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Unemployment and Right-wing Extremist Crime

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Abstract

It is frequently argued that unemployment plays a crucial role for the occurrence of right-wing extremist crimes. We empirically test this hypothesis using data from Germany. We find that right-wing criminal activities occur more frequently when unemployment is high. The big difference in right-wing crime between East and West German states can mostly be attributed to differences in unemployment. This finding reinforces the importance of unemployment as an explanatory factor for right-wing crime and questions explanations based solely on the different socialization in former communist East Germany and the liberal West German states.

JEL Classification: J15, J69, K42

Keywords: Hate crime, right-wing extremism, unemployment, cost of unemployment

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1 Introduction

Right-wing extremism is a serious problem in many societies. Germany, for example, has witnessed several fatal assaults against foreigners.[1] While these assaults have received a lot of attention they are just the most severe examples of crimes with a racist, xenophobic, and/or antisemitic background (henceforth right-wing extremist crimes). For instance, more than 10,000 right-wing extremist crimes per year were officially registered in Germany during the period 1996 to 1999.[2] More than 90 percent of these crimes were non-violent crimes, in particular propaganda offences. Among violent crimes, 65 percent of the cases were hate crimes against the foreign population. In the US, the FBI recorded about 8,000 right-wing extremist crimes per year between 1998 and 2002. Great Britain has witnessed a dramatic increase of this type of crime from 13,878 cases in 1998 to 54,370 cases in 2002 (Statistics on Race and the Criminal Justice System). Similar numbers are available for other OECD countries. While different classifications and legislations make a cross country comparison impossible, the numbers nonetheless demonstrate the severeness of the problem and the need for a better understanding of its causes.

In Germany, the extent of right-wing extremist crimes is particularly problematic in Eastern states, the former communist German Democratic Republic (GDR). During 1996 to 1999, the indicence of right-wing extremist crimes was 50 percent higher in Eastern states as compared to the Western states. In this paper we analyze two competing hypotheses for why the incidence of right-wing crime is so much more pronounced in East Germany compared to West Germany. According to the first hypothesis, these differences exist because of the politically and educationally very different socialization between former communist East Germany and democratic West Germany. These political and historical differences and their different political cultures show up in different preferences between East and West German citizens also after the German reunification (Alesina and Fuchs-Schündeln, 2007). The political heritage of the GDR may have generated more hostile attitudes towards immigrants and groups with other ethnic origin. The second hypothesis stresses the particularly strong economic hardship in East Germany, characterized not least by a substantially higher unemployment rate than

[1] In September 1991, asylum seekers were attacked in their home in Hoyerswerda. Similarly, in Rostock-Lichtenhagen in August 1992, asylum seekers were attacked in pogrom-like riots. Lethal fire assaults were committed against Turkish foreigners in Mölln (November 1992) and Solingen (May 1993).

[2] By way of comparison, there were about 6.5 million reported offences in the year 1997 overall, of which about 12,000 had been classified as right-wing extremist crimes. Right-wing extremist crimes thus comprise only a small fraction of all registered crimes.

in the Western states. As an alternative explanation, higher unemployment in Eastern states may be a major cause for the occurrence of right-wing extremist crime. In this paper we try to discriminate these two explanations using crime statistics ("Polizeiliche Kriminalstatistik") collected by the Federal Criminal Police Office ("Bundeskriminalamt"). The argument that unemployment may be an important driving force behind right-wing extremist sentiments is prominent among historians. Several studies have argued that the rise of the Nazis in Germany in the 1930s was decisively affected by the high unemployment rates (Fischer and Modigliani, 1978).[3] This hypothesis is supported by an empirical analysis of voting behavior on the state level by Frey and Weck (1981).[4] A possible explanation for this relation is offered by relative deprivation theory (Falter and Klein, 1994; Hofstadter, 1963; Lipset, 1963). According to this theory unemployment or the threat of becoming unemployed causes a loss in status and feelings of deprivation. As a consequence, people develop a preference for authoritarian leaders, an anti-foreigner ideology, and violent predispositions.[5] Despite its intuitive appeal, however, previous emprical evidence on the relation between right-wing extremist crime, racist crime and/or crime against immigrants on the one side and unemployment on the other side is rather mixed (as we discuss below).[6]

In this study we explore the empirical relationship between unemployment and violent and non-violent right-wing crimes in Germany. We use these finding to better understand the sources of the higher incidence of right-wing extremist crimes in East Germany. Our main results are as follows. *First,* we find a significantly positive relation between state level unemployment and the incidence of right-wing extremist crimes. Importantly, this relation

[3]To illustrate: the unemployment rate was 14.4 percent in 1930, and the Nazi-party NSDAP (National Socialist German Labor Party) received 18.3 percent of the votes in the elections for the German Reichstag. In the elections of 1932, when unemployment had reached a level of 26.6 percent, 37.3 percent of the voters voted in favor of the NSDAP. Note, however, that the political environment in Germany at the onset of the great depression is hardly comparable to the current one. Hence a one-to-one comparison between now and then is clearly problematic.

[4]It should be noted that, even though increasing unemployment may have causally affected the increasing support for the Nazi party, this does *not* mean that the unemployed voted predominantely for the Nazis. In fact, as shown in an interesting recent paper by King *et al.* (2008), the unemployed voted disproportionately for the communist party.

[5]A related literature on subjective well being shows that unemployment significantly reduces subjective well-being (Clark and Oswald, 1994; Frey and Stutzer, 2002; Winkelmann and Winkelmann, 1998). Yang and Lester (1994) even show that the suicide rate of unemployed in the U.S. is significantly higher than the one of the employed.

[6]On a more general level, most studies do find a significant association between unemployment and non-violent forms of crime, but often no relation with violent forms of crime. See, inter alia, Raphael and Winter-Ebmer (2001) for the US, Carmichael and Ward (2001) for the UK, Fougère *et al.* (2009) for France, and Entorf and Spengler (2000) for Germany. See also Freeman (1999) for a more general discussion of the economic analysis of crime.

turns out to be robust to the inclusion of state fixed effects and state-specific time trends. *Second*, we find that a large fraction of the difference in right-wing extremist crimes between East and West Germany can be explained by the much higher unemployment rates in Eastern states. In particular, we estimate the impact of unemployment on right-wing crime separately for states with high and low incidence of unemployment and we find a very similar impact of unemployment on right-wing crime both in high-unemployment East German states and in high-unemployment West German states. In contrast, we do not find find any such relationship for low-unemployment states. Thus the relationship between unemployment and right-wing extremist crimes is not a particular East German phenomenon. Instead, our estimates point to the importance of non-linearities: the relationship between right-wing crimes and unemployment becomes relevant only once a critical level of unemployment has been exceeded. We also study whether unemployment has differential impacts on violent and non-violent right-wing crimes. As laid out in more detail in the next section, these two categories comprise very different types of crime. For non-violent crimes, all results are very similar to the ones obtained from analyzing the total incidence of crime, including the non-linearity in the impact of unemployment. On the other hand, we do not find a strong relationship between unemployment and violent crimes. A final interesting result shows that *total* unemployment predicts the incidence of right-wing crime better than *youth* unemployment. Prima facie this finding is surprising since right-wing criminals are typically young men between 15 and 25 years (Neubacher, 1998; Willems *et al.*, 1993). One could therefore expect that youth unemployment affects these criminals more directly. However, unemployment may affect right-wing crime not (or not only) at the individual level. In other words, crimes are not necessarily committed by those who are actually *unemployed* and unemployment may thus affect right-wing crime in a more complex way. One possible interpretation is that high unemployment increases the fear of *losing* a job. This in turn may lower people's willingness to support humanitarian values of tolerance and altruism. As a consequence, in a high-unemployment environment the normative pressure against right-wing criminals may eradicate.

