coded as the number of tweets about Germany during World Cup 2014 in Brazil, divided by the total number of tweets in each municipality. Included controls: distance to Germany (border), distance to Metz, distance to Strasbourg, and distance to Nancy. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, based on Conley standard errors.

[a] Estimates from using one half of the optimal IK bandwidth.

3. Gender Differences in Revenge and Strategic Play: A Natural Experiment*

3.1 Introduction

Since team work dominates the modern labor market (Hamilton *et al.* 2003), it is crucial for professional advancement to acquire the right social skills and learn how to interact strategically with others. Yet, most studies on gender differences in behavioral economics analyze how individual decisions are made in isolation, rather than in a natural social setting.[1] In order to increase the understanding of mechanisms potentially contributing to the persistent gender gap (Goldin 2015), we focus on gender differences in revenge seeking behavior in a social setting. This is an important question: how we respond following an attack sends a strong signal to our surroundings. A person who is quick to retaliate might ward off future aggressions whereas one who does not may invite more, which could in turn impact success (Clutton-Brock and Parker 1995; Raihani

* This paper was coauthored with Emma Heikensten and Siri Isaksson. We thank Katherine Baldiga Coffman, Fiery Cushman, Anna Dreber Almenberg, Johannes Haushofer, Magnus Johannesson, Torsten Persson, Jonathan de Quidt, Anna Sandberg, David Strömberg, Jenny Säve-Söderbergh, Robert Östling, and seminar participants at the IIES (Stockholm University) for helpful comments. We thank Hulda Lif Hardardottir and Åsa Söderlund for expert research assistance, Christina Lönnblad for proofreading, and Handelsbanken's Research Foundations for financial support.

[1] There are some exceptions, such as Apesteguia *et al.* (2012) and Kuhn and Villeval (2015), who both study gender differences in groups and argue for the need of more studies in this field.

and Bshary 2015). To answer questions related to gender differences in retaliation, we collect a unique data set on a high-stake quiz-based game show broadcasted on TV in Sweden (*Vem vet mest?*), and investigate if men and women have different propensities to seek revenge, and whether there are differences in who suffers from retaliatory actions. We also examine to what extent a higher propensity to retaliate is associated with increased success and thus establish whether revenge seeking is a rational strategy in this game.

Our data set provides a natural setting with clear rules and less noise than is typically found in administrative data, and with more observations and higher stakes than what can be obtained in the laboratory.[2] Since contestants do not choose who they compete against, our data resolves the central endogeneity issue of selection into groups. We examine behavior from the elimination round of the quiz-based game show, where contestants risk being knocked out if they answer questions incorrectly. In this round, contestants eliminate each other by sending questions to one another. Since there are virtually no benefits to receiving questions, sending one is considered a harmful and aggressive action. When a participant sends back the question to the contestant who just sent it to her, she retaliates.[3]

We find large and significant gender differences in the propensity to retaliate. Men seek revenge 22 percent of the time, whereas women are 5 percentage points less likely to retaliate. This is equivalent to a 23 percent gender gap in the propensity to seek revenge. In addition, the target matters for women but not for men: women are more likely to retaliate against a man. Both of these results also remain when we restrict our sample and consider only first retaliations within each episode. Turning to the question of whether there are benefits to seeking revenge, we find that higher levels of retaliation are associated with increased success since they ward off questions in the short term. Interestingly, female retaliatory acts are more successful in terms of averting future questions than male

[2] There are 1,496 subjects in our dataset and the maximum amount a contestant can win is \$3,750.

[3] While we did not formally post a pre-analysis plan, this definition of retaliation was determined prior to when the analysis was conducted, and will be justified and carefully examined in later sections of this paper.

ones and yet, women are less likely to seek revenge.

Retaliation has previously been studied in the context of *Ultimatum Games* (UG) (Fehr and Gächter 2000) and *Public Goods Games* (PGG).[4] A few papers examine gender differences in UG, including Eckel and Grossman (2001), Solnick (2001) and McGee and Constantinides (2013), where the latter is an unsuccessful replication of Solnick (2001). At a first glance, the results on gender differences are contradictory. For instance, Eckel and Grossman (2001) find that men retaliate more than women, while Solnick (2001) reports the opposite. In addition, Eckel and Grossman (2001) find that men face more retaliation while Solnick (2001) again shows the reverse result. More recently, McGee and Constantinides (2013) attempt to replicate Solnick (2001) using the same experimental design while also adding seven rounds of play. Interestingly, Solnick (2001) fails to replicate, and McGee and Constantinides (2013) conclude that the original findings are partially driven by the behavior in the first round.

Taken together, these studies seem to indicate that gender differences in retaliation are sensitive to the environment. This is in line with the conclusion of Croson and Gneezy (2009) who assert that female social preferences are malleable to contexts. To form our hypotheses, we compared the detailed settings of previous studies and found that our environment is more similar to that of Eckel and Grossman (2001) than Solnick (2001). For instance, Eckel and Grossman (2001) is based on repeated face-to-face interactions. Also in similarity with our setting, the design is sequential which means that the respondent is informed about the proposal before he or she decides whether to reject. Given the importance of context for female social preferences, it is reasonable that we expect and observe results in line with Eckel and Grossman (2001), namely that men

[4] The general set-up of this game is that two people are paired to split a fix amount of money. One is assigned the role of the proposer and the other person is the responder. Next, the proposer makes a suggestion of how the money should be divided between the two players and sends it to the responder. He or she then decides whether to accept this proposal, in which case the money is split according to the proposal, or not, in which case neither the responder nor the proposer gets any money. Thus, if the responder thinks that the proposer made an unfair proposal, he or she can retaliate by rejecting. Retaliation in this game is defined as the frequency and levels at which proposals are rejected.

have a higher propensity to retaliate than women and are more likely to be the target of retaliations by women. While we share a lot of features with Eckel and Grossman (2001), there are also important factors that set us apart. For example, we study a setting outside of the laboratory where the decision to seek revenge is strategic and has consequences for success. In Eckel and Grossman (2001), punishment can never be strategic since the ultimatum game is never repeated with the same partner and the possibility of establishing a reputation of toughness through retaliation is thus removed. We also have higher stakes, more subjects originating from a different sample and a social setting where actions are observed within each group and broadcasted to the TV audience. Therefore, while Eckel and Grossman (2001) is a seminal contribution to the understanding of gender and revenge, we make a unique addition to this literature.

By estimating gender differences in the propensity to engage in retaliatory behavior, we add to three strands of literature. First, we add to the existing scholarship on punishment and retaliation in economics and social psychology. In experimental economics, we know of only the three aforementioned laboratory studies that have focused on measuring gender differences in retaliation (Eckel and Grossman 2001; McGee and Constantinides 2013; Solnick 2001). Vengeful behavior can also be studied in the public goods game, in which retaliation can be used to punish free riders and obtain cooperation (Fehr and Gächter 2000).[5] Gender differences in these settings are scarcely examined and, based on the available evidence, Croson and Gneezy (2009) conclude that women's propensity to punish other players to obtain higher levels of cooperation is, again, context dependent. In contrast to punishing free-riders, people also engage in anti-social punishment (Herrmann *et al.* 2008), where they harm others who act pro-socially. However, we do not know of any studies on gender differences in this behavior. The literature also points to other

[5] In the classic public goods game, three or more players are endowed with an arbitrary amount of *units*, which the can choose to keep or to contribute towards the provision of a public good. By contributing, the value of the public good increases by an amount larger than the contribution, and then its value is split between all the players in the group. It is optimal for the group if all participants contribute all their units, but each individual maximizes her profit by not giving anything. As punishments are introduced, the players are, for example, given the opportunity to reduce the units of other players who did not contribute.

motivations for retaliation: it can be strategic since it wards off future attacks (Clutton-Brock and Parker 1995; Nikiforakis 2008; Raihani and Bshary 2015), or it could be driven by aggression and competition for status (Sylwester *et al.* 2013).

Turning to studies in psychology, laboratory experiments analyzing gender differences in retaliation find that men are more likely to retaliate electric shocks (Zeichner *et al.* 2003) and that priming status goals lead men to be more aggressive when facing provocations (Griskevicius *et al.* 2009). There are also a few examples from the field. For instance, in a study made on a networking site, both men and women exhibit retaliatory aggression when facing rejection or criticism, although men reject more strongly and retaliate to a larger extent than women (Chen and Abedin 2014). Similarly, from crime statistics, the conclusion is that men respond more strongly to provocations than women and are more physically aggressive (Daly and Wilson 1988; Wilson and Daly 1985). Laboratory studies confirm that men are more directly aggressive than women, meaning that they are more prone to aggressive behavior when they are face-to-face with their target (Griskevicius *et al.* 2009). Wilkowski *et al.* (2012) show that the gender difference in direct aggression is mediated by a higher motivation for revenge among men. The literature thus unequivocally shows that men are more prone to direct aggression than women and indicates that this is related to the propensity to retaliate. In order to relate our study to these insights, and provide a better understanding of what drives our result, we examine whether men adopt more aggressive strategies in our data. In the section on mechanisms, we present suggestive evidence in line with the literature, and conclude that differences in aggressiveness may be driving our results.

We also add to the literature in economics using televised game shows as natural experiments. For example, using data from "Card Sharks and Lingo", Berk *et al.* (1996) investigate rational decision theory and Gertner (1993), Beetsma and Schotman (2001) and Post *et al.* (2008) look at risk preferences in "Deal or No Deal". Multiple studies also examine data from "Jeopardy!" to analyze performance, risk and uncertainty (Jetter and Walker 2017; Metrick 1995; Säve-Söderbergh and Sjögren Lindquist 2017). Finally, both List (2006) and Heikensten and Isaksson (2016) find that game show participants make discriminatory choices despite the fact

that actions are made in front of millions of viewers.

Finally, since we study a setting where actions are public and broadcasted to an audience, we add to the literature on social image as a motivation for behavior. This scholarship shows that a wide array of pro-social behavior (e.g. donating blood and volunteering) is partially motivated by appearing as a good person to others. Thus, behavior in a setting such as ours, where actions are displayed to a wider audience, could, in part, be motivated by social image concerns. Seminal contributions in this field show, both theoretically (e.g. Bénabou and Tirole 2006) and experimentally (e.g. Ariely *et al.* 2009), that pro-social behavior is higher in public than private settings. Under the reasonable assumption that social image concerns are valid for hostile acts as well as pro-social acts, gender differences in social image concerns may explain our results. In other words, if women are more concerned about making a good impression on the audience, this could explain why they retaliate less in our setting. This explanation is in line with Mellström and Johannesson (2008), who vary social image concerns in the decision to donate blood, and find large and significant effects for females but not for males.

The rest of the paper is structured as follows. Section 3.2 describes the data and the definition of retaliation, while the results are presented in Section 3.3. In Section 3.4, we discuss mechanisms, while we consider alternative explanations and conclude the paper in Section 3.5.

3.2 Data and definitions

The data used in this study is based on the Swedish game show *Vem vet mest* ("Who Knows the Most").[6] The show airs every day of the week on the Swedish public service broadcasting channel *SVT*, and has close to half a million viewers.[7] In each episode, eight contestants are invited to compete against each other, and on Fridays the winners from the Monday through Thursday episodes compete in the weekly finals. The contestant who wins the weekly final gets roughly $1,250 (10,000 SEK). In addition,

[6] The game show is based on the British show "Fifteen to One", which was originally aired from 1988 to 2003.

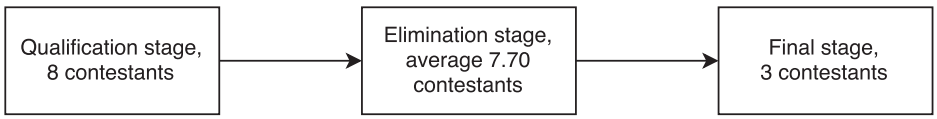
[7] According to audience measurements by *MMS (Mediamätning i Skandinavien)* in 2015.

the Friday-winner has the possibility to participate in a "Final week" where all winners of the weekly finals compete and the champion gets three times the amount of the Friday final prize. Thus, the game show constitutes a setting with high stakes.

