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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 in the occurrence of right-wing extremist crimes. We test this hypothesis empirically using data from Germany. We find that right-wing criminal activities occur more frequently when unemployment is high. The substantial 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.

Keywords: Hate crime; right-wing extremism; cost of unemployment
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I. Introduction

Right-wing extremism is a serious problem in many societies, not so much because of its economic costs, but rather because it questions fundamental values such a equality and integrity of all individuals and because of its severe impact on victims (Leets, 2002; Nielsen, 2002). Germany, for example, has witnessed several fatal assaults on foreigners.[1] While these assaults received considerable attention, they are just the most severe examples of crimes with a racist, xenophobic, and/or anti-Semitic background (henceforth right-wing extremist crimes). For example, more than 10,000 right-wing extremist crimes per year were officially registered in Germany from 1996 to 1999.[2] More than 90 percent of these crimes were non-violent crimes, usually involving propaganda offences. Among violent crimes, 65 percent of the cases were hate crimes against the foreign population. Clearly, however, this phenomenon is not limited to Germany. 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 severity 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 the Eastern states, the former communist German Democratic Republic (GDR). The incidence of right-wing extremist crimes between 1996 and 1999 was 50 percent higher in Eastern states than in the Western states. Two competing hypotheses have been advanced as to why the incidence of right-wing crime is so much more pronounced in East Germany than in West Germany. According to the first hypothesis, these differences exist because the socialization between former communist East Germany and democratic West Germany was politically and educationally very different. These political and historical differences and their different political cultures appear in different preferences between East and West German citizens and have remained intact following the German reunification (Alesina and Fuchs-Schündeln, 2007). The

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

[2] In comparison, there were about 6.5 million reported offences in the year 1997 overall, of which about 12,000 were classified as right-wing extremist crimes. Right-wing extremist crimes thus comprise only a small fraction of all registered crimes. However, we believe the absolute number of committed crimes indicates very little about the severity of different types of criminal acts.

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 in the Western states. This alternative explanation postulates that higher unemployment in Eastern states may be a major cause for the occurrence of right-wing extremist crime. The argument that unemployment may be an important driving force behind right-wing extremist sentiments is prominent among historians. Several studies have argued that high unemployment rates facilitated the rise of the Nazis in Germany in the 1930s (Fischer and Modigliani, 1978).[3] An empirical analysis of voting behavior on the state level further supports this hypothesis Frey and Weck (1981).[4] The relative deprivation theory offers a possible explanation for this relation (Hofstadter, 1963; Lipset, 1963; Falter and Klein, 1994). According to this theory, unemployment or the threat of becoming unemployed causes a loss in status and feelings of deprivation. The perceived gap between people's expectations and achievements may trigger anxieties; these may, in turn, transform into negative feelings towards and reactions to groups like immigrants and asylum seekers (Hernes and Knudsen, 1992; Runciman and Bagley, 1969). As a consequence, people may even develop a preference for authoritarian leaders, an anti-foreigner ideology, and violent predispositions (for example, see Turpin-Petrosino, 2002, on students' attitudes towards hate groups).[5] In line with such arguments, Lubbers and Scheepers (2001) show that that unemployed people have been more likely to support extreme right-wing parties in Germany. However, and despite its intuitive appeal, previous empirical evidence on the relation between right-wing extremist crime, racist crime, and/or crime against immigrants on the one hand and unemployment on the other is rather mixed (as we discuss below).[6]

[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 1932 elections, 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 situation. Hence a one-to-one comparison between the two eras is clearly problematic.

[4]It should be noted, however, that even though increasing unemployment may have causally affected the increasing support for the Nazi party, this does *not* mean that the unemployed voted predominantly for the Nazis. In fact, an interesting recent paper by King et al. (2008) has recently shown that 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; Winkelmann and Winkelmann, 1998; Frey and Stutzer, 2002). Yang and Lester (1994) even show that the suicide rate of unemployed in the US is significantly higher than that of the employed.

[6]On a more general level, most studies 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, Edmark (2005) for

In this paper we try to discriminate between these two explanations using crime statistics collected by the German Federal Criminal Police Office. More specifically, we investigate whether the considerably higher unemployment rates in the eastern states can explain the large difference in right-wing extremist crime rates between East and West German states. We use state-level data for the years 1996 to 1999 to estimate the association between the incidence of unemployment and right-wing extremist crime rates.

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, we observe this relation to be robust to the inclusion of state fixed effects and state-specific time trends. Second, we find that the much higher unemployment rates in Eastern states can explain a large fraction of the difference in right-wing extremist crimes between East and West Germany. To investigate the relation between unemployment and right-wing extremist crimes, we estimate the impact of unemployment on right-wing crime separately for states with high and low incidences 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 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 only becomes relevant 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 those 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 (Willems et al., 1993; Neubacher, 1998). One could therefore expect youth unemployment to affect these criminals more directly.