There are only few studies that support the hypothesis that current economic conditions, such as unemployment, have a signficant impact on crimes motivated by right-wing extremist, anti-foreigner, or racist attitudes. One study that provides empirical support for such a relationship is Dustmann *et al.* (2004) who investigate the determinants of racial harassment in the UK. Using individual data with information on self-reported experience of racial

harassment, they find that minority individuals in high-unemployment neighborhoods are significantly more frequently harassed. They argue that this could either indicate "(...) that unemployment provokes greater hostility in the expression of negative attitudes or (...) it puts a pool of unemployed individuals into contact with others in circumstances where hostile outcomes can easily occur" (p.23). These results differ from those in Green *et al.* (1998) who study the determinants of crimes against non-whites (Asian, Latinos, and blacks) in New York City. They find that racially motivated crimes are most frequent in predominantly white areas and in areas that experienced strong in-migration of minorities. However, a higher local unemployment rate among whites does not affect the incidence of such crimes nor is there an interaction between high unemployment and high in-migration of minorities.[7]

To the best of our knowledge, the only study that empirically investigates the impact of unemployment on right-wing extremist crime in recent Germany is Krueger and Pischke (1997). They regress the incidence of anti-foreigner crimes in Germany on unemployment rates in the period between 1991 and 1993. Lacking official data they collected county-level crime data on these crimes based on newspaper reports. They report a significant relation between unemployment and crime incidents. This relation, however, becomes insignificant after controlling for the differences between East and West Germany. Several reasons may be responsible for why their result differs from ours: first, since they rely on newspaper data, the precision of measurement is potentially questionable. Second, they analyze violent crimes only. This is due to the fact that non-violent crimes are typically not reported in the newspapers. In our data, which comprises violent and non-violent crimes, the incidence of violent crimes as a fraction of all crimes is only about 6 percent in West Germany and about 9 percent in East Germany. Our sample comprises 44,403 crimes in absolute terms, whereas the one of Krueger and Pischke (1997) identified "only" 1,056 such crimes. Thus they analyze only a relatively small proportion of all committed right-wing extremist crimes. Moreover, as our results show, the association between violent crimes and unemployment is much weaker than for non-violent crimes.

The rest of this paper is organized as follows. In the next section we present the data and some preliminary empirical evidence. We discuss our empirical strategy in section 3. In section

[7]See also Krueger and Malečková (2003) who investigate the link between poverty (or low education) and politically motivated violence and terrorist activities. Using data on public opinion polls conducted in the West Bank and Gaza Strip they find that support for violent attacks against Israeli targets does not decrease among those with higher education and higher living standards.

4 we present and discuss our empirical findings. Section 5 concludes.

2 Data and descriptive evidence

To assess the role of unemployment on right-wing crime we use official crime statistics ("Polizeiliche Kriminalstatistik"). The data have been collected by the Federal Criminal Police Office ("Bundeskriminalamt") and have not been analyzed previously. The data set uses information reported by the police departments in the various German states ("Länder") on a monthly basis.[8] The variable to be explained is the number of registered right-wing extremist crimes (REC) per 100,000 inhabitants. The Federal Criminal Police Office classifies right-wing extremist criminal activities in "violent right-wing extremist crimes" and "non-violent right-wing extremist crimes". The former include offenses such as murder and attempted murder, bomb and fire attacks, assault and battery, offenses against the laws relating to civil disorders and rioting. The latter include sedition, disruption of graveyard peace, threat/coercion, right-wing extremist propaganda, willful damage to property, and so on. While our empirical analysis below will concentrate on the role of unemployment as a determinant of total right-wing crimes, we will also look separately at the two subcategories of non-violent and violent right-wing crimes. The focus of our analysis is on the period from 1996 to 1999 for which consistent data are available.[9] More than 10,000 right-wing extremist crimes per year were officially registered within this period, of which 93.2% were non-violent and 6.8% were violent right-wing crimes. Among non-violent RECs, 65% were right-wing propaganda delicts and "other" right-wing extremist activities, and 35% of all non-violent crimes were hate crimes against foreigners and crimes with anti-Semitic background. Among violent crimes, 65% of the cases were hate crimes against immigrants.

Figure 1

[8] Official crime records are well known to be prone to measurement error (Skogan, 1974). The most obvious problem is reporting behavior of victims. It could also be that what is classified as a right-wing extremist criminal activity by the police varies across states and/or changes over time (e.g. as a consequence of increased media attention). This is potentially important in the German case because the police falls under state responsibility meaning that results may merely reflect state-differences in definitions and/or systematic changes in these definitions over time (see also footnote 9 below).

[9] There are two important breaks in the data. First, until the end of 1995, both the Federal Criminal Police Office as well as the Federal Office for the Protection of the Constitution ("Bundesverfassungsschutz") collected data on REC. From 1996 onwards, both offices registered only those offences as REC which were reported as such by the corresponding police authority of the involved state. Second, in an attempt to harmonize the assessment and reporting of politically motivated offences across the states, there has been a major change in the collection and registration of such crimes at the end of the 1990s. We therefore only analyze data from the period 1996 until 1999.

Panel (a) of Figure 1 reports the total number of registered right-wing extremist crimes per 100,000 inhabitants and the overall unemployment rate in Germany over the period 1996 to 1999. Over this period, the total REC rate averaged about 1.4 crimes per 100,000 residents and average total unemployment was about 12.7% in the same period. Panel (b) shows the absolute number of non-violent and violent criminal activities. The total number of RECs amounted to about 800 cases per month (1.4 cases per 100,000 residents) for non-violent RECs and about 60 cases per month (0.1 cases per 100,000 residents) for violent RECs. While both series show considerable fluctuations over time, none of them has a clear underlying trend within the observation period (note, however, that trending behavior of the unemployment rate may be an issue).

Figure 2

Do the data suggest any systematic relationship between REC rates and unemployment rates? Figure 2 gives a first hint on this issue. In each panel, the vertical axis shows REC rates per 100,000 residents and the horizontal axis refers to the unemployment rate. Panel (a) pools all available month-state observations. This figure shows a clear positive correlation between the unemployment rate and total REC rates. Panel (b) shows the aggregate time-series relationship (i.e. each data point refers to the country-wide REC and unemployment rates of a particular month), while panel (c) aggregates over time and shows the differences in REC and unemployment rates across states. Overall, Figure 2 displays a very clear picture: Both time-series and cross-sectional variation indicate a clear positive relationship between the two variables of interest.

Table 1

One issue that received considerable attention in the German public debate relates to the question whether right-wing criminal activities are primarily a problem of the "new states", the East German states that formed the communist Democratic Republic of Germany. The issue here is to which extent the higher incidence of right-wing extremism in East Germany is rooted in historical and political post-WWII differences, and to which extent it is related to the weak economic performance and, in particular, to the high unemployment rates in the East. Table 1 presents descriptive statistics on East-West differences in unemployment and right-wing extremist crimes. In fact, East-West differences of right-wing extremist crimes are dramatic: over the period 1996-1999, the total monthly REC rate in the Eastern states amounted to

2.575 per 100,000 residents, almost three times as high as in the Western states (0.914 crimes per 100,000 residents). Furthermore, the fraction of violent crimes in total RECs was 9.2% in East Germany, almost 1.5 times higher than in the West. Table 1 also shows the difference in total unemployment and youth unemployment between the new and the old states. East-West differences are also dramatic along this dimension. The average unemployment rate in the Eastern states was 17.6%, which compares to 10.5% in Western states. Interestingly, with respect to youth unemployment, East and West German states do not differ that much. The mean youth unemployment rate of East German states over the observation period is 15.7%, compared to 12.2% in the West.