The show was first aired in 2008, at which point each episode had twelve contestants. Starting in 2013, the number of contestants was reduced to eight, four men and four women. For this reason, we only include episodes after 2013. We randomly select 187 episodes from 2013 to 2016, excluding all weekly Friday finals, and the data collection was completed in the summer of 2016. We exclude the Friday finals to avoid contestants appearing more than once in our data: we do not want the actions of the contestants to be conditional on the history of actions from previous episodes. We also exclude episodes that were aired in weeks with special themes and guests (for instance "celebrity week"). This gives us a total of 1,496 contestants, with half of them being female.

The game show is divided into three stages: the qualification stage, the elimination stage, and the final stage (see Figure 3.1). In the qualification stage, each contestant is asked three questions and if she can give a correct answer to at least one of them, she qualifies for the elimination stage. The number of correct answers in the first stage translates into "lives" in the elimination stage: each contestant has a total of three lives at the start of the first stage, symbolized by the number of lit up lamps in front of them, and for each incorrect answer one lamp is turned off, i.e. a life is lost. After the qualification stage, and before the elimination stage, all surviving contestants gain one additional life, implying that these contestants have between two and four lives.[8]

Figure 3.1: Schematic figure of the game show



Notes: This figure illustrates the chronological order of the three stages of the game show, as well as the number of contestants in each stage.

[8] Table A3.1 shows the share of female and male contestants in the qualification stage, their respective shares in the final stage, and among the winners, as well as the average number of lives at the end of the qualification stage.

The elimination stage begins with the host randomly choosing one contestant who will receive the first question. If this contestant provides an incorrect answer, she loses one life and a new contestant is randomly selected to answer a new question. This procedure continues until someone correctly answers a question (on average, 0.439 questions are asked before the first correct answer), in which case she is asked to choose who among the other contestants is to receive the next question. For each question that follows during the elimination round, there are two possible occurrences. Either the contestant who received the question answers it correctly and gets to decide who should receive the next one, or the contestant answers the question incorrectly and loses one life, in which case the contestant who sent the question is allowed to pick another, or the same, contestant for the next question. A contestant is knocked out of the game when she gives an incorrect answer to a question when having only one life left, and the elimination stage ends when only three contestants remain.

In the final stage, the remaining lives of the three finalists are converted into points, with one life being equal to ten points. Each correctly answered question in the final stage grants ten points and the contestant that is first to push her button gets to answer the question. This stage of the game is similar to other quiz shows where the contestant that correctly answers the most questions wins the game.

The elimination stage entails the behavioral element that is central to our analysis. Receiving a question is associated with a risk of losing a life, and there is large variation in question difficulty. The average share of correct answers in the elimination stage among the 1,436 contestants that survived the first round is 0.492, as can be seen in Table 3.1, and Figure 3.2 shows that this average is not obtained by, for instance, correct answers to all questions by one half of all contestants, while the other half gives incorrect answers to all their questions. In other words, all contestants face a significant risk of losing a life when they receive a question. Figure A3.1 illustrates the negative relationship between the probability of reaching the finals and the number of questions received during the elimination stage. Contestants receiving a low number of questions are more likely to reach the final stage. Thus, it seems reasonable to assume that having to answer a question is unambiguously negative, and that

Table 3.1: Descriptive statistics, elimination stage contestants

Variable	Mean	St. dev.	Min	Max	Obs.
All participants					
Female	0.499	0.500	0.000	1.000	1436
Retaliation, share	0.191	0.293	0.000	1.000	1257
Correct answer, share	0.492	0.266	0.000	1.000	1436
# Questions received	4.649	1.624	1.000	10.000	1436
Share questions received by female	0.462	0.267	0.000	1.000	1436
Only male participants					
Retaliation, share	0.217	0.310	0.000	1.000	627
Correct answer, share	0.496	0.263	0.000	1.000	720
# Questions received	4.749	1.658	1.000	10.000	720
Share questions received by female	0.544	0.255	0.000	1.000	720
Only female participants					
Retaliation, share	0.165	0.274	0.000	1.000	630
Correct answer, share	0.488	0.268	0.000	1.000	716
# Questions received	4.549	1.585	1.000	10.000	716
Share questions received by female	0.379	0.253	0.000	1.000	716

Notes: Descriptive statistics for contestants reaching the elimination stage. *Female* takes the value 1 if the participant was female. *Retaliation, share* is the average share of actions that were retaliations, when retaliation was possible. *Correct answer, share* is the average share of correctly answered questions, while *# Questions received* is the average number of questions received. *Share questions received by female* is the share of questions received when the sender is female. Note that participants are the unit of observation.

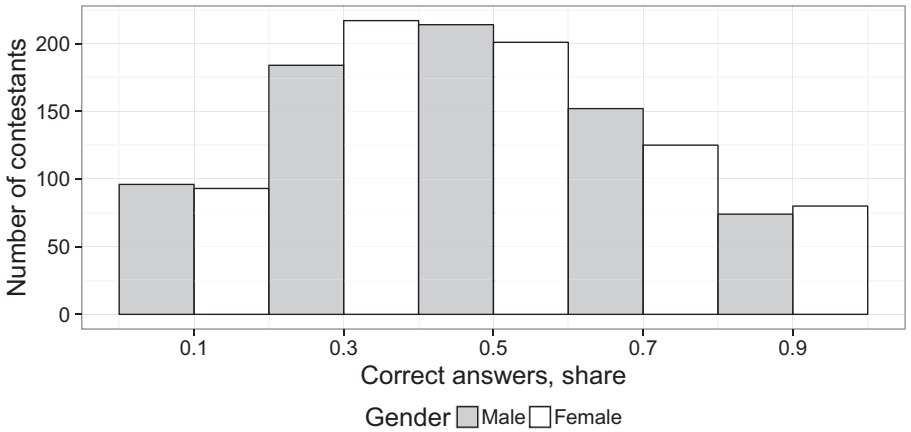
contestants are better off not receiving questions at all.[9]

Estimating gender differences in retaliation

We define retaliation as the act of immediately sending the question back to the contestant from which the question was received. Naturally, this is contingent on the receiving contestant answering the question correctly. Figure 3.3 illustrates how contestant B is retaliating against contestant A: if contestant B received the question from A, contestant B is retaliating if she returns the question to contestant A, after successfully answering the

[9] One potential benefit is that a contestant that receives the question and manages to correctly answer it is allowed to choose who gets to answer the next question. Although the right to determine next round's recipient is advantageous, we argue that it does not compensate for the potential risk of losing one life.

Figure 3.2: Histogram, share of correct answers



Notes: This graph shows the distribution of the share of questions answered correctly by contestants. Each bar represents an interval of 0.2 in the share of correct answers, with the frequency for male (gray) and female (white) contestants, based on 1,436 contestants in the elimination stage.

question received from A. We will refer to contestant B as the *retaliator*, and A as the *target*.

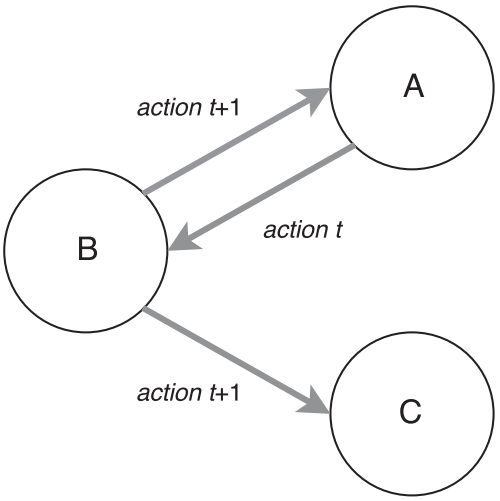
In our main analysis, the unit of observation is each action in the elimination stage. A total amount of 6,676 actions were observed in the elimination stages of the 187 episodes in our sample. The share of correct answers in the elimination stage is 0.492 (see Table 3.1) and since retaliation is only possible when a contestant has correctly answered a question (which was not sent by the host), there are roughly 3,200 actions that could result in a retaliation.[10] The subsample of the correct answers is used to estimate gender differences in retaliation, according to the following regression model:

$$Retaliation_i = \alpha + \beta Female_i + \mathbf{\Gamma}' \boldsymbol{X}_i + \varepsilon_i, \tag{3.1}$$

where $Retaliation_i$ indicates whether action i is a retaliation, and $Female_i$ indicates whether the contestant acting at action i is female. Thus, α estimates the share of retaliations conducted by male contestants; β is the gender difference in propensity to retaliate. We estimate the difference

[10] A female contestant is the sender in 48.66 percent of all potential retaliations.

Figure 3.3: Definition of retaliation



Notes: This figure illustrates how retaliation in the elimination round is defined. Contestant A acts in round t and sends the question to contestant B. If B answers the question correctly, she has the option to return the question to A (red arrow) which then constitutes a *retaliation*, or send it to contestant C (blue arrow).

in a regression model setting for two reasons. First, as we might suspect actions within each episode and for each contestant to be correlated, we want the statistical inference to be based on standard errors clustered on contestant and episode level.[11] Second, since the propensity to retaliate might depend on, for instance, the number of contestants still in the game, or the number of remaining lives of the receiving contestant, we want to estimate the gender difference when controlling for these potential confounding factors. The vector $\boldsymbol{X}_i$ comprises these (demeaned) control variables.[12]

The first part of the analysis uses all actions where retaliation is possible, i.e., where the previous action resulted in a correct answer, to measure gender differences in retaliation. We also estimate gender differences in targets. To this end, we restrict the data to consist only of carried out retaliations. A regression model of an indicator for the gender of the target is regressed on a constant, and estimated using OLS, clustering

[11] In the sensitivity analysis, we also control for episode fixed effects.
[12] Table A3.3 describes all variables used in this study.

standard errors on contestant and episode level, to determine whether female contestants are targets more often than male:

$$Female\_target_i = \delta + \eta_i, \tag{3.2}$$

where $Female\_target_i$ indicates whether the target is a female contestant, and δ measures the share of female targets.[13] To determine whether gender differences in the target depend on the gender of the retaliator, we estimate δ using a subset of only male and only female retaliators, respectively.

3.3 Results

Table 3.2 presents the main results from estimation of the regression model in (3.1). The unit of observation is a potential retaliation: the contestant correctly answered the previous question and thus has the opportunity to return the question to whomever sent it in the previous round. Column (1) presents the OLS estimates without the inclusion of control variables, and shows that 21.7 percent of all actions, where male contestants had the opportunity to retaliate, resulted in a retaliation. For female contestants, the same estimate is 5.3 percentage points lower, and the difference is statistically significant with a p-value of 0.0003. Female contestants are roughly 25 percent less likely to retaliate. This difference is thus both statistically and quantitatively significant.

In regression model (3.1), several control variables are included. Column (2) in Table 3.2 presents the OLS estimates with the inclusion of these controls. As the elimination round progresses and contestants are being knocked out, it potentially becomes more difficult to avoid retaliations. We control for the chronological order of each action to account for the potentially higher share of retaliations in the late stage of the elimination round.[14] Indeed, the estimated slope coefficient for the question

[13] The inclusion of demeaned controls will not change the estimate of δ since this is already captures the share of female targets when all confounding factors are at their average.