Sweden, and Entorf and Spengler (2000) for Germany. See also Freeman (1999) for a more general discussion of the economic analysis of crime.

However, unemployment might not affect right-wing crime at the individual level, or might do so only in a limited manner. 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, the normative pressure against right-wing criminals may deteriorate in a high-unemployment environment.

There are only few studies that investigate the hypothesis that current economic conditions, such as unemployment, have a significant 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 neither affects 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 recent study that empirically investigates the impact of unemployment on right-wing extremist crime in post-reunification 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 from 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. There are several

[7]See also Krueger (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.

possible reasons why their result differs from ours: first, since they rely on newspaper data, the precision of measurement is potentially questionable. Second, they only analyze violent crimes. This is due to the fact that non-violent crimes are typically not reported in the newspapers. In our data, which comprises both 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 that of Krueger and Pischke (1997) identified "only" 1,056 such crimes. They thus 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 that of 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 III. In section IV we present and discuss our empirical findings. Section V concludes.

II. Data and Descriptive Evidence

To assess the role of unemployment on right-wing crime, we use official crime statistics ("Polizeiliche Kriminalstatistik"). The data were collected by the Federal Criminal Police Office ("Bundeskriminalamt") and had not been previously analyzed. The data set uses information reported by the police departments in the various German states ("Länder") on a monthly basis.[8] The Federal Criminal Police Office divides right-wing extremist criminal activities in two classifications, namely "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, desecration of graves, 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 examine the two subcategories of non-violent and violent right-wing crimes separately. The focus of our analysis is on the number of registered right-wing extremist crimes (REC)

[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 is also possible that the classification of 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 fall under state, and not national, jurisdiction, meaning that results may merely reflect state-differences in definitions and/or systematic changes in these definitions over time (see also footnote 9 below).

per 100,000 inhabitants and on the period from 1996 to 1999, a time with consistent available data.[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 the remaining 35% of 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

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 for the period 1996 to 1999. During 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 in 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 about this issue. In each panel, the horizontal axis refers to the unemployment rate and the vertical axis shows REC rates per 100,000 residents. 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

[9]There are two important breaks in the data. First, both the Federal Criminal Police Office and the Federal Office for the Protection of the Constitution ("Bundesverfassungsschutz") collected data on REC until the end of 1995. From 1996 onwards, both offices registered only those offences as REC which the corresponding police authority of the involved state reported as such. Second, in an attempt to harmonize the assessment and reporting of politically motivated offences across the states, there was a major change in the collection and registration of such crimes at the turn of the year 2000. We therefore only analyze data from the period 1996 until 1999.

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", i.e. the East German states that formed the communist German Democratic Republic. The issue here is the extent to which the higher incidence of right-wing extremism in East Germany is rooted in historical and political post-WWII differences, and the extent to which 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 in 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 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%, in contrast to 10.5% in Western states. Panel (d) of Figure 1 plots the joint distribution of right-wing extremist crimes and unemployment separately for observations from Eastern and Western Germany. Interestingly, East and West German states do not differ much with respect to youth unemployment. The mean youth unemployment rate of East German states over the observation period is 15.7%, compared to 12.2% in the West.

III. 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 other observed and unobserved state characteristics as well, may play a potentially important role in explaining the incidence of REC rates across states and time. We also want to take general trends in REC into account that may be completely unrelated to (trends in) unemployment.

Our first model is a simple two-way fixed effects model:

$$REC_{it} = \alpha_i + UR_{it}\beta + x_{it}\gamma + \lambda_t + \epsilon_{it}, \tag{1}$$

where REC_{it} measures the number of right-wing crimes in state i and month t (with $i = 1, \ldots, 16$ and $t = 1, \ldots, 48$), UR_{it} denotes the overall unemployment rate, and x_{it} is a vector of additional time-variant state characteristics.[10]

Importantly, note that we include a full set of state fixed effects and a full set of time fixed effects on a monthly frequency, denoted by α_i and λ_t, respectively. Accounting for unobserved differences between states 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 are under state (and not national) jurisdiction, observed REC differences may simply reflect state-differences in REC definitions or crime reporting. Accounting for a flexible time trend is probably important as well because idiosyncratic changes in definitions and reporting may exist over time. The error term ϵ_{it} captures unobserved (and time-varying) 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 in a year, we use the seasonally adjusted unemployment rate throughout our analysis. Finally, the vector of coefficients γ estimates the impact of other control variables on registered crime rates.