3 Empirical strategy

The preceding evidence focuses exclusively on unconditional correlations between REC and unemployment rates. It is clear, however, that not only levels of unemployment but also other state-characteristics may play a potentially important role to explain the incidence of REC rates across states and time. Our empirical analysis focuses on two basic models. The first model pools all data and runs a simple regression of the following form:

$$REC_{it} = \alpha + \beta \cdot UR_{it} + x_{it}\gamma + \varepsilon_{it}, \tag{1}$$

where REC_{it} measures the number of right-wing crimes in state i in month t, UR_{it} is the overall unemployment rate, and x_{it} is a vector of (potentially) time-variant state characteristics. The error term ε_{it} captures unobserved determinants of crime rates and measurement and/or classification errors. The coefficient β captures the impact of unemployment on crime and is of primary interest. In order to rule out any spurious correlation that results from fluctuations in that variable across seasons, we use the seasonally adjusted unemployment rate throughout. Finally, the vector of coefficients γ estimates the impact of other control variables on registered crime rates.

Our second basic model controls for permanent differences in REC rates across states and for differences in REC trends across states. Accounting for such differences is potentially important in the German case. On the one hand, the data are generated by reporting of crimes to the police. Because the police in Germany is under state responsibility, observed REC differences may simply reflect state-differences in REC definitions or reporting and/or

systematic changes in definitions and reporting over time. On the other hand, there are many other differences across states in Germany, particularly between Eastern and Western states that could have led to differential trends in REC-rates between states. To account in a flexible way for such state-differences we estimate the following econcometric model:

$$REC_{it} = \alpha_i + \beta \cdot UR_{it} + \delta_i t + \delta_i' t^2 + \epsilon_{it} \tag{2}$$

This model allows for time-invariant state fixed effects by estimating a set of state-specific intercepts α_i. Moreover, it also adds state-specific quadratic time trends, captured by the two parameter vectors δ_i and δ_i'. Note that model (2) does not acount for additional control variables because the variables contained in x_{it} have actually only little variation *within states*. In other words, the effect of x_{it} is essentially captured by state the fixed effects α_i. The parameter β now captures the effect of changes in the unemployment rate on right-wing crimes *within states*. The error term ϵ_{it} accounts for both time-variant unobserved heterogeneity and measurement or classification errors. In comparison, model (2) offers two main advantages over model (1). First, it accounts for unobserved heterogeneity across states in a very flexible way. Second, it takes the potential trending of the unemployment rate (see figure 1) into account whereas model (1) neglects the longitudinal dimension in the data.

Note that both models represent associations at the level of the state, while the structural model of interest is at the individual level. Therefore, both models are estimated by weighted least squares, using the population size of the states as weights.[10] In order to take potential serial correlation of the error term into account – and Figure 1 suggests that serial correlation may indeed be an issue – we use standard errors that are clustered at the state-level throughout, allowing for arbitrary correlation of the regression errors within states.[11] In the empirical analysis below, we also present some additional model specifications. First, we also estimate the model in differences, as Figure 1 suggests that unemployment might be characterized by high temporal persistence. Second, we also estimate several dynamic variants of the model

[10]Weighting by the population size of the states is very natural when working with data that represent state-specific averages (Wooldridge, 2008). However, the results do not hinge on using WLS instead of OLS (compare columns (1) and (2) of table A.1).

[11]Columns (4) to (6) of table A.1 present alternative ways of dealing with serially correlated errors. It turns out, however, that the exact way of dealing with this issue does not matter much. The model in the fourth column uses quarterly data instead of monthly data. Next, column (5) shows estimates from a model with AR(1) errors. Finally, we have re-estimated the baseline model by GMM. Clearly, using clustered standard errors may yield conservative standard errors (compare the standard errors across columns (2) to (6) of Table A.1, for example) and thus the reported standard errors are likely to provide an upper bound.

given in equation (2). Dynamic models not only provide an alternative way of dealing with serial correlation in the error term, they also allow us to test whether there is a lagged rather than an immediate impact of unemployment on REC rates.

4 Empirical results

4.1 The relationship between unemplyoment and REC

Table 2 shows the impact of total unemployment on total REC rates under alternative specifications in simple WLS regressions. The first column of Table 2 shows the unemployment coefficient from a regression that does neither include control variables, nor state fixed effects, nor any deterministic time trend. This coefficient indicates that an increase in the unemployment rate by one percentage point significantly increases the number of total REC cases by 0.168 cases per 100,000 residents. Evaluated at sample averages, this implies an elasticity of total RECs with respect to unemployment of 1.61 ($= (0.168 \cdot 10.820)/1.127$). The second column in Table 2 accounts for additional variables which may potentially affect right-wing extremist crime. We include economic and demographic variables such as per-capita income, education, the population share of young males and of foreigners, as well as urban and rural population shares. We further control for policy variables such as crime conviction rates and expenditures of regional governments for facilities and support of the young population, as well as expenditures for social welfare.[12] The goodness-of-fit (adjusted R-squared) increases strongly, from 0.511 without these regressors to 0.669 once these regressors are included. Furthermore, the inclusion of these covariates decreases the point estimate of the unemployment rate considerably, but the coefficient is still highly significant and quantitatively important, with an implied elasticity at sample means of about 1.27 ($= (0.132 \cdot 10.820)/1.127$).

Table 2

The coefficients of the first two columns in Table 2 are based on pooled data, i.e. on our basic model given by equation (1). It is possible, however, that the unemployment coefficient is correlated with the error term as unobserved state-characteristics may affect both, unemploy-

[12]The full list of included control variables is as follows: Real per capita GDP, the fraction of the male population that is aged between 15 and 25, the population share of foreigners, the fraction of the population living in either small (less than 5,000 inhabitants) or large (more than 500,000 inhabitants) communities, the fraction of school leavers with either "Hauptschulabschluss", "Realschulabschluss", or " Fachhochschulreife", the probability of conviction (for violent and non-violent crimes separately), real youth welfare service spending per male inhabitant aged between 18 and 25, and real social welfare spending per capita.

ment and REC rates. Futhermore, it turns out that the included control variables have very little variation over time and most of their effect is identified from variation between states. Given the limited within-state variation in control variables, column (3) reports the results of the a fixed effects model that does not include additional control variables. These fixed-effects pick up variation in REC rates that arise from time-invariant state-characteristics, for example from differences in reporting behavior to the police. The resulting unemployment coefficient is equal to 0.159. Notice also that the simple fixed effects model performs better than the pooled model with covariates: the adjusted R-squared increases from 0.663 to 0.751. Column (4) extends this specification by additionally including state-specific quadratic time-trends. This specification yields an unemployed coefficient of 0.204. It also turns out that including time-trends is important in terms of the fraction of explained variance, the adjusted R-squared increases further to 0.805. The last two rows of Table 2 display the estimated (first-order) autocorrelation in the error term, using a simple regression-based test proposed in Wooldridge (2008). While the estimated coefficient is quite high in the pooled regressions, it drops strongly when fixed effects and state-specific time trends are included. In what follows, our empirical analysis concentrates on the specification of column (4).