[14] Similarly, one can control for the number of contestants remaining in the game.

order is positive and highly statistically significant. We also control for the number of remaining lives of the recipient before receiving the question. This is important as contestants could be using different strategies to gain advantage in the later stages of the game, or in the final stage. For example, a potential strategy could be to always target the players with the lowest number of remaining lives, since these contestants are less likely to be able to answers questions correctly, and therefore more likely to be eliminated. Another strategy could be to target players with a larger number of remaining lives, in order be able to face less able contestants in a potential final stage. Finally, we control for the share of females in the group of contestants that are not yet eliminated from the game. This could be important since different gender compositions might induce different cultural norms.[15]

The results in column (2) show that the inclusion of these controls do not alter the results: male contestants retaliate 21.4 percent of the time, while the gender difference is 4.9 percentage points (p-value of 0.0008). This means that female contestants retaliate roughly 23 percent less than their male counterparts.

3.3.1 Robustness checks

The results in Table 3.2 show that the estimated propensity for retaliation among male and female contestants is robust to the inclusion of a set of control variables. In this section, we will further examine the statistical and quantitative significance of our result by including episode and occupation fixed effects, and controlling for contestant position. In addition, we show that our results remain even when we only consider the very first retaliation in each episode.

Episode fixed effects

It is important to note that the qualifying round in each episode is always gender balanced (it has four female and four male contestants). Neverthe-

This gives almost identical results.

[15] Interacting the share of females with the the indicator for the gender of the sender gives identical estimates, and the estimated interaction term is not significantly different from zero (these results are not presented in the paper).

Table 3.2: Probability of retaliation

Dep. variable: Retaliation	(1)	(2)
Male retaliations	0.217***	0.214***
	(0.011)	(0.011)
Female	-0.053***	-0.049***
	(0.015)	(0.015)
	[0.0003]	[0.0008]
Question order		-0.002
		(0.002)
Share female		0.006***
		(0.001)
# Lives, receiver		-0.015*
		(0.008)
Adj-Rsquare	0.004	0.034
Observations	3245	3245

Notes: This table shows estimates of the propensity to retaliate among male contestants, and the gender difference. The dependent variable *Retaliation* takes the value 1 if the question was sent to the previous round's receiver, 0 otherwise. *Male retaliations* is the share of retaliations among male contestants, represented by the estimated intercept. The regressor of interest is $Female = \mathbf{1}$[Sender is female], and measures the difference in retaliation rates between female and male. *Question order* controls for the within-episode progress, *Share female* controls for the share of female participants still in the competition at each round, *# Lamps, receiver* controls for the number of lamps the receiving participant had before receiving the question. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10%, respectively, based on clustered standard errors (in parentheses) on contestant and episode level, and p-values in brackets.

less, there might be other factors influencing the atmosphere and norms in each specific group, which in turn might affect the behavior. For instance, one could imagine that retaliation due to aggression is common in one group setting but not in another. If this type of group constellation exists in some episodes but not in others, we worry that the results are driven by these episodes.

Column (1) in Table 3.3 presents the estimates with the inclusion of episode fixed effects.[16] The estimate for the gender difference is almost identical to the one presented in Table 3.2, and it is highly significant with a p-value equal to 0.0072. Thus, we conclude that the results are not driven by the atmosphere or the norms in one particular group setting.

[16] We include demeaned dummies for each episode, which allow us to interpret the intercept as the share of retaliations among male contestants. The same has been done for position and occupation fixed effects.

Probability of receiving questions conditional on position

At the start of the qualifying stage, contestants are positioned on the stage in the shape of a half circle, with contestant one positioned at the very left, and the others following in clock-wise order (see Figure A3.2). These positions are kept in the elimination stage, which means that contestants have the same "neighbors" throughout the first two stages. One might suspect that proximity to other contestants could influence the propensity to send them a question. This could also influence the propensity to retaliate.

Table 3.4 shows the amount of questions contestants in a particular position receive a as share of the total number of questions sent by each of the other positions. Contestants at one end of the half circle are more likely to send the question to the other end, and contestants in the middle are more likely to send it to one of the ends. At any position, contestants seem unwilling to send the question to their direct neighbor. For instance, only 10 percent of the questions sent by contestants at position 1 were sent to their closest neighbor, while 17 percent of these questions went to contestants at position 8.

Given these differences in the propensity to send questions, one concern is that male and female contestants have different propensities to retaliate conditional on their position, and the position of their target. In Table 3.3 we address this potential problem. Here, we re-estimate the parameters in (3.1) with fixed effects for position of sender and position of receiver. The results are presented in columns (2) through (4). In column (2), only sender position fixed effects are included, while only receiver position fixed effects are included in column (3). In column (4), both are included. The inclusion of any, or both, of these does not alter the results.

Column (5) includes both sender and receiver fixed effects, as well as both of these interacted with the gender of the sender. This specification does not change the estimated gender difference in retaliation, which is still highly significant with a p-value close to 0.001. As a final step, we estimate the regression model from (3.1) including sender and receiver fixed effects, their interactions with gender, as well as the episode fixed effects. The results are presented in column (6) and are virtually unchanged.

Table 3.3: Controlling for position of contestants

Dep. variable: Retaliation	(1)	(2)	(3)	(4)	(5)	(6)
Male retaliations	0.218***	0.215***	0.215***	0.215***	0.215***	0.218***
	(0.008)	(0.011)	(0.011)	(0.011)	(0.011)	(0.008)
Female	-0.054***	-0.049***	-0.048***	-0.049***	-0.049***	-0.055***
	(0.016)	(0.015)	(0.015)	(0.015)	(0.015)	(0.016)
	[0.0006]	[0.0010]	[0.0009]	[0.0011]	[0.0010]	[0.0006]
Question order	0.007***	0.006***	0.006***	0.006***	0.006***	0.007***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Share female	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
# Lives, receiver	-0.001	-0.014*	-0.014*	-0.014*	-0.014*	-0.002
	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)
Adj-Rsquare	0.041	0.034	0.036	0.036	0.038	0.045
Observations	3245	3245	3245	3245	3245	3245
Episode fixed effects	Yes	No	No	No	No	Yes
Sender position fixed effects	No	Yes	No	Yes	Yes	Yes
Receiver position fixed effects	No	No	Yes	Yes	Yes	Yes
Positions × Female	No	No	No	No	Yes	Yes

Notes: This table presents results from robustness checks on the estimated gender difference in retaliation. The dependent variable *Retaliation* takes the value 1 if the question was sent to the previous round's receiver, zero otherwise. *Male retaliations* is the share of retaliations among male contestants, represented by the estimated intercept. The regressor of interest is $Female = \mathbf{1}$[Sender is female], and measures the difference between retaliation rates between female and male. *Question order* controls for the within-episode progress, *Share female* controls for the share of female participants still in the competition at each round, *# Lamps, receiver* controls for the number of lamps the receiving participant had before receiving the question. Sender and receiver position fixed effects control for the position (1 to 8) of the sender and receiver, respectively, while position × Female interacts sender and receiver positions with the gender of the sender. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10%, respectively, based on clustered standard errors (in parentheses) on contestant and episode level, and p-values in brackets.

Table 3.4: Sending question, given position

	Sender position:							
Receiver position:	1	2	3	4	5	6	7	8
1	NA	0.081	0.133	0.161	0.158	0.174	0.180	0.170
2	0.104	NA	0.114	0.132	0.177	0.165	0.189	0.170
3	0.131	0.115	NA	0.103	0.130	0.181	0.170	0.165
4	0.129	0.153	0.123	NA	0.092	0.143	0.168	0.148
5	0.141	0.154	0.162	0.114	NA	0.074	0.128	0.138
6	0.157	0.159	0.147	0.172	0.110	NA	0.092	0.136
7	0.162	0.151	0.154	0.153	0.179	0.111	NA	0.072
8	0.175	0.188	0.167	0.164	0.153	0.152	0.073	NA

Notes: Questions received by contestants on each position, when sent by contestants on all other positions, as shares of the total number of questions received. Rows indicate receiver position while column indicates sender position.

Occupation

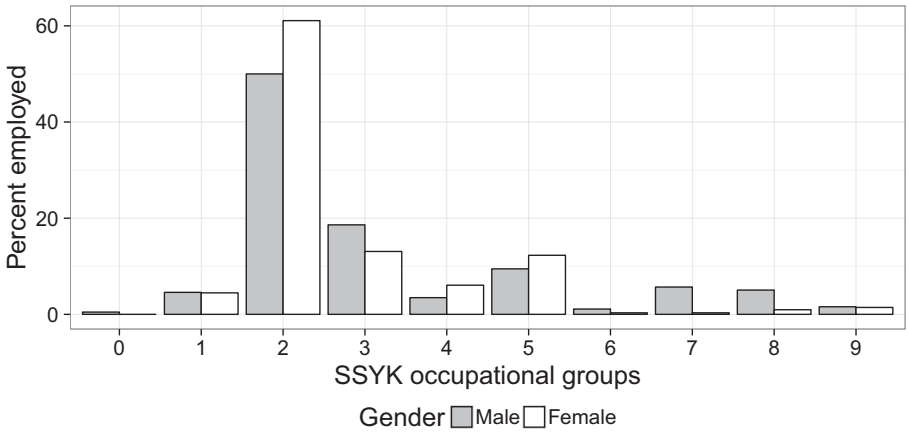
Although the number of contestants in each episode is balanced in terms of gender, this is necessarily not the case when it comes contestants' occupation. If, for instance, carpenters are more likely to retaliate and are overrepresented among male contestants, then the observed gender difference in retaliation results from differences in occupation representation. Indeed, as illustrated in Figure 3.4, there are differences in the share of male and female for a number of occupation categories, in particular *professionals* and *technicians and associate professionals* (categories 2 and 3, respectively).[17] To examine whether these explain the gender difference in retaliation, we add occupation fixed effects based on *Swedish Standard Classification of Occupation* (SSYK) 1-digit codes.

We classify each contestant according to one out of ten professional fields, based on the occupations of all contestants announced by the host at the beginning of the show. We are unable to classify contestants for whom no occupation was reported, or the description was imprecise.[18] By including occupation fixed effects, the estimation is based on a reduced number of observations compared to the results presented in Tables 3.2 and 3.3. This means that any difference between the estimates with and

[17] Table A3.2 in Appendix A describes the occupation categories, based on Dehdari (2017).

[18] We have 1-digit SSYK codes for 1,209 out of the 1,436 contestants qualifying for the elimination stage.

Figure 3.4: Occupation shares



Notes: This graph shows the occupation shares of male and female contestants based on 1-digit SSYK occupation codes (2012). Table A3.2 in Appendix A describes the occupation categories.

without the inclusion of occupation fixed effects is potentially driven by sample differences. Therefore, we re-estimate the coefficients of regression model (3.1) with the reduced sample. These are presented in column (1) of Table 3.5, and the estimated gender difference in retaliation is similar to the one estimated using the whole sample of potential retaliations (see Table 3.2).

In column (2), occupation fixed effects have been included. The inclusion of these does not alter the estimate of the gender difference in retaliation, which is still significant at the 1 percent level. For completeness, column (3) also includes episode fixed effects, and controls for sender and receiver position. The estimated gender difference remains essentially unchanged. Thus, a lower propensity to retaliate among female contestants cannot be explained by gender differences in occupational representation.