The second model relaxes the restrictive assumption of a common time trend across states. Indeed, 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. For example, changes in measurement and/or reporting error over time might differ across states. To account for such state-differences in a flexible way, we estimate the following econometric model:

$$REC_{it} = \alpha_i + UR_{it}\beta + x_{it}\gamma + t\delta_{1i} + t^2\delta_{2i} + \epsilon_{it}, \tag{2}$$

with $t = 1, \ldots, 48$. The main feature of this model, and the difference to the first model, is that we have replaced the full set of time dummies with state-specific quadratic time trends

[10] It turns out that most control variables have relatively little variation within states (remember that our data cover a relatively short period of time). We will therefore mainly rely on and discuss models that do not include control variables.

(note that the corresponding two parameters are indexed by i). Below we will see that the distinction between the two models is important in our application.

Let us make some further comments on the empirical strategy. First, 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. Weighting by the population size of the states is very natural when working with data that represent state-specific averages (Wooldridge, 2008). Second, to take potential serial correlation of the error term into account, we use standard errors that are clustered at the state-level throughout, thereby allowing for arbitrary correlation of the regression errors within states.[11]

IV. Results

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 that do not include any observed state characteristics.[12]

Table 2

The first column of Table 2 shows the unemployment coefficient from a regression that neither includes control variables, 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 high R-Squared of about 0.5 underlines the close association between unemployment and REC that was already evident in panel (a) of Figure 1.

We add both a full set of state dummies and a full set of time dummies on a monthly frequency in the second column. The estimated unemployment coefficient is substantially decreased but still positive. However the coefficient is only estimated very imprecisely in this

[11] Note, however, that clustered standard errors may be conservative and thus the standard errors we report are likely to represent an upper bound.

[12] As mentioned, most of the observed state characteristics show very little variation within states. Indeed, it turns out that the control variables do not play an important role in our results, at least if we allow for both state fixed effects and state-specific time trends. Nonetheless, we present the results including the controls in table A1 in the appendix.

case (the standard error almost quadruples). To rectify this, we replace the fully flexible time trend with a simple quadratic time trend, assumed to be common to all states. The comparison between columns (2) and (3) shows that the standard error in the unemployment coefficient is considerably lower in the model with the parametric time trend (however, the point estimate also changes quite a bit).[13] One potential shortcoming of the models shown in columns (2) and (3) is the assumption of a common time trend across states.

The next two columns thus show models that allow for different time trends across states. The most flexible way to do so is to include the full set of interactions between state dummies and time dummies (on a quarterly frequency), i.e. we include 16 distinct time dummies for each state in this specification. Corresponding estimates are shown in column (4) of Table 2. Allowing for nonparametric and state-specific trends has two interesting effects. First of all, the unemployment coefficient again grows substantially larger: the point estimate is 0.362, more than twice as large as the unconditional effect from column (1). Because the standard error does not increase as much, the effect again becomes statistically significant. Second, there is a substantial drop in serial correlation as shown at the bottom of Table 2.

However, using a model as flexible as that in column (4) subjects us to the risk of overfitting the data. We therefore still allow for state-specific time trends in the next column, but we use a simple quadratic time trend instead of the more flexible specification based on time dummies with quarterly frequency. Note that this specification uses up only 48 (= 16 + 2·16) degrees of freedom, while the former (more flexible) specification uses up 256 (= 16·16) of a total of 768 degrees of freedom. This model yields a point estimate of the effect of unemployment on REC of 0.204, somewhat smaller than in the previous specification. A comparison of the standard error of the unemployment coefficient shows that the model in column (5) gives a much more precise estimate than the model in the previous column. Interestingly, most control variables become statistically insignificant as soon as state-specific time trends are allowed (see Table A1).

[13] Table A1 shows that the difference between using a nonparametric or parametric time trend (with respect to the estimated unemployment coefficient) is much smaller when additional controls are included. Please also note, however, that there are some unexpected results with respect to the models that include control variables (compare columns (2) and (3) of Table A1). For example, the estimated effect of the percentage of the population that is male and aged between 15 and 25 turns out to be statistically significant, but with a negative sign (contrary to our expectation and to common sense). We find this result rather strange and believe that it points to some kind of misspecification in the econometric model. Specifically, we suspect that some of the regressors are endogenous (and should thus not be controlled for) and/or that the assumption of a common time trend is inappropriate.

Finally, the last column takes seasonality into account by including a full set of interactions between calendar-month dummies and state dummies (i.e. we allow for a different seasonal pattern in each state). This has no large impact on the unemployment coefficient, which is still positive and statistically significantly different from zero (point estimate of 0.198).

To get a sense of the quantitative importance of the estimates, we 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 (5) 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 a corresponding 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 conclude that increasing the unemployment rate by one standard deviation predicts an increase in total REC rates equal to 87% of the standard deviation