Table 3

Table 3 present the results from some additional model specifications (the first column redisplays our preferred model from Table 2). First, we estimate the relation between REC and unemployment in first differences, as unemployment may have quite some persistence (see Figure 1 again). However, column (2) shows that very similar estimates result independent of whether the model is estimated in differences or in levels (as long as time trends are included). The remaining six columns show several dynamic models, including either lags of the dependent variable or lags of the unemployment rate. More specifically, columns (4) to (6) test for a lagged impact of the dependent variable. It turns out that both 3-months and 6-months lags do not have an important impact but that the 12-months lag does, suggesting some seasonal pattern in REC rates (see Figure 1). This is underlined by the fact that the estimated first-order autocorrelation of the error term turns out to be insignificant in this specific model. Nonetheless, estimating such a dynamic specification does not change the size nor the statistical significance of the unemployment coefficient. Columns (7) to (9) add different lags of the unemployment rate. It appears that the relation between unemployment and right-wing crime is very immediate, as none of the lagged unemployment coefficients turns out to be sta-

tistically significant. Finally, including different lags of both the dependent variable and the unemployment rate at the same time yields qualitatively the same results, as shown in the final column. In sum, the additional results of Table 3 suggest that the impact of unemployment on right-wing extremist crimes is quite robust. Unemployment seems to have a signficantly positive and quantitatively important impact on right-wing extremist crimes.

To get a sense of the quantitative importance of the estimates, let us calculate the effects on the total REC rate predicted by a one-standard-deviation increase in the unemployment rate, using the unemployment coefficient of the model shown in column (4) of Table 2 as benchmark. The overall standard deviation in observed unemployment rates amounts to 3.732. This implies that the impact on total REC rates predicted by such a change in the unemployment rate equals 0.761 ($= 0.204 \cdot 3.732$). This compares to an observed standard deviation of total REC rates of 0.874. Hence we reach the conclusions that increasing the unemployment rate by one standard deviation predicts an increases on total REC rates equal to 87% of the standard deviation of REC rates observed in the data. In any event, this suggests a very close link between unemployment and REC rates. However, we also acknowledge that there remain some potential problems as regards identification and that we can not definitely settle the causality issue.[13]

4.2 Accounting for REC-differences between East and West Germany

An important issue in the German public debate has been whether the higher incidence of right-wing extremism in East Germany is a phenomenon related to particular historical or political circumstances; or whether this is due to the worse economic conditions in East Germany, in particular with respect to unemployment. Individuals in East Germany grew up in a communist political system while West Germans experienced democracy and a social market economy. This political history and the associated differences in political cultures may have strongly affected the preferences and attitudes of individuals in the two regions even after the re-unification of the country (Alesina and Fuchs-Schündeln, 2007). The absence of political participation under the communist regime may have led East Germans to distrust their own

[13]Specifically, the unemployment rate and the error term could be correlated for several distinct reasons. For example, it may be the case that law enforcement increases in states where unemployment increases which would induce correlation between the unemployment rate and the error term (one could also argue the other way around, however). We also note, however, that studies that instrument for the unemployment rate suggest that such effects may have only a minor impact; see Raphael and Winter-Ebmer (2001) or Fougère *et al.* (2009), for example.

government and undermined democratic and liberal thinking. This may well have made East Germans more receptive for extremist "ideologies" and activities. A second explanation emphasizes the particular economic problems to which East Germans are exposed. The process of transition from a socialist to a market economy that has begun with the fall of the Iron Curtain and the German reunification of the early 1990s imposed particular hardship on many individuals in East Germany. As a result of job loss and unemployment, many individuals found themselves – at least in relative terms – as economic losers. Unemployment is associated with occupational downgrading, loss of human capital, and little hope for rapid and significant improvement. The particularly bad labor market conditions in East Germany may have generated a social climate conducive to right-wing criminal activities. According to this view, the high unemployment rates in the East, rather than other specific circumstances not necessarily related to the labor market, explain the difference in the incidence of RECs between the old and the new states.

In what follows we use the above results to shed light on this issue. We take as a benchmark the results from our preferred specification (as given in column (4) of Table 2). Assuming that this model is a reasonable description of the relation between REC and unemployment, we can decompose the observed REC-differences between East and West Germany into (i) a component that is due to differences in unemployment and (ii) a component that is due to other (observed and unobserved) differences between the two regions. In other words, we use our estimated coefficient for the following thought experiment: to which level would East German REC rates decrease, would unemployment rates in East-Germany go down to West-German levels? The East-West difference in total REC rates amounts to 1.741 (= 2.570 - 0.824) and the difference in average unemployment rates amounts to 8.062 percentage points (see Table 1). Using our benchmark estimates, the predicted reduction in REC rates would amount to 1.645 ($= 0.204 \cdot 8.062$). In other words, about 64% of the observed REC-difference between East and West Germany can be attributed to differences in unemployment.

Table 4

In Table 4 we analyze in more detail the origins of East-West differences in REC rates. For instance, it could be that RECs in East Germany react more strongly to changes in unemployment than in West Germany. Alternatively, there could be non-linearities in the relationship between unemployment and crime. One explanation for such a non-linear relationship may be related to the enforcement of social norms. The hypothesis is that right-wing extremist crime

is an interactive process between right-wing extremist criminals and a majority of witnesses who fail to enforce social norms against racist and anti-foreigner violence. If a critical level of unemployment is reached, this willingness to enforce norms decreases disproportionately.[14]

To explore this hypothesis further, Table 4 proceeds in the following way (for comparison reasons, the first column repeats the unemployment coefficient of our baseline specification). First, in column (2), we introduce an interaction effect between a dummy variable indicating an Eastern state and the unemployment rate. This allows us to test for differences in the strength of the unemployment-REC relationship between the two regions. It turns out that the point estimate of the interaction effect is positive and quantitatively large – indicating that, indeed, the incidence of RECs in East Germany increases more strongly to a given change in the unemployment rate. However, the estimated effect is not statistically significant. We then proceed by checking whether there are non-linearities in the relationship between unemployment and REC rates: at modest levels of unemployment, right-wing criminal activities may be low and almost unrelated to rates of unemployment but once a critical level of unemployment has been reached, a further increase in unemployment strongly increases right-wing criminal activities. In fact, Figure 2 suggests there may be non-linearities: it appears as if there is only a weak correlation at low unemployment levels but a strong one at higher levels. Column (3) of Table 4 therefore allows for differential effects of unemployment on right-wing extremist crime under high-unemployment and low-unemployment circumstances. To this end we include a dummy variable, $\mathbb{1}(\mathrm{UR}_{it} > \overline{\mathrm{UR}}_{it})$, in the regression that takes the value 1 if unemployment in state i and month t is above the mean unemployment rate observed in the whole sample (equal to 10.82%). We then interact this dummy with the difference between the observed and the mean umployment rate. This spline-specification allows for a piecewise linear relationship between the unemployment rate and REC. In particular, we can test whether the relationship between unemployment and REC rates becomes stronger when unemployment exceeds its average value. The estimates reported in Table 4 support the explanation based on a non-linear impact of unemployment on REC. When unemployment falls short of the average unemployment, a one percentage point increase in the unemployment rate does hardly affect total REC rates (the corresponding point estimate is very small, -0.002, and does not reach statistical

[14] As an extreme example, we refer to the riots in the cities of Rostock and Hoyerswerda (in former East Germany in 1991, mentioned in footnote 1), where foreigners were collectively attacked for several consecutive days. Many residents who witnessed the riot did not only tolerate the violence, but actually supported it by clapping and yelling.

significance). In contrast, if unemployment is above average, a one percentage point increase in the unemployment rate increases REC rates by 0.249 ($= 0.251 - 0.002$).