First retaliation

As a final robustness check, we examine the share of female retaliators when we only consider the very first retaliation that occurs in each episode. One potential caveat is that male and female contestants behave differently conditional on the history of actions in each game. For instance, male contestants might retaliate more excessively once female

Table 3.5: Controlling for contestants' occupation (1-digit SSYK)

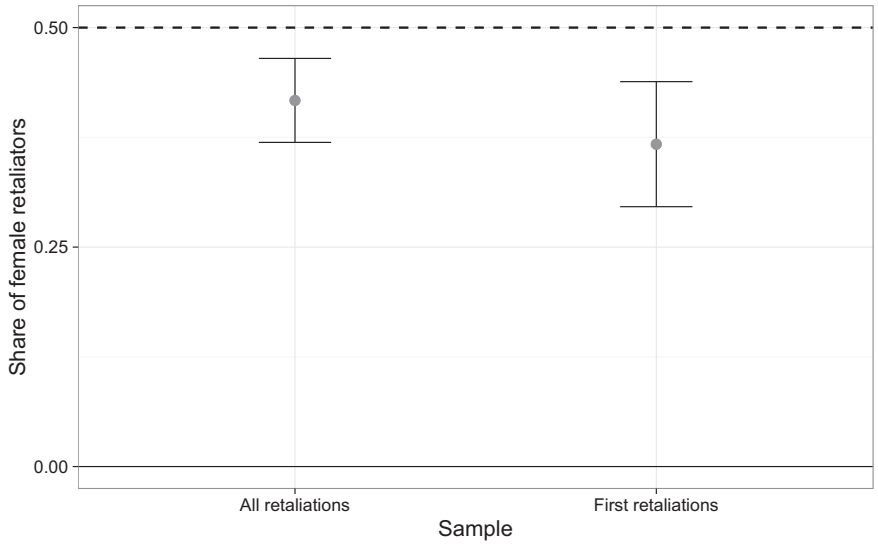
Dep. variable: Retaliation	(1)	(2)	(3)
Male retaliations	0.214***	0.214***	0.216***
	(0.012)	(0.012)	(0.009)
Female	-0.043***	-0.042***	-0.045**
	(0.016)	(0.016)	(0.018)
	[0.0072]	[0.0090]	[0.0116]
Question order	0.006***	0.006***	0.007***
	(0.001)	(0.001)	(0.001)
Share female	-0.001	-0.001	-0.000
	(0.001)	(0.001)	(0.002)
# Lives, receiver	-0.013	-0.013	-0.001
	(0.009)	(0.008)	(0.009)
Adj-Rsquare	0.031	0.030	0.040
Observations	2771	2771	2771
Occupation fixed effects	No	Yes	Yes
Episode fixed effects	No	No	Yes
Sender position fixed effects	No	No	Yes
Receiver position fixed effects	No	No	Yes
Positions × Female	No	No	Yes

Notes: This table shows estimated gender differences in retaliation when controlling for the occupation of the sender. The dependent variable *Retaliation* takes the value 1 if the question was sent to the previous round's receiver, 0 otherwise. *Male retaliations* is the share of retaliations among male contestants, represented by the estimated intercept. The regressor of interest is *Female* = **1**[Sender is female], and measures the difference between retaliation rates between female and male. *Question order* controls for the within-episode progress, *Share female* controls for the share of female participants still in the competition at each round, *# Lamps, receiver* controls for the number of lamps the receiving participant had before receiving the question. Occupation fixed effects control for sender occupation based on 1-digit SSYK codes (2012). Sender and receiver position fixed effects control for the position (1 to 8) of the sender and receiver, respectively, while position × Female interacts sender and receiver positions with the gender of the sender. '***', '**' and '*' indicate statistical significance at 1%, 5% and 10%, respectively, based on clustered standard errors (in parentheses) on contestant and episode level, and p-values in brackets.

contestants have acted in a certain way. Therefore, we restrict the sample so that it only consists of the first retaliation in each episode and compare the share of female retaliators in this subset to the share when all retaliations are included.

Figure 3.5 presents the share of female retaliators when considering all retaliations (left estimate) and when only considering first retaliations (right estimate). For all retaliations, 41.7 percent of the retaliators are female, while the corresponding number for first retaliations is 36.7. As indicated by the 95 percent confidence intervals in Figure 3.5, these two

Figure 3.5: Share of female as first retaliator in each episode



Notes: This figure shows estimates of the share of female contestant retaliating. *All retaliations* uses data on all retaliations in the elimination stage, while *First retaliations* only uses the very first retaliation in each episode. 95% confidence intervals are based on clustered standard errors, on contestant and level. The results indicate that the share of female retaliators from the first retaliations of each episode does not differ from when all retaliations are considered.

shares are not statistically different from each other. Thus, the gender composition among the initial retaliations of each episode does not differ from when all retaliations are considered.

In sum, we find that female contestants retaliate 23 percent less than male contestants and that this gender difference holds throughout various robustness checks.

3.3.2 Gender differences in targets

In the previous sections, we show that there is a large and statistically significant gender difference in the propensity to retaliate. This section examines whether there are differences in target gender. What we are interested in finding is whether contestants are more likely to select a female target, and whether the gender of the retaliator matters.

Table 3.6 presents the results on the share of female targets. The estimated shares are based on a subset comprising of only conducted

retaliations, and the t-tests from the estimated regression model in (3.2) are based on clustered standard errors on contestant and episode level. The null hypothesis for the t-test is that the share of female targets does not differ from the share of females receiving non-retaliatory actions. The first column includes all retaliations, regardless of the gender of the sender. The results suggest that female contestants are not more likely to be selected as targets.

The second and third column of Table 3.6 divide the subset of retaliations based on the gender of the retaliator. For male retaliators, there is no statistically significant difference between the share of female targets and corresponding share for all non-retaliatory actions. However, male contestants are more likely to be the target of female retaliations: for female retaliators, 32.0 percent of the targets are female, which is statistically different from the share of female contestants receiving non-retaliatory questions (p-value equal to 0.0056).

Table 3.6: Share of female targets

	All	Only Male	Only Female
Share female receiving non-retaliations	0.469	0.526	0.406
Share female receiving retaliations	0.459	0.558	0.320
	(0.021)	(0.029)	(0.031)
	[0.6269]	[0.2618]	[0.0056]
Observations (receiving retalitions)	621	362	259

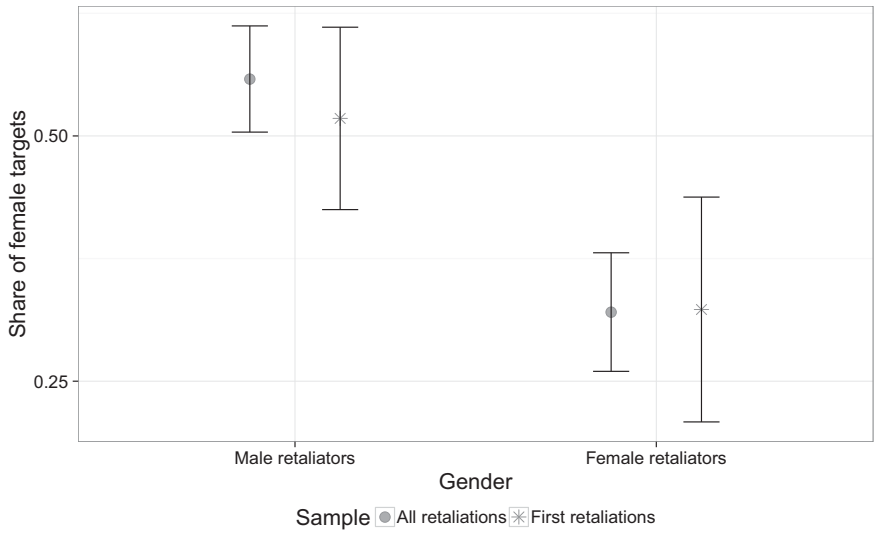
Notes: This table shows the share of female targets. The first row presents estimates of the share of female contestants as receivers when the question was not sent as a retaliation, while the second row shows the share of female targets following a retaliation. Numbers in brackets are p-values from t-tests (regression based) on the difference between the share of female targets and the share of female receiving non-retaliations. Clustered standard errors on contestant and episode level in parentheses.

First retaliation: target gender

As discussed in the previous section, one concern is that male and female contestants behave differently given the history of the game. For instance, previous occurrences of male retaliations might trigger female contestants to retaliate against their male counterpart. To address this potential caveat, we compare the share of female targets among both female and

male retaliators when using all retaliations and when only considering the very first retaliation in each episode. The results are presented in Figure 3.6. For both male and female retaliators, there is no statistically significant difference between the estimated share of female targets. Thus, female contestants are as likely to be the target of the first retaliation as they are when considering the whole sample of retaliations.

Figure 3.6: Share of female targets of first retaliation in each episode



Notes: This figure shows estimates of the share of female targets of male and female retaliations. *All retaliations* uses data on all retaliations in the elimination stage, while *First retaliations* only uses the very first retaliation in each episode. 95% confidence intervals are based on clustered standard errors, on contestant level.

In sum, we test our primary hypotheses and find that male contestants are more likely to engage in retaliation than female contestants. This result is consistent throughout various robustness checks. In addition, we test whether male or female contestants are more likely to become the targets and if this depends on the gender of the retaliator. Our results show that male contestants are equally likely to retaliate against female as male, while female retaliators are more likely to select a male target.

3.4 Mechanisms

In the previous section, we showed that there are gender differences in the propensity to engage in retaliatory behavior, and that this result is consistent as we control for various observable features and behaviors of the contestants, as well as when we restrict the sample to only include first occurrences of retaliation. In addition, we find that male contestants are more likely to be the target of female retaliators. This section examines whether retaliations have a deterring effect on the probability of receiving questions and thus, whether it can be considered a successful strategy. In order to learn more about the gender difference in retaliatory behavior, we look for differences in other strategies that are deemed as more or less aggressive. If female contestants are less aggressive, this could potentially explain why they are also less prone to retaliate.

3.4.1 Retaliation and success

The two most obvious ways of measuring success in the game show is whether or not a contestant wins the whole game, and whether or not the contestant reaches the final stage. Since our focus is on the elimination stage, we emphasize the measure of success based on contestants successfully avoiding elimination during that stage. Thus, a contestant is successful if she manages to reach the final stage.

Figure A3.1 in Appendix A shows how the number of questions that contestants receive is negatively correlated with their chances of making it to the final stage. Since retaliations are believed to deter questions, we should expect retaliations to be positively associated with success. In Table 3.7, we use contestant-level data with indicators for whether a contestant reached the final stage or not, as well as the propensity to retaliate, measured as the number of retaliations divided by the total number of actions. However, it is important to note that this relationship is most likely not causal: other factors are likely to affect both the propensity to retaliate and the chances of reaching the final stage. Still, we are interested in learning whether we do find a positive correlation.

Table 3.7 presents estimates of regression models where an indicator for reaching the final stage is regressed on the percent of questions

received, the percent of retaliations conducted, the number of lives at the start of the elimination round, and the percent of correctly answered questions. The estimate for the percent of questions a contestant receives (percent of all questions in that particular episode) illustrates what we already know from Figure A3.1: a negative association between receiving questions and reaching the final stage. A one percentage point increase in the share of questions received is associated with a decrease of 0.030 in the probability of reaching the finals.[19] In column (2), we find a positive correlation between retaliation and reaching the final stage. These correlations are present when one controls for the number of lives at the start of the elimination round and the percent of correct answers which, as we should expect, are both positively correlated with reaching the finals.

Table 3.7: Probability of reaching the final stage

Dep. variable: Reach final	(1)	(2)	(3)	(4)	(5)
Constant	0.839***	0.413***	-0.491***	-0.887***	-0.499***
	(0.042)	(0.010)	(0.037)	(0.026)	(0.037)
Percent questions received	-0.030***	-	-0.031***	-	-0.031***
	(0.003)	-	(0.002)	-	(0.002)
Percent retaliation	-	0.114**	-	0.061*	0.078**
	-	(0.045)	-	(0.032)	(0.030)
# Lives at start	-	-	0.250***	0.226***	0.250***
	-	-	(0.012)	(0.012)	(0.012)
Percent correct answers	-	-	0.015***	0.015***	0.015***
	-	-	(0.000)	(0.000)	(0.000)
Adj-Rsquare	0.056	0.004	0.601	0.542	0.603
Observations	1257	1257	1257	1257	1257

Notes: Dependent variable *Reach final* takes the value 1 if the contestant reached the final (third) stage, 0 otherwise. *Questions received* is the share of questions the contestant received in relations to the total number of actions in the episode, *Share retaliation* is the share of actions that were retaliations, *# Lamps at start* is the number of lamps at the start of the elimination round, *Share correct answers* is the share of correctly answered questions. '***', '**' and '*' indicate statistical significance at 1%, 5% and 10%, respectively, based on clustered standard errors (in parentheses) at the episode level.