Finally, let us make a similar thought experiment as above but now using the estimates of column (3) of Table 4. Bringing down the Eastern unemployment rate down to the Western unemployment rate, which requires a reduction in unemployment of 6.682 percentage points to the average unemployment rate and further 1.38 percentage points to the Western rate, would lead to an estimated reduction in Eastern REC rates of 1.591 ($= (17.502 - 10.820) \cdot (-0.251 - 0.002) + 0.329 - (10.820 - 9.440) \cdot (-0.002)$) cases per 100,000 residents. In other words, the estimated effects column (3) of Table 4 suggests that the East-West gap in unemployment rates explains about 78% of the difference in REC in this hypothetical scenario.

4.3 Extensions

Non-violent versus violent right-wing extremist crimes

The preceding results all relate to the incidence of total right-wing extremist crimes, i.e. to both non-violent and violent crimes. As mentioned before, however, these two categories comprise very different types of crimes. A separate analysis is therefore quite important for a better understanding and an assessment of the costs of right-wing extremist crimes to society. Table 5 addresses this issue by showing respective results once REC rates are differentiated by non-violent and violent crimes.

Table 5

The left panel of Table 5 shows estimates of the impact of unemployment on violent RECs and the right panel shows analogous estimates for non-violent RECs. First, notice that the estimated coefficient is smaller in absolute value in the violent REC regressions. This is due to the fact that violent crimes are less than 10% of all crimes.[15] For violent crimes, the pooled model without co-variates shows a significant coefficient, which becomes insignificant once we control for state fixed effects and state-specific trends. Again it may be interesting to consider possible non-linearities as before for total crime rates. This is done in column (3) of Table 5. In contrast to overall crimes, violent crimes do not seem to be significantly affected by unemployment. While the corresponding point estimate indicates a steeper slope once

[15]Note, however, that in terms of severeness and damage a violent crime is much worse than a non-violent one.

unemployment exceeds the average unemployment rate (as indicated by the positive coefficient of the interaction term), this effect is not statistically significant. This result resembles the one obtained by Krueger and Pischke (1997), who report no significant impact of unemployment on predominantly *violent* right-wing extremist crimes for Germany in the early 1990s.

With respect to non-violent RECs (the right panel of Table 5) the picture resembles very closely the one obtained for total REC rates. Columns (4) and (5) show that the coefficient on unemployment estimated from the pooled model without control variables is highly statistically significant, albeit somewhat smaller in size than in the total REC regressions. It becomes somewhat larger once we allow for state-fixed effects and state-specific time trends. Allowing for different unemployment coefficients for high- and low-unemployment environments yields essentially the same picture as in the total REC regressions: unemployment has a strong impact when unemployment is high but it does not affect REC-incidence at lower levels of unemployment.

Youth unemployment versus total unemployment

One could argue that a large pool of unemployed individuals implies a large pool of potential committers of right-wing extremist crimes. Provided that the experience of unemployment induces individuals to commit right-wing criminal activities, one would expect that youth unemployment – rather than total unemployment – is a better measure for the potential impact of unemployment on crime. To examine this hypothesis, we rerun some of the key regressions of Tables 2 and 4 with the youth unemployment rather than the total unemployment rate as the explanatory variable (see Table 6). In all other respects, the regressions are identical.

Table 6

The first two columns in Table 6 report the unemployment coefficients for the basic model given by equation (2) and for the extended model that allows for differences in unemployment rates between high/low unemployment regions and East/West. A clear picture emerges from these results: the youth unemployment rate (YUR) does not have a significant impact on REC rates. All YUR-coefficients of Table 6 are insignificant. Allowing for heterogenous unemployment effects yields a qualitatively similar picture as above. However, the youth unemployment coefficients are quantitatively much smaller and statistically insignificant. When we include the overall unemployment rate in addition to the youth unemployment rate, however, it turns out

that the overall unemployment rate remains highly significant and of quantitative magnitude comparable to the previous estimates while the youth unemployment rate remains statistically insignificant (the point estimate becomes even negative). As an alternative specification we included the youth unemployment rate relative to the overall unemployment as an indicator of the prevalence of youth unemployment problems. Again, it turns out that overall unemployment is the dominant variable whereas the ratio of youth unemployment relative to total unemployment is insignificant. Obviously, the relationship between unemployment and RECs is not a simple one. An explanation that rests upon the hypothesis that higher unemployment increases the pool of potential committers does not seem to be supported by the data. As committers of RECs are typically younger individuals, the above hypothesis is certainly not consistent with the weak/absent effect of youth unemployment on RECs reported in Table 5. We will come back to this issue in the final section.

5 Conclusions

The above evidence on right-wing crime suggests a strong and systematic relationship between regional unemployment and the occurrence of right-wing activity. *First,* we find a significantly positive relation between state level unemployment and the incidence of right-wing extremist crimes. The relation remains significant once we control for state fixed effects and state-specific time trends and take serial correlation of the error term into account. *Second*, we find that the dramatic differences in right-wing extremist crimes between East and West Germany can be explained almost entirely by the gap in unemployment rates between the two regions. This conclusion is further strengthened by the result that the relationship between unemployment and right-wing extremist crime is non-linear. At low levels of unemployment, a one-percentage point increase in the unemployment rate has a very small and statistically insignificant effect on the incidence of right-wing extremist crimes. In contrast, at high levels of unemployment this relationship becomes very strong. This suggests that right-wing extremist activities may become particularly problematic once unemployment has reached some critical level. It is an interesting possibility that a non-linear relationship may be related to the enforcement of social norms. The hypothesis is that right-wing extremist crimes is an interactive process between active right-wing extremist criminals and passive witnesses (family, friends, society in general) who fail to enforce social norms against racist and anti-foreigner violence. When one's

willingness to enforce norms is influenced by own unemployment experience (or the fear to lose the job) high unemployment leads these norms to erode. Moreover, when a critical mass of individuals who are unwilling to actively support the social norm exists, right-wing extrimists may be disproportionately encouraged to commit hate crimes.

Our empirical analysis also reveals a differential impact of unemployment on violent and non-violent right-wing crimes, two categories that comprise of very different types of crimes. For non-violent crimes, our results are very similar to the ones obtained from analyzing the total incidence of crime, including the non-linearity in the impact of unemployment. In contrast, we do not find a strong relationship between unemployment and violent crime. A final interesting result shows that *total* unemployment predicts the incidence of right-wing crime better than *youth* unemployment. Prima facie this finding is surprising since right-wing criminals are typically young men between 15 and 25 years (Neubacher, 1998; Willems *et al.*, 1993).