These results suggest an association between retaliation and success, which is not necessarily causal, and they do not tell us anything about whether retaliation is successfully warding off future questions.[20] In order

[19] At the start of the elimination round, the average unconditional probability of reaching the final stage is close to 0.39 (3 out of an average of 7.7 contestants).

[20] Similar to the correlation between the share of retaliation and reaching the final stage, the correlation between the share of questions received and retaliation is uninformative in terms of the true effect of retaliations. For instance, if more com-

to further examine this mechanism, we perform an *event study* where the probability of receiving a question following a retaliation is estimated. For each conducted retaliation, we examine whether the contestant received the question in the following rounds. For instance, suppose that contestant B retaliated at $t = 0$. Then, we consider the next round, $t = 1$, and note whether contestant B received the question. We do the same for the following round, $t = 2$, and so on. This gives us a vector which indicates whether contestant B received the question in each round following her retaliation. Similarly, we consider the rounds prior to the retaliation. To make the consequences of retaliations occurring at different stages of the game comparable, we normalize all retaliations to $t = 0$, and therefore consider all actions following a retaliation as if they occurred in $t = 1$, the following action as $t = 2$, and so on.

Using all retaliations, we estimate the share of retaliators receiving questions prior and following the round when the retaliation was conducted. These shares are then compared to the consequences of having the opportunity to retaliate, but choosing not to. In other words, we estimate the share of contestants receiving questions following situations where they decided to not retaliate. Before comparing these two shares, we subtract the average baseline probability of receiving a question, defined as the inverse of the number of remaining opponents.[21]

In Figure 3.7, the differences in the probability of receiving the question between retaliations and non-retaliations are presented. We include the five time periods before and after the event of either retaliation or non-retaliation, and include 95 percent confidence intervals, computed using regression-based clustered standard errors (at the contestant and episode level). Since a contestant sending the question cannot, at the same time, receive a question, the probability of receiving questions at $t = 0$ is zero for both retaliations and non-retaliations. Moreover, since a

petent contestants are both more likely to retaliate and receive questions, we would estimate a positive association between retaliation and receiving questions. Using the contestant-level data used in Table 3.7, we do not find any statistically significant correlation between the two variables.

[21] We compute the theoretical probability of receiving a question by the inverse of the number of remaining opponents. This is done for all rounds prior and following a potential retaliation, and the baseline probability is the arithmetic mean of the theoretical probabilities in each round.

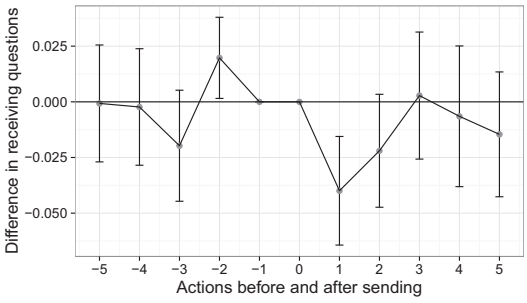
potential retaliation is only possible when a contestant received the question in the previous round (and answered it correctly), the probability of receiving the question at $t = -1$ is, mechanically, equal to 1, and the difference between retaliation and non-retaliation is zero.[22] For the other time periods, the figures show differences in the probability of receiving the question between retaliation and non-retaliation, before and after a potential retaliation. For example, as seen in 3.7a, a contestant who used the chance to retaliate was 4 percentage points less likely to receive the next question ($t = 1$, difference of -0.04), than she would have been had she not retaliated. This negative difference is also present in $t = 2$, although not statistically different from zero at the 5 percent significance level. The deterring effect seems to wear off rather quickly: three rounds after a potential retaliation, the probability of receiving the questions is virtually the same for retaliation and non-retaliation. It is also worth noting that at $t = -2$, the difference is positive. Among the contestants potentially retaliating at $t = 0$, all received the question at $t = -1$, and some of them also received it at $t = -2$, meaning that they were targeted twice in succession. What the positive difference means is that retaliations are more common among contestants receiving the questions twice in succession. Before $t = -2$, there are no differences in the probability of receiving the question.

Figures 3.7b and 3.7c present results for the event study when only using male and female contestants, respectively. Both cases are similar to the results from 3.7a, except that a negative difference of 0.04 in the probability of receiving the question is statistically significant for $t = 2$ for female contestants, while the positive difference at $t = -2$ is not significant.[23] It is important to note that when a retaliator receives the question at $t = 1$, she herself becomes the target. A potential retaliator at $t = 1$ would have to retaliate against a contestant who, in the previous round, retaliated against her, while this is not the case for a potential

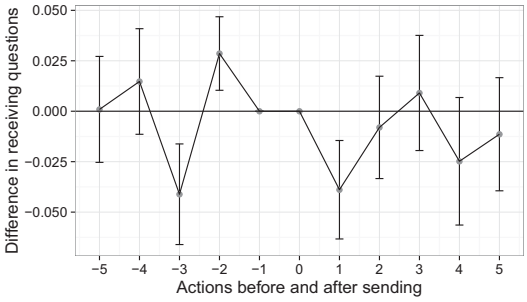
[22] We actually do estimate non-zero differences for $t = 0$ and $t = 1$, which are solely driven by small differences in the baseline probabilities for retaliation and non-retaliation. Since these differences are not important and do not influence our results, we set them equal to zero. They also lack confidence intervals as there is no variation in receiving the question.

[23] We find a negative difference at $t = -3$ for male but not for female contestants. The only difference that is consistent for both men and women is at $t = 1$.

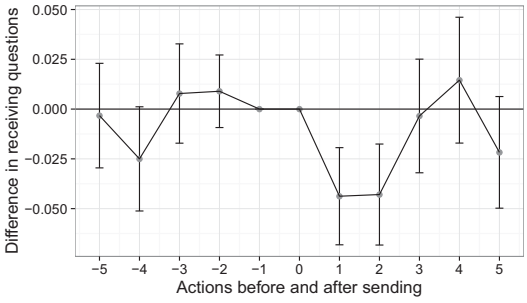
Figure 3.7: Probability of receiving questions, before and after retaliation



(a) All contestants



(b) Male contestants



(c) Female contestants

Notes: These figures show the short-term deterrent effect of retaliation by estimating differences in the probability of receiving questions before and after potential retaliation between occurrence of retaliation and non-retaliations, controlling for the baseline probability of receiving the question (defined as the inverse of the number of remaining competitors). Figure (a) shows the difference for all contestants, while (b) and (c) only consider male and female contestants, respectively. Vertical bars indicate 95 percent confidence intervals based on clustered standard errors at the contestant and episode level.

retaliator at $t = 1$ following a non-retaliation. Thus, retaliation effectively wards off aggressions in the next round. For female retaliators, this effect persists for one additional round, as indicated by the negative difference at $t = 2$.

Figures 3.7a through 3.7c show that retaliations have a negative effect on receiving questions, but only for the first couple of rounds following a retaliation. The deterring effect is only present for the first round following a retaliation for male contestants, while it is present for two rounds for female contestants. Taking this together with the negative correlation between receiving questions and reaching the final presented above, the short-lived deterring effects of retaliation on the probability of receiving questions suggest that retaliatory behavior increases the likelihood of reaching the final stage.

3.4.2 Propensity to adopt aggressive strategies

Retaliation is often discussed in the literature as being connected to a preference for aggression (Griskevicius *et al.* 2009; Wilkowski *et al.* 2012). Previous studies unequivocally show that men are more inclined to direct aggression than women. In order to learn more about the gender difference in retaliatory behavior, we look for differences in other strategies that, similar to retaliations, are deemed to be aggressive. If this analysis shows that female contestants are less aggressive, this could potentially explain why they are also less prone to retaliate. In this section, we examine potential gender differences in the propensity to adopt aggressive strategies by using data from the elimination stage.

In order to successfully reach the final stage, contestants can employ different strategies in choosing to whom to send the question to. Some are more aggressive than others. For instance, only targeting contestants with the least remaining number of lives is an aggressive strategy. Similarly targeting the contestant with the most remaining lives is the least aggressive strategy. Table 3.8 presents OLS estimates from a regression model of different aggressive behaviors regressed on a dummy for the gender of the sender. Specifically, the outcome in the first column is the number of lives the receiver had before receiving the question, in relation to the average number of lives among all contestants. The second column uses

the relative number of lives at the beginning of the elimination, proxying for observed ability. The outcome in the third column is a dummy taking the value one if the receiver had the fewest number of lives among all contestants, while in the last column, the outcome is a dummy taking the value one if a contestant received the question twice in succession. We control for a set of confounding factors that we believe to be correlated with both the outcomes and the gender of the sender, for instance the gender of the receiver, and whether or not it is a retaliatory action.

Table 3.8: Gender differences in aggressive behavior

Dep. variable:	Relative # lives, receiver	Relative # lives at start	Fewest # of lives	Attack
Constant	0.213***	0.113***	0.318***	0.045***
	(0.016)	(0.014)	(0.009)	(0.006)
Female	0.052**	0.031	-0.011	-0.012
	(0.024)	(0.020)	(0.013)	(0.008)
	[0.0279]	[0.1225]	[0.3809]	[0.1365]
Adj-Rsquare	0.061	0.022	0.047	0.022
Observations	6407	6407	6407	2955
Controls	Yes	Yes	Yes	Yes

Notes: This table reports estimated gender differences in aggressive behavior. Dependent variables are regressed separately on a constant and a dummy $Female = \mathbf{1}$[Sender is female]. *Relative # lives* is the number of lives the receiver had, minus the average number of lives among all contestants, *Relative # at start* is the number of lives the receiver had at the beginning of the round, minus the average number of lives at the beginning, *Fewest # of lives* is a dummy taking the value 1 if the contestant had the fewest number of lives among all contestants, 0 otherwise, and *Attack* is a dummy taking the value 1 if the receiver was targeted twice in a row, 0 otherwise. All specifications control for the gender of the receiver, whether the action was a retaliation or not, and the number of remaining contestants. '***', '**' and '*' indicates statistical significance at 1%, 5% and 10%, respectively, based on clustered standard errors (in parentheses) on contestant and episode level.

All four estimates suggest that female contestants are less aggressive. On average, the number of lives the receiver holds prior to receiving a question is above the mean, and the first column shows an estimated positive gender difference of 0.052 (p-value of 0.0279). This means that, on average, the number of lives that the receivers of questions sent by female contestants have is higher than the number of lives held by receivers of questions sent by male contestants. The same holds when looking at observable ability, as shown in the second column. The gender difference is 0.031, but it is not statistically significant at 10 percent (p-value of

0.1225). For the propensity to send questions the to contestants with the fewest number of lives, we estimate a non-significant negative difference of 0.011 with a p-value of 0.3809 (third column). The results presented in the fourth column suggest that female participants are less likely to send questions to the same contestant for two consecutive rounds, although the estimated difference is not significant (p-value of 0.1365).

Although all estimated differences in Table 3.8 suggest that female contestants are less aggressive, one should be careful in interpreting the results, as only one estimate is significant at the five-percent level. Still, we believe that these results give interesting input to our study by showing us that female contestants seem less aggressive than their male counterparts.[24] The next, and final, section of this paper discusses these findings in light of the existing literature and suggests alternative explanations for our result.

3.5 Discussion

This paper asks if men are more likely to retaliate than women. To answer this question, we collected data from 187 episodes of the Swedish game show *Vem vet mest?*, where contestants eliminate each other by sending questions to one another. In this setting, sending back the question to a competitor who just sent it to you is considered a retaliation and an aggressive act. Using this definition, we find that men are 23 percent more likely to retaliate than women, and that men are more likely to be the target of retaliations by women. In addition, we show that higher levels of revenge are associated with success and constitute a good strategy to ward off questions in the short term, especially for women. Thus, if our results are externally valid, gender differences in the propensity to retaliate could affect female success and, as a consequence, be part of the

[24] It is important to note that the strategies deemed as aggressive are not necessarily compatible with retaliatory behavior. For instance, a contestant committed to retaliations might always end up targeting the contestant with the highest relative number of lives, which we define as a non-aggressive strategy. Indeed, the correlation between contestant-level propensity to retaliate and the average relative number of lives of their targets is not statistically different from zero. These results are available from the authors upon request.

explanation to the persistent labor market gender gap. In light of this, it seems important to understand why women retaliate less than men.

The literature suggests that the quest for status (Sylwester *et al.* 2013) or feelings of aggression (Wilkowski *et al.* 2012) are associated with retaliatory actions. Similarly, in our setting, strategies can be more (sending the question to someone who only has few lives) or less (sending the question to someone who has several lives) aggressive. Using this definition, we find indications that women are less aggressive than men. The lower propensity for direct aggression among women demonstrated in our data and previous studies could potentially explain why they retaliate less.

However, there are other plausible reasons why we find that women retaliate less. For instance, if women believe that being aggressive reflects poorly on them, this could motivate them to retaliate less. This explanation would be in line with previous research finding that women are more sensitive to social image concerns than men (Mellström and Johannesson 2008). The literature further supports the notion that women retaliate less when they are face-to-face with their target and social image concerns are triggered (see Eckel and Grossman 2001). In order to tease out different mechanisms such as the inclination to aggression and social image concerns, we would need to extend the current study with a laboratory experiment.

Our study might be informative about wider gender differences in success on e.g. the labor market and other contexts outside of the game. However, it is important to address the caveats of this study, especially given the novelty of the topic and data, and establish whether the main result is externally valid. One of our main concerns using game show data is the representativeness of the sample: one would expect that the people applying to participate in game shows are both competitive and overconfident. In order to address this, we compare the share of contestants in each occupational category group with the shares for the whole population. These shares are presented in Appendix Figure A3.3, and show that *professionals* (category 2) are overrepresented among both female and male contestants, while *service workers and shop sales workers* (category 5) are underrepresented. In addition, *craft and related trades workers*, and *plant and machine operators and assemblers* (categories 7 and 8, respectively) are underrepresented among male contestants. Thus, our sample of

contestants is not necessarily representative of the population. However, since we are interested in learning more about behavior in competitive workplaces, the overrepresentation of professionals might be beneficial: we would expect the type of workplaces populated by professionals to be competitive, which encourages strategic behavior among both employees and employers. Another potential caveat for external validity is the fact that actions in the game are public and even broadcasted, whereas many interactions on the labor market are private. However, there are many examples of public competition in the workplace. Consider, for instance, the highly frequent direct sales competition in which salespeople openly compete with each other in how much they sell (Beltramini and Evans 1988), and individual progress is made public through e.g dashboards. Indeed, making the success of an employee public is often part of an incentive scheme, such as employee of the month. Thus, while we do not claim that our setting is representative for the labor market as a whole, it could be valid for specific interactions involving public competition, as illustrated in the examples above.

While we expect that women retaliate less openly than men, it is important to note that our result is silent on the propensity to engage in indirect retaliation, such as gossip. However, by its very nature, indirect retaliation can never have the important warding off effect of revenge that we demonstrate in this paper, since it is inherently unclear where indirect retaliation comes from. Thus, whether or not women engage as much or more in indirect retaliation as do men does not alter the relevance of our results. We suggest more laboratory studies on the mechanisms behind gender differences in retaliation. Insights from such scholarship could be used to create less gender biased working environments, thereby leveling the playing field for men and women. This could be done either by creating a working place where women feel more comfortable to retaliate, or one that deters men from this behavior. Since we observe a connection between retaliation and success and provide significant and sizeable evidence that women retaliate less than men, we believe that further studies on the topic would be important contributions to the knowledge stock on gender differences on the labor market.

References

Apesteguia J, Azmat G, Iriberri N (2012). "The impact of gender composition on team performance and decision making: Evidence from the field." *Management Science*, **58**(1), 78–93.

Ariely D, Bracha A, Meier S (2009). "Doing good or doing well? Image motivation and monetary incentives in behaving prosocially." *American Economic Review*, **99**(1), 544–55.

Beetsma RMWJ, Schotman PC (2001). "Measuring Risk Attitudes in a Natural Experiment: Data from the Television Game Show Lingo." *The Economic Journal*, **111**(474), 821–848.

Beltramini RF, Evans KR (1988). "Salesperson motivation to perform and job satisfaction: a sales contest participant perspective." *Journal of Personal Selling & Sales Management*, **8**(2), 35–42.

Bénabou R, Tirole J (2006). "Incentives and prosocial behavior." *American economic review*, **96**(5), 1652–1678.

Berk JB, Hughson E, Vandezande K (1996). "The Price is Right, But are the Bids? An Investigation of Rational Decision Theory." *The American Economic Review*, **86**(4), 954–970.

Chen GM, Abedin Z (2014). "Exploring differences in how men and women respond to threats to positive face on social media." *Computers in Human Behavior*, **38**, 118–126.

Clutton-Brock TH, Parker GA (1995). "Punishment in animal societies." *Nature*, **373**(6511), 209.

Croson R, Gneezy U (2009). "Gender differences in preferences." *Journal of Economic literature*, **47**(2), 448–74.

Daly M, Wilson M (1988). *Homicide*. Transaction Publishers.

Dehdari S (2017). "Economic Distress and Support for Far-right Parties – Evidence from Sweden." *mimeo*.

Eckel CC, Grossman PJ (2001). "Chivalry and solidarity in ultimatum games." *Economic Inquiry*, **39**(2), 171–188.

Fehr E, Gächter S (2000). "Fairness and retaliation: The economics of reciprocity." *Journal of economic perspectives*, **14**(3), 159–181.

Gertner R (1993). "Game Shows and Economic Behavior: Risk-Taking on "Card Sharks"." *The Quarterly Journal of Economics*, **108**(2), 507–521.

Goldin C (2015). "How to Achieve Gender Equality." *The Milken Institute Review*, pp. 24–33.

Griskevicius V, Tybur JM, Gangestad SW, Perea EF, Shapiro JR, Kenrick DT (2009). "Aggress to impress: hostility as an evolved context-dependent strategy." *Journal of personality and social psychology*, **96**(5), 980.

Hamilton BH, Nickerson JA, Owan H (2003). "Team incentives and worker heterogeneity: An empirical analysis of the impact of teams on productivity and participation." *Journal of political Economy*, **111**(3), 465–497.

Heikensten E, Isaksson S (2016). "In Favor of Girls: A Field Study of Adults' Beliefs in Children's Ability." *mimeo*.

Herrmann B, Thöni C, Gächter S (2008). "Antisocial punishment across societies." *Science*, **319**(5868), 1362–1367.

Jetter M, Walker JK (2017). "Gender Differences in Competitiveness and Risk-Taking Among Children, Teenagers, and College Students: Evidence from Jeopardy!" *IZA Discussion Paper*, (11201).

Kuhn P, Villeval MC (2015). "Are Women More Attracted to Cooperation Than Men?" *The Economic Journal*, **125**(582), 115–140.

List JA (2006). "Friend or foe? A natural experiment of the prisoner's dilemma." *The Review of Economics and Statistics*, **88**(3), 463–471.

McGee P, Constantinides S (2013). "Repeated play and gender in the ultimatum game." *The Journal of Socio-Economics*, **42**, 121–126.

Mellström C, Johannesson M (2008). "Crowding out in blood donation: was Titmuss right?" *Journal of the European Economic Association*, **6**(4), 845–863.

Metrick A (1995). "A Natural Experiment in "Jeopardy!"." *The American Economic Review*, **85**(1), 240–253.

Nikiforakis N (2008). "Punishment and counter-punishment in public good games: Can we really govern ourselves?" *Journal of Public Economics*, **92**(1-2), 91–112.

Post T, van den Assem MJ, Baltussen G, Thaler RH (2008). "Deal or No Deal? Decision Making under Risk in a Large-Payoff Game Show." *American Economic Review*, **98**(1), 38–71.

Raihani NJ, Bshary R (2015). "The reputation of punishers." *Trends in ecology & evolution*, **30**(2), 98–103.

Säve-Söderbergh J, Sjögren Lindquist G (2017). "Children Do Not Behave Like Adults: Gender Gaps In Performance And Risk Taking In A Random Social Context In The High-Stakes Game Shows Jeopardy and Junior Jeopardy." *The Economic Journal*, **127**(603), 1665–1692.

Solnick SJ (2001). "Gender differences in the ultimatum game." *Economic Inquiry*, **39**(2), 189–200.

Sylwester K, Herrmann B, Bryson JJ (2013). "Homo homini lupus? Explaining antisocial punishment." *Journal of Neuroscience, Psychology, and Economics*, **6**(3), 167.

Wilkowski BM, Hartung CM, Crowe SE, Chai CA (2012). "Men don't just get mad; they get even: Revenge but not anger mediates gender differences in physical aggression." *Journal of Research in Personality*, **46**(5), 546–555.

Wilson M, Daly M (1985). "Competitiveness, risk taking, and violence: The young male syndrome." *Ethology and sociobiology*, **6**(1), 59–73.

Zeichner A, Parrott DJ, Frey FC (2003). "Gender differences in laboratory aggression under response choice conditions." *Aggressive behavior*, **29**(2), 95–106.

3.6 Appendix

Table A3.1: Descriptive statistics, all contestants

	Male	Female
Share of all contestants, first stage	0.500	0.500
Share of all reaching final stage	0.508	0.492
Share of all winning final stage	0.465	0.535
# Lives, end of qualification stage	2.045	1.945
Low skilled	0.265	0.214

Notes: Gender differences using data on all contestants. *Share of all contestants, first stage* shows the share of male and female contestants in the first stage, while *Share of all reaching final stage* and *Share of all winning final stage* show same shares among contestants reaching the final stage and contestants winning the final stage, respectively. *# Lives, end of qualification stage* shows the average number of lives among male and female contestants at the end of the qualification stage. *Low skilled* is the share of female and male contestants coded as low skilled, according to SSYK codes (see Table A3.2).

Table A3.2: Description of 1-digit SSYK occupation categories

1-digit SSYK code (2012)	Name of occupational category	Skill level
0	Armed forces	–
1	Legislators, senior officials and managers	High
2	Professionals	High
3	Technicians and associate professionals	High
4	Clerks	Low
5	Service workers and shop sales workers	Low
6	Skilled agricultural and fishery workers	Low
7	Craft and related trades workers	Low
8	Plant and machine operators and assemblers	Low
9	Elementary occupations	Low

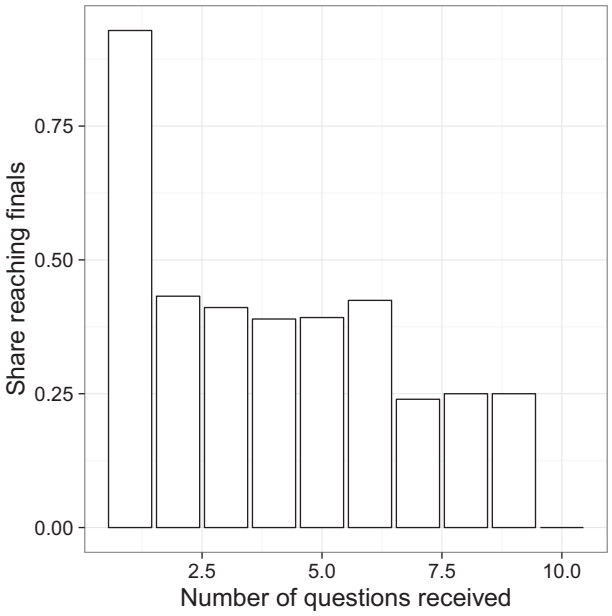
Notes: Description of 1-digit *Swedish Standard Classification of Occupations* (SSYK) occupation categories. Source: Statistics Sweden (SCB), based on Dehdari (2017).