In sum, our empirical evidence suggests a systematic effect of regional unemployment on right-wing extremist criminal activities. The estimated effect is statistically highly significant and quantitatively large. Notice, however, that our results do not (or not necessarily) imply that those who are actually unemployed are more likely to commit right-wing extremist crimes. This view is supported by our finding that - despite the fact that most crimes are committed by young men - youth unemployment has a much weaker effect on right-wing crimes than total unemployment. In our view high regional unemployment affects right-wing crime in a rather complex way, in particular it affects not only those who are currently unemployed. It seems very likely that living in a region with a high unemployment rate increases the fear of *losing* a job. This fear may negatively affect attitudes towards foreigners, creating a demand for scapegoats and lowering people's willingness to enforce norms and to support humanitarian values of tolerance and altruism. As a consequence anti foreigner resentments develop and the normative pressure against committing right-wing crime eradicates.[16]

As an example, we refer to the riots in the cities of Rostock and Hoyerswerda (in former East Germany in 1991, mentioned in footnote 1), where foreigners were collectively attacked for several consecutive days. Many residents who witnessed the riot, did not only tolerate the violence but actually supported it by clapping and yelling. This example illustrates that right-wing crime is an interactive process. It requires not only psychopathic people who are

[16]Sampson *et al.* (1997) use a similar argument, namely that social cohesion among neighbors is linked to the incidence of violence. Their empirical analysis shows that different measures of social cohesion are indeed correlated with variation in violence.

ready to lay violent hands on others (and who need not necessarily be unemployed) but also the majority of witnesses who fail to enforce social norms against (anti-foreigner) violence. If high unemployment rates reduce this willingness to enforce norms, unemployment may therefore be associated with right-wing crime, even though the actual criminals are not unemployed.[17]

[17]In fact, the available evidence based on individual data lends no (or only weak) support to the hypothesis that unemployed individuals are more likely to engage in right-wing extremist activities. Wahl (2001, 2003), for example, concludes that there is only a weak indication that individual unemployment is a key factor for committing right-wing extremist crimes. Bacher (2001a,b) studies attitudes towards foreigners and Jews in Germany and finds that unemployment seems to activate and enforce existing latent anti-foreigner predispositions. Fertig and Schmidt (2002) find only a small or insignificant impact of being unemployed or being afraid of losing a job on attitudes towards foreigners. Gang *et al.* (2002) identify the degree of competition in the labor market with immigrants as a major factor of negative attitudes towards immigrants, but they do not find any significant difference between employed and unemployed was detected. Bauer *et al.* (2000) find that being unemployed does not significantly change natives' answers to the question whether immigration should be reduced. The evidence presented in Siedler (2006), however, suggests that young Germans are more likely to develop right-wing extremist and xenophobic attitudes if their parents experienced unemployment.

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Table 1: Right-wing extremist crime and unemployment in East and West Germany, 1996-1999

	West Germany	East Germany	Total	Difference
Total right-wing extremist crime (REC) rate	0.829	2.570	1.127	1.741
	(0.381)	(1.118)	(0.874)	(0.332)
Violent crimes as fraction of total REC	0.057	0.087	0.062	0.030
	(0.042)	(0.061)	(0.047)	(0.019)
Unemployment rate (UR)	9.440	17.502	10.820	8.061
	(2.243)	(1.758)	(3.732)	(0.946)
Youth unemployment rate (YUR)	10.653	15.482	11.480	4.829
	(3.277)	(1.799)	(3.572)	(1.198)
Number of observations	528	240	768	768

Notes: Total REC rate corresponds to the total registered rightist extremist crimes per 100,000 inhabitants. Youth unemployment rate refers to persons below age 25 only. The two unemployment rates are seasonally adjusted. All table entries are weighted by the population size of the states. Standard deviations (columns (1) to (3)) and standard errors (final column) in parentheses, respectively. Standard errors are in the last column are adjusted for clustering at the state level.

Table 2: Unemployment and RECs

Dependent variable:	REC_Total			
Mean	1.127			
Standard deviation	0.874			
UR	0.168	0.132	0.159	0.204
	(0.032)***	(0.045)**	(0.070)**	(0.079)**
Controls	No	Yes	No	No
State fixed effects	No	No	Yes	Yes
State-specific trends	No	No	No	Yes
Constant	−0.686	14.329	−1.165	−1.040
	(0.327)*	(5.363)**	(1.192)	(1.140)
Observations	768	768	768	768
R^2	0.511	0.669	0.756	0.817
Adjusted R^2	0.511	0.663	0.751	0.805
Coefficient on lagged $\hat{\epsilon}$	0.719	0.584	0.420	0.234
	(0.026)***	(0.031)***	(0.034)***	(0.037)***

Notes: *, **, *** denotes statistical significance at the 10%, 5%, 1% level, respectively. All regressions are estimated by WLS, using the population size of the states as weights. Robust standard errors are given in parentheses and are clustered at the state level. The full list of control variables is given in footnote 12. The coefficient on lagged $\hat{\epsilon}$ is the estimated slope parameter from a regression of $\hat{\epsilon}_{it}$ on $\hat{\epsilon}_{it-1}$.

Table 3: Unemployment and RECs: Alternative and dynamic specifications

Dependent variable:	REC_Total	D1.REC_Total	REC_Total						
Mean	1.127	−0.001				1.127			
Standard deviation	0.874	0.459				0.874			
UR	0.204		0.241	0.231	0.195	0.243	0.227	0.208	0.169
	(0.079)**		(0.075)***	(0.067)***	(0.090)**	(0.067)***	(0.068)***	(0.083)**	(0.071)**
D1.UR		0.291							
		(0.094)***							
L3.REC_Total			−0.055						−0.039
			(0.059)						(0.054)
L6.REC_Total				−0.094					0.007
				(0.066)					(0.049)
L12.REC_Total					0.259				0.239
					(0.031)***				(0.027)***
L3.UR						−0.012			0.067
						(0.071)			(0.061)
L6.UR							−0.068		−0.080
							(0.040)		(0.059)
L12.UR								0.085	0.015
								(0.095)	(0.071)
Constant	−1.040	−0.003	−1.175	−0.631	0.552	−1.153	0.099	−0.324	2.829
	(1.140)	(0.003)	(1.129)	(0.912)	(1.580)	(1.294)	(1.017)	(1.923)	(1.265)**
Observations	768	752	720	672	576	720	672	576	576
R^2	0.817	0.015	0.831	0.829	0.870	0.830	0.828	0.858	0.870
Adjusted R^2	0.805	0.014	0.819	0.815	0.857	0.818	0.814	0.845	0.856
Coefficient on lagged $\hat{\epsilon}$	0.234	−0.350	0.253	0.212	0.049	0.263	0.225	0.098	0.050
	(0.037)***	(0.035)***	(0.038)***	(0.040)***	(0.043)	(0.039)***	(0.040)***	(0.044)**	(0.041)

Notes: *, **, *** denotes statistical significance at the 10%, 5%, 1% level, respectively. Robust standard errors in parentheses, clustered at the state level. All models are estimated by population-weighted least squares and include state fixed effects and state-specific quadratic time-trends. D1.REC_Total and D1.UR denotes first differences of REC_Total and UR, respectively. Lx.REC_Total and Lx.UR denotes the x-month lag of REC_Total and UR, respectively. The coefficient on lagged $\hat{\epsilon}$ is the estimated slope parameter from a regression of $\hat{\epsilon}_{it}$ on $\hat{\epsilon}_{it-1}$.