Table A3.3: Description of variables

Variable	Description
Actions in the elimination stage	
Retaliation	Takes the value 1 if the sender returned the question to the sender from previous action, 0 otherwise.
Female	Takes the value 1 for actions where the sender is female, 0 otherwise.
Question order	The chronological order of the current action.
Share female	The share of female contestants still in the game at the time of the action.
# Lives, receiver	The number of lives held by the receiver before the current action.
Relative # lives, receiver	The number of lives held by the receiver before the current action, minus the avg. number of lives among all remaining contestants.
Relative # lives at start	The number of lives held by the receiver at the start of the elim. stage, minus the avg. number of lives among all remaining contestants.
Fewest # of lives	Takes the value 1 if the receiver held the lowest number of lives among the remaining contestants, 0 otherwise.
Attack	Takes the value 1 if the receiver received the question twice in succession.
Contestants	
Reach final	Takes the value 1 if the contestant having reached the final stage
Percent questions received	The number of questions received by the contestant, as a percentage share of the total number of questions in the elimination stage.
Percent retaliations	The number of retaliations, as a percentage share of the total number of questions sent by the contestant.
# Lives at start	The number of lives held by the contestant at the start of the elimination stage.
Percent correct answers	The number of correctly answered questions, as percentage share of total questions received.

Notes: Description of variables. *Actions in the elimination stage* describes variables that use data on each action in the elimination stage, while *Contestants* describes variables using data on average contestant-level behavior.

Figure A3.1: Reaching final state and the number of questions received

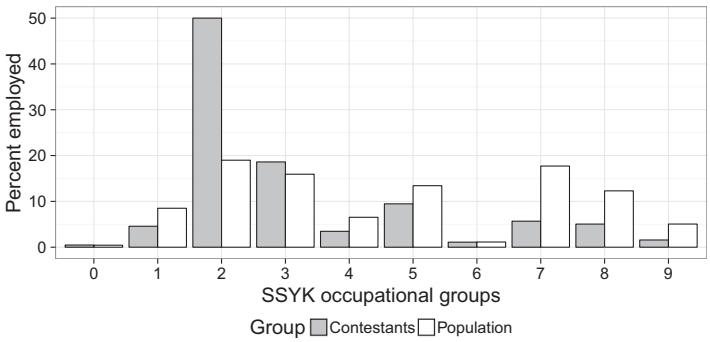


Notes: This graph shows the correlation between the number of questions contestants receive, and their chances of reaching the final stage. Each bar represents the share of contestants that reach the final stage, conditional on the number of questions they received in the elimination stage. This illustrates how a low number of questions received is associated with a high probability of reaching the final stage.

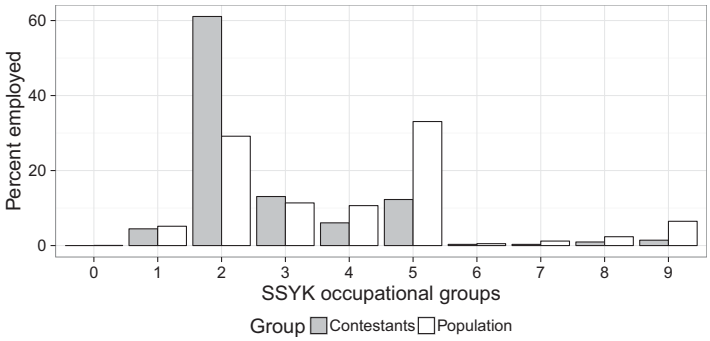
Figure A3.2: Position of contestants

Notes: This figure shows how the contestants are positioned at the beginning of the qualification round, with position number 1 to the far left, and position 8 to the far right. When a contestant is knocked out, the spotlight on her is turned off and she stands at her podium until the end of the elimination round.

Figure A3.3: Share in each occupational category



(a) Male contestants and population



(b) Female contestants and population

Notes: Figure (a) compares shares of male contestants in each occupational category (based on 1-digit SSYK codes) with shares for the whole male population, 16-64 years, while Figure (b) compares same shares for female contestants and the female population. Table A3.2 in Appendix A describes the occupation categories.

Sammanfattning

Denna avhandling består av tre fristående uppsatser i politisk ekonomi och beteendeekonomi.

Kapitel 1, **Economic Distress and support for Far-right Parties – Evidence from Sweden**, undersöker förhållandet mellan ekonomiska faktorer och stödet för högerextrema partier genom att studera det ökade stödet för det svenska främlingsfientliga och invandringskritiska partiet *Sverigedemokraterna*. Genom att länka valresultat med antalet varselbesked per valdistrikt undersöker jag hur ett högre antal varsel påverkar stödet för Sverigedemokraterna. Jag rapporterar ett positivt orsakssamband mellan varselbesked bland lågutbildade inrikes födda och antalet röster på Sverigedemokraterna: partiet ökar med en ytterligare röst för vartannat varselbesked mottaget av lågutbildade inrikes födda i närområdet. Detta kan förklara ungefär en tredjedel av partiets totala ökning mellan riksdagsvalen 2006 och 2010. För varselbesked bland övriga grupper – högutbildade inrikes födda, låg- och högutbildade utrikes födda – hittar jag ingen, eller i vissa fall en negativ, effekt på väljarstödet för Sverigedemokraterna.

Stödet för högerextrema partier kopplas ofta ihop med ökad invandring: när flyktingar och minoriteter blir synliga i grannskapet känner inrikes födda att deras sociala och ekonomiska status är hotad och väljer därför att stödja partier som lovar att begränsa invandringen. Detta är möjligen relaterat till ekonomisk oro om inrikes födda skyller försämrad personlig ekonomisk situation på invandring. För att undersöka denna möjlighet interagerar jag antalet varsel med ett mått på låg- och högutbildad invandring. Jag hittar att varselbesked bland lågutbildade inrikes födda har en större effekt på stödet för Sverigedemokraterna i områden med en hög andel lågutbildade utrikes födda, medan samma effekt är mindre i områden med en hög andel högutbildade utrikes födda. Det motsatta förhållandet gäller för varselbesked mottagna av högutbildade inrikes födda. Jag tolkar dessa resultat som att inrikes födda har lättare

för att skylla personliga ekonomiska motgångar på invandring när invandrare är synliga i närområdet, på grund av oro för konkurrens på arbetsmarknaden.

En växande vetenskaplig litteratur inom nationalekonomi kopplar stödet för högerextrema partier till ökad globalisering och internationell handel. Väljare vars arbetsmarknadsutfall försämras på grund av att inhemska företag utsätts för importkonkurrens är möjligen mer benägna att motsätta sig internationellt ekonomisk samarbete och frihandelsavtal. För att testa denna teori undersöker jag huruvida varselbesked påverkar stödet för *Vänsterpartiet*, som är väldigt lika Sverigedemokraterna när det gäller motstånd till Europeiska unionen. Trots dessa likheter hittar jag inga bevis för att varselbesked ökar stödet för Vänsterpartiet. Dessa resultat ifrågasätter förklaringar om att det ökade stödet för högerextrema partier drivs av motståndet till Europeiska unionen och globalisering.

Kapitel 1 rapporterar resultat från en analys av svenska enkätundersökningar som tyder på att ekonomisk oro översätts till stöd för Sverigedemokraterna genom sin påverkan på hur framträdande frågor om invandring är på den politiska dagordningen. Väljare som anser att invandring hotar deras sociala och ekonomiska status är troligen mer benägna att fokusera på en konfliktsdimension som ställer olika kulturer och etniciteter mot varandra. Detta skiftar fokus från traditionella socioekonom-iska frågor till andra frågor inom den sociokulturella dimensionen, där den förstnämnda domineras av de etablerade partierna, medan högerextrema partier dominerar den sistnämnda. Ökat stöd för invandringskritiska partier är därmed inte beroende av *ökat* motstånd mot invandring.

Kapitel 2, **The Origins of Common Identity: Division, Homogenization Policies and Identity Formation in Alsace-Lorraine** (författat tillsammans med Kai Gehring), studerar effekten av nationsbyggande – genom *homogeniseringspolitik* – på regional identitet. Uppkomsten av separatiströrelser i ett stort antal länder i många olika delar av världen demonstrerar vikten av en bättre förståelse för hur en gemensam identitet skapas. Empiriska studier av denna fråga är begränsade eftersom det är svårt att skilja på effekterna av en viss typ av politik från övriga faktorer som är specifika för en viss region eller ett land. Kapitel 2 använder sig av en godtycklig uppdelning av ett homogent område för att studera hur förtryckande assimileringspolitik påverkar identitetsska-

pandet.

Jag studerar uppdelningen av regionerna *Alsace* och *Lorraine* i Frankrike, vid gränsen till Tyskland, efter fransk-tyska kriget 1870-71. Området återlämnades till Frankrike efter Första världskriget. Befolkningen i de ockuperade områdena utsattes för förändringar i nationstillhörighet och förtryckande homogeniseringspolitik av både den tyska och den franska staten. Resultatet påvisar att försöken till homogenisering av befolkningen ledde till permanent högre regional identitet i de före detta ockuperade områdena: enkätundersökningar visar att invånarna i de före detta ockuperade områdena uttrycker en starkare tillhörighet till sin region än invånarna i den del av Alsace och Lorraine som aldrig annekterades av tyskarna.

För att fastställa ett kausalt samband betraktar jag enbart kommuner i närheten av den gräns som efter 1871 delade Tyskland och Frankrike. Denna typ av analys bygger på antagandet om att kommunerna nära, men på varsin sida om den forna gränsen, är lika i samtliga andra avseenden och skiljer sig enbart åt vad gäller utsatthet av olika typer av assimileringspolitik. Som ett mått på regional identitet använder jag stödet för ökad integration av Europeiska unionens medlemsländer i två viktiga folkomröstningar under åren 1992 och 2005. Europeiska unionen ansågs vid denna tid verka för ökad autonomi hos regionala myndigheter och folkvalda församlingar. Jag använder även andelen hushåll som prenumererar på den regionala nyhetstidningen som ett mått på regional identitet. För samtliga utfall hittar jag en starkare regional identitet i det före detta ockuperade området. Eftersom gränsdragningen efter tysk-franska kriget inte tog hänsyn till regional identitet innebär det att de uppskattade skillnaderna i regional identitet är en konsekvens av förändringar i nationstillhörighet samt tillhörande homogeniseringspolitik.

Vidare hittar jag inga skillnader i nationell identitet eller nationalism. Stödet för det franska nationalistiska partiet *Nationella fronten* i presidentvalet 2007 är lika stort på båda sidor av den forna gränsen. Detta tyder på att både den tyska och den franska homogeniseringspolitiken bidrog till högre regional identitet i det före detta ockuperade området, utan att ha påverkat nationell identitet.

Kapitel 2 betraktar även ett stort antal alternativa förklaringar till uppkomsten av skillnaden i regional identitet, så som potentiella effekter

av närheten till Tyskland, inverkan av religionsundervisning, språk- och dialektskillnader, och migration. Jag undersöker samtliga förklaringar och visar att det är mindre troligt att de kan förklara skillnader i regional identitet. Jag föreslår istället att skillnaderna uppkommit som ett resultat av att föräldrar i det ockuperade området investerade i överföringen av regionala traditioner till sina barn som svar på statens repressiva politik. Investeringarna ökade regional identitet och denna högre nivå har bevarats i nästan ett sekel.