Table 4: Unemployment and RECs: Non-linearities

Dependent variable:	REC_Total		
Mean		1.127	
Standard deviation		0.874	
UR	0.204	0.127	
	(0.079)**	(0.163)	
UR · East		0.097	
		(0.186)	
$(\text{UR} - \overline{\text{UR}})$			−0.002
			(0.109)
$\mathbb{1}(\text{UR} > \overline{\text{UR}})$			−0.329
			(0.069)***
$(\text{UR} - \overline{\text{UR}}) \cdot \mathbb{1}(\text{UR} > \overline{\text{UR}})$			0.251
			(0.142)*
Constant	−1.040	−1.329	1.811
	(1.140)	(1.293)	(0.170)***
Observations	768	768	768
R^2	0.817	0.817	0.819
Adjusted R^2	0.805	0.805	0.806
Coefficient on lagged $\hat{\epsilon}$	0.234	0.236	0.233
	(0.037)***	(0.037)***	(0.037)***

Notes: *, **, *** denotes statistical significance at the 10%, 5%, 1% level, respectively. All regressions are estimated by population-weighted least squares including state fixed effects, and state-specific quadratic time-trends. Robust standard errors in parentheses, clustered at the state level. $\overline{\text{UR}}$ corresponds to the average unemployment rate. $\mathbb{1}(\cdot)$ denotes the indicator function. The coefficient on lagged $\hat{\epsilon}$ is the estimated slope parameter from a regression of $\hat{\epsilon}_{it}$ on $\hat{\epsilon}_{it-1}$.

Table 5: Unemployment and non-violent/violent RECs

Dependent variable:	Violent REC			Non-violent REC		
Mean		0.073			1.054	
Standard deviation		0.083			0.820	
UR	0.015	0.008		0.153	0.196	
	(0.002)***	(0.005)		(0.032)***	(0.078)**	
$(UR - \overline{UR})$			0.006			−0.009
			(0.008)			(0.108)
$\mathbb{1}(UR > \overline{UR})$			−0.034			−0.294
			(0.005)***			(0.068)***
$(UR - \overline{UR}) \cdot \mathbb{1}(UR > \overline{UR})$			0.002			0.249
			(0.009)			(0.140)*
State fixed effects	No	Yes	Yes	No	Yes	Yes
State-specific trends	No	Yes	Yes	No	Yes	Yes
Constant	−0.089	0.099	0.235	−0.597	−1.138	1.576
	(0.021)***	(0.069)	(0.011)***	(0.320)*	(1.130)	(0.168)***
Observations	768	768	768	768	768	768
R^2	0.448	0.595	0.595	0.482	0.816	0.818
Adjusted R^2	0.448	0.568	0.567	0.481	0.804	0.806
Coefficient on lagged $\hat{\epsilon}$	0.273	0.018	0.019	0.739	0.244	0.243
	(0.035)***	(0.038)	(0.038)	(0.025)***	(0.037)***	(0.037)***

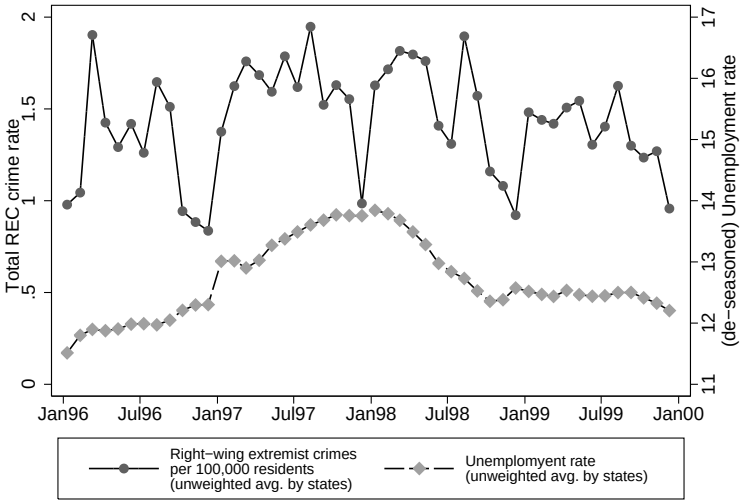
Notes: *, **, *** denotes statistical significance at the 10%, 5%, 1% level, respectively. All regressions are estimated by population-weighted least squares. Robust standard errors are given in parentheses and are clustered at the state level. $\overline{UR}$ corresponds to the average unemployment rate. $\mathbb{1}(\cdot)$ denotes the indicator function. The coefficient on lagged $\hat{\epsilon}$ is the estimated slope parameter from a regression of $\hat{\epsilon}_{it}$ on $\hat{\epsilon}_{it-1}$.

Table 6: Total unemployment versus youth unemployment

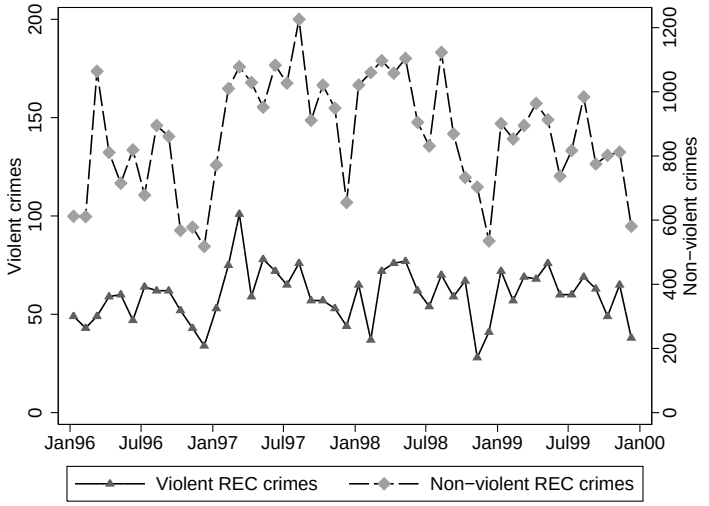
Dependent variable:	REC_Total					
Mean	1.127					
Standard deviation	0.874					
UR	0.204				0.232	0.198
	(0.079)**				(0.084)**	(0.082)**
YUR		0.055	−0.003		−0.039	
		(0.046)	(0.037)		(0.033)	
YUR · East			0.120			
			(0.080)			
(YUR − $\overline{\text{YUR}}$)				0.013		
				(0.068)		
$\mathbb{1}$(YUR > $\overline{\text{YUR}}$)				0.032		
				(0.116)		
$\mathbb{1}$(YUR − $\overline{\text{YUR}}$) · (YUR > $\overline{\text{YUR}}$)				0.066		
				(0.082)		
UR / YUR						0.466
						(0.427)
Constant	−1.040	1.227	0.457	1.947	−0.948	−1.478
	(1.140)	(0.568)**	(0.887)	(0.086)***	(1.158)	(1.171)
Observations	768	768	768	768	768	768
R^2	0.817	0.810	0.811	0.810	0.817	0.817
Adjusted R^2	0.805	0.797	0.798	0.797	0.805	0.805
Coefficient on lagged $\hat{\epsilon}$	0.234	0.256	0.256	0.257	0.232	0.234
Standard error	(0.037)***	(0.037)***	(0.037)***	(0.037)***	(0.037)***	(0.037)***

Notes: *, **, *** denotes statistical significance at the 10%, 5%, 1% level, respectively. All regressions are estimated by population-weighted least squares including state fixed effects and state-specific quadratic time-trends. Robust standard errors in parentheses, clustered at the state level. $\overline{\text{YUR}}$ corresponds to the average youth unemployment rate. $\mathbb{1}(\cdot)$ denotes the indicator function. The coefficient on lagged $\hat{\epsilon}$ is the estimated slope parameter from a regression of $\hat{\epsilon}_{it}$ on $\hat{\epsilon}_{it-1}$.