I det tredje, och sista kapitlet, **Gender Differences in Revenge and Strategic Play: A Natural Experiment** (författat med Emma Heikensten och Siri Isaksson), undersöker jag könsskillnader i hämndbeteende. Denna fråga är av betydelse då en individs svar på en attack sänder en stark signal till omgivningen. En individ som besvarar attacken med att hämnas kan möjligen avvärja framtida attacker medan en individ som inte hämnas kan bjuda in till fler attacker. Jag besvarar frågor rörande könsskillnader i hämndbeteende genom att samla in data på deltagarnas agerande i frågesporten *Vem vet mest?*. Dataunderlaget möjliggör analys av en miljö med tydliga spelregler och mindre påverkan av externa faktorer än som oftast återfinns i exempelvis registerdata. Dessutom tillhandahåller dataunderlaget ett större antal observationer i en miljö med högre insatser än vad som kan erhållas genom labbexperiment. Under frågesportens utslagningsomgång skickar deltagarna frågor till varandra i ett försök att slå ut övriga deltagare. Eftersom mottagandet av en fråga enbart innebär en potentiell utslagning är skickandet av frågan att betraktas som en aggressiv och skadlig aktion. Resultatet visar att kvinnliga deltagare är 23 procent mindre benägna att hämnas efter att ha mottagit en fråga. Dessutom spelar könet på mottagen roll när kvinnor hämnas: kvinnor är mer benägna att hämnas mot män än mot andra kvinnor.

Vidare undersöks huruvida hämndfulla aktioner påverkar en deltagares chanser att lyckas i frågesporten. Jag skattar ett negativt samband mellan antal frågor en deltagare mottar i utslagningsomgången och hennes chanser att nå nästa omgång. Jag visar att hämndaktioner avvärjer mottagandet av framtida frågor men enbart på kort sikt. Kvinnor som hämnas avvärjer framtida frågor en längre period men är samtidigt mindre benägna att hämnas.

Dessutom studerar jag könsskillnader i andra, i frågesporten vanligt förekommande, strategier. I synnerhet studeras strategier som anses som aggressiva, till exempel att skicka frågan till samma deltagare flertalet gånger i rad, eller att alltid skicka frågan till deltagaren med färst antal återstående "liv". Resultaten tyder på att kvinnor är mindre aggressiva, vilket kan förklara deras lägre benägenhet att hämnas. Dessa resultat är i linje med tidigare studier, vilka visar att kvinnor bryr sig mer om hur andra betraktar deras beteende: om kvinnor anser att ett aggressivt beteende har negativ påverkar på hur de betraktas av övriga deltagare kan detta få dem att hämnas i mindre utsträckning, även om hämndaktioner visar sig vara fördelaktiga.

MONOGRAPH SERIES

1. Michaely, Michael, *The Theory of Commercial Policy: Trade and Protection*, 1973

2. Söderström, Hans Tson, *Studies in the Microdynamics of Production and Productivity Change*, 1974

3. Hamilton, Carl B., *Project Analysis in the Rural Sector with Special Reference to the Evaluation of Labour Cost*, 1974

4. Nyberg, Lars and Staffan Viotti, *A Control Systems Approach to Macroeconomic Theory and Policy in the Open Economy*, 1975

5. Myhrman, Johan, *Monetary Policy in Open Economies*, 1975

6. Krauss, Melvyn, *International Trade and Economic Welfare*, 1975

7. Wihlborg, Clas, *Capital Market Integration and Monetary Policy under Different Exchange Rate Regimes*, 1976

8. Svensson, Lars E.O., *On Competitive Markets and Intertemporal Resources Allocation*, 1976

9. Yeats, Alexander J., *Trade Barriers Facing Developing Countries*, 1978

10. Calmfors, Lars, *Prices, Wages and Employment in the Open Economy*, 1978

11. Kornai, János, *Economics of Shortage, Vols I and II*, 1979

12. Flam, Harry, *Growth, Allocation and Trade in Sweden. An Empirical Application of the Heckscher-Ohlin Theory*, 1981

13. Persson, Torsten, *Studies of Alternative Exchange Rate Systems. An Intertemporal General Equilibrium Approach*, 1982

14. Erzan, Refik, *Turkey's Comparative Advantage, Production and Trade Patterns in Manufactures. An Application of the Factor Proportions Hypothesis with Some Qualifications*, 1983

15. Horn af Rantzien, Henrik, *Imperfect Competition in Models of Wage Formation and International Trade*, 1983

16. Nandakumar, Parameswar, *Macroeconomic Effects of Supply Side Policies and Disturbances in Open Economies*, 1985

17. Sellin, Peter, *Asset Pricing and Portfolio Choice with International Investment Barriers*, 1990

18. Werner, Ingrid, *International Capital Markets: Controls, Taxes and Resources Allocation*, 1990

19. Svedberg, Peter, *Poverty and Undernutrition in Sub-Saharan Africa: Theory, Evidence, Policy*, 1991

20. Nordström, Håkan, *Studies in Trade Policy and Economic Growth*, 1992

21. Hassler, John, Lundvik, Petter, Persson, Torsten and Söderlind, Paul, *The Swedish Business Cycle: Stylized facts over 130 years*, 1992

22. Lundvik, Petter, *Business Cycles and Growth*, 1992

23. Söderlind, Paul, *Essays in Exchange Rates, Business Cycles and Growth*, 1993

24. Hassler, John A.A., *Effects of Variations in Risk on Demand and Measures of Business Cycle Comovements*, 1994

25. Daltung, Sonja, *Risk, Efficiency, and Regulation of Banks*, 1994

26. Lindberg, Hans, *Exchange Rates: Target Zones, Interventions and Regime Collapses*, 1994

27. Stennek, Johan, *Essays on Information-Processing and Competition*, 1994

28. Jonsson, Gunnar, *Institutions and Incentives in Monetary and Fiscal Policy*, 1995

29. Dahlquist, Magnus, *Essays on the Term Structure of Interest Rates and Monetary Policy*, 1995

30. Svensson, Jakob, *Political Economy and Macroeconomics: On Foreign Aid and Development*, 1996

31. Blix, Mårten, *Rational Expectations and Regime Shifts in Macroeconometrics*, 1997

32. Lagerlöf, Nils-Petter, *Intergenerational Transfers and Altruism*, 1997

33. Klein, Paul, *Papers on the Macroeconomics of Fiscal Policy*, 1997

34. Jonsson, Magnus, *Studies in Business Cycles*, 1997

35. Persson, Lars, *Asset Ownership in Imperfectly Competitive Markets*, 1998

36. Persson, Joakim, *Essays on Economic Growth*, 1998

37. Domeij, David, *Essays on Optimal Taxation and Indeterminacy*, 1998

38. Flodén, Martin, *Essays on Dynamic Macroeconomics*, 1999

39. Tangerås, Thomas, *Essays in Economics and Politics: Regulation, Elections and International Conflict*, 2000

40. Lidbom, Per Pettersson, *Elections, Party Politics and Economic Policy*, 2000

41. Vestin, David, *Essays on Monetary Policy*, 2001

42. Olofsgård, Anders, *Essays on Interregional and International Political Economics*, 2001

43. Johansson, Åsa, *Essays on Macroeconomic Fluctuations and Nominal Wage Rigidity*, 2002

44. Groth, Charlotta, *Topics on Monetary Policy*, 2002

45. Gancia, Gino A., *Essays on Growth, Trade and Inequality*, 2003

46. Harstad, Bård, *Organizing Cooperation: Bargaining, Voting and Control*, 2003

47. Kohlscheen, Emanuel, *Essays on Debts and Constitutions*, 2004

48. Olovsson, Conny, *Essays on Dynamic Macroeconomics*, 2004

49. Stavlöt, Ulrika, *Essays on Culture and Trade*, 2005

50. Herzing, Mathias, *Essays on Uncertainty and Escape in Trade Agreements*, 2005

51. Bonfiglioli, Alessandra, *Essays on Financial Markets and Macroeconomics*, 2005

52. Pienaar, Natalie, *Economic Applications of Product Quality Regulation in WTO Trade Agreements*, 2005

53. Song, Zheng, *Essays on Dynamic Political Economy*, 2005

54. Eisensee, Thomas, *Essays on Public Finance: Retirement Behavior and Disaster Relief*, 2005

55. Favara, Giovanni, *Credit and Finance in the Macroeconomy*, 2006

56. Björkman, Martina, *Essays on Empirical Development Economics: Education, Health and Gender*, 2006

57. Larsson, Anna, *Real Effects of Monetary Regimes*, 2007

58. Prado, Jr., Jose Mauricio, *Essays on Public Macroeconomic Policy*, 2007

59. Tonin, Mirco, *Essays on Labor Market Structures and Policies*, 2007

60. Queijo von Heideken, Virginia, *Essays on Monetary Policy and Asset Markets*, 2007

61. Finocchiaro, Daria, *Essays on Macroeconomics*, 2007

62. Waisman, Gisela, *Essays on Discrimination and Corruption*, 2008

63. Holte, Martin Bech, *Essays on Incentives and Leadership*, 2008

64. Damsgaard, Erika, *Färnstrand Essays on Technological Choice and Spillovers*, 2008

65. Fredriksson, Anders, *Bureaucracy, Informality and Taxation: Essays in Development Economics and Public Finance*, 2009

66. Folke, Olle, *Parties, Power and Patronage*, 2010

67. Yanagizawa-Drott, David, *Information, Markets and Conflict*, 2010

68. Meyersson, Erik, *Religion, Politics, and Development*, 2010

69. Klingelhofer, Jan, *Models of Electoral Competition*, 2010

70. Perrotta, Maria Carmela, *Aid, Education and Development*, 2010

71. Caldara, Dario, *Essays on Empirical Macroeconomics*, 2011

72. Mueller, Andreas, *Business Cycles, Unemployment and Job Search*, 2011

73. von Below, David, *Essays in Climate and Labour Economics*, 2011

74. Gars, Johan, *Essays on the Microeconomics of Climate Change*, 2012

75. Spiro, Daniel, *Some Aspects of Resource and Behavioral Economics*, 2012

76. Ge, Jinfeng, *Essays on Macroeconomics and Political Economy*, 2012

77. Li, Yinan, *Institutions, Political Cycles and Corruption*, 2012

78. Håkanson, Christina, *Changes in Workplaces and Careers*, 2013

79. Qin, Bei, *Essays on Empirical Development and Political Economics*, 2013

80. Jia, Ruixue, *Essays on the Political Economics of China's Development*, 2013

81. Campa, Pamela, *Media Influence on Pollution and Gender Equality*, 2013

82. Seim, David, *Essays on Public, Political and Labor Economics*, 2013

83. Shifa, Abdulaziz B., *Essays on Growth, Political Economy and Development*, 2013

84. Panetti, Ettore, *Essays on the Economics of Banks and Markets*, 2013

85. Schmitt, Alex, *Beyond Pigou: Climate Change Mitigation, Policy Making and Decisions*, 2014

86. Rogall, Thorsten, *The Economics of Genocide and War*, 2015

87. Baltrunaite, Audinga, *Political Economics of Special Interests and Gender*, 2016

88. Harbo Hansen, Niels-Jakob, *Jobs, Unemployment, and Macroeconomic Transmission*, 2016

89. Stryjan, Miri, *Essays on Development Policy and the Political Economy of Conflict*, 2016

90. Karadja, Mounir, *On the Economics and Politics of Mobility*, 2016

91. Kitamura, Shuhei, *Land, Power and Technology, Essays on Political Economy and Historical Development*, 2016

92. Malmberg, Hannes, *Human Capital in Development Accounting and Other Essays in Economics*, 2017

93. Öberg, Erik, *On Money and Consumption*, 2017

94. Lane, Nathaniel, *States of Development: Essays on the Political Economy of Development in Asia*, 2017

95. Prawitz, Erik, *On the Move: Essays on the Economic and Political Development of Sweden*, 2017

96. Iwanowsky, Mathias, *Essays in Development and Political Economics*, 2018