Figure 1: Right-wing extremist crimes and unemployment, Germany 01.1996-12.1999

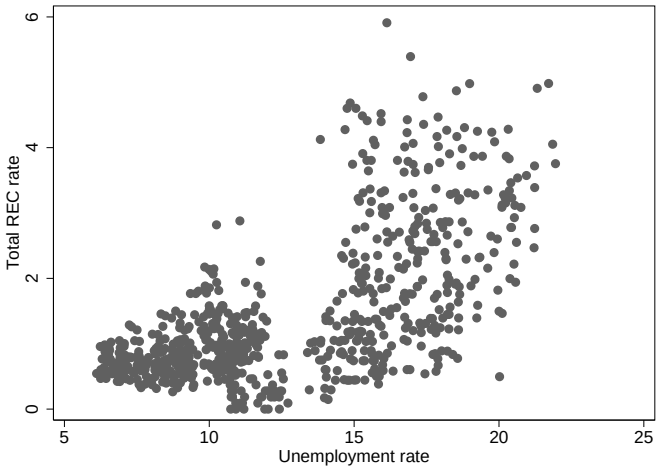


(a) Right-wing extremist crime rate and unemployment rate

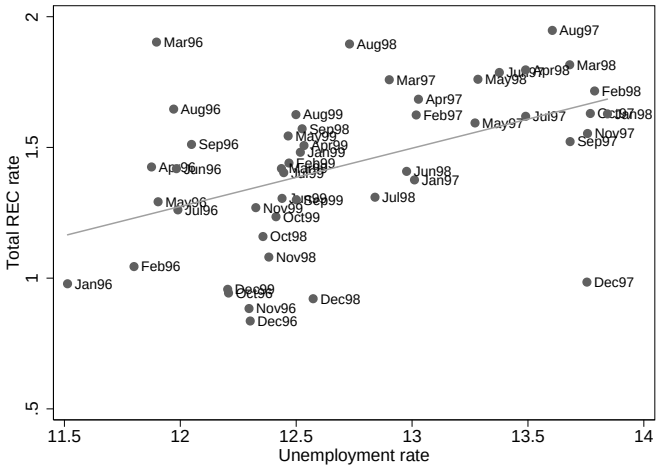


(b) Absolute number of violent and non-violent right-wing extremist crimes

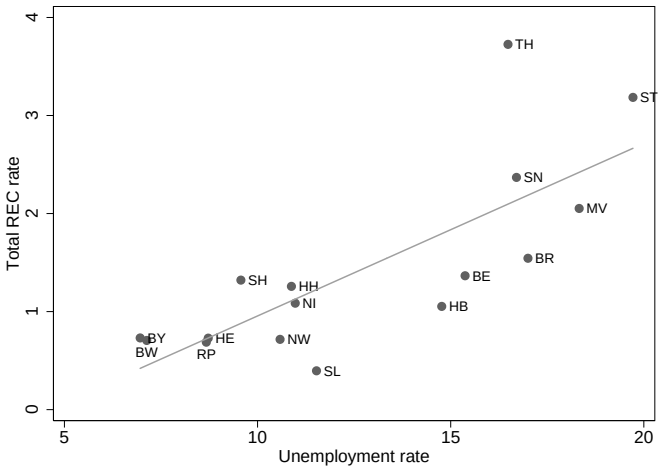
Figure 2: Total right-wing extremist crime versus unemployment



(a) Pooled data

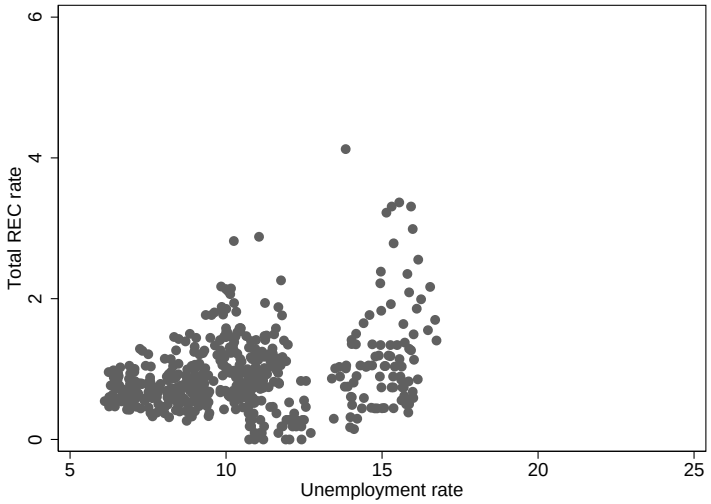


(b) Longitudinal variation only

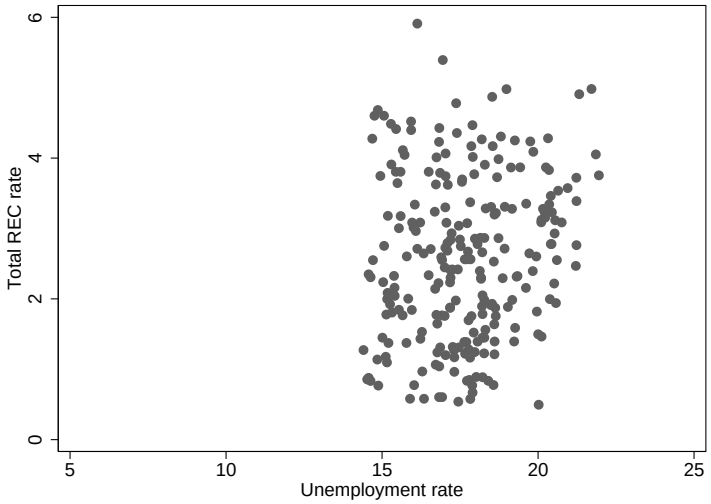


(c) Cross-sectional variation only

Figure 3: Total right-wing extremist crime and unemployment, East versus West Germany



(a) West Germany



(b) East Germany

Table A.1: Alternative model specifications

Dependent variable:	REC_Total						
Mean				1.127			
Standard deviation				0.874			
Method	OLS	WLS	WLS	WLS	AR(1)	GMM	WLS
Data frequency	Monthly	Monthly	Monthly	Quarterly	Monthly	Monthly	Monthly
Standard errors	Conventional	Conventional	Robust	Robust	Semi-robust	Robust	Robust
UR	0.184	0.204	0.204	0.215	0.190	0.204	0.293
	(0.037)***	(0.036)***	(0.079)**	(0.088)**	(0.062)***	(0.059)***	(0.157)*
ΔUR ($= \text{UR}_t - \text{UR}_{t-12}$)							−0.085
							(0.095)
Constant	−0.748	−1.040	−1.040	−1.086	−0.880	−1.040	−0.324
	(0.587)	(0.568)*	(1.140)	(1.248)	(0.894)	(0.880)	(1.923)
Observations	768	768	768	256	768	768	576
R^2	0.784	0.817	0.817	0.906	0.692	0.817	0.858
Adjusted R^2	0.769	0.805	0.805	0.884	0.672	0.805	0.845
Coefficient on lagged $\hat{\epsilon}$	0.235	0.234	0.234	−0.094	0.235	0.234	0.098
	(0.037)***	(0.037)***	(0.037)***	(0.072)	(0.037)***	(0.037)***	(0.044)**

Notes: *, **, *** denotes statistical significance at the 10%, 5%, 1% level, respectively. All columns include state fixed effects and and state-specific quadratic time-trends. The coefficient on lagged $\hat{\epsilon}$ is the estimated slope parameter from a regression of $\hat{\epsilon}_{it}$ on $\hat{\epsilon}_{it-1}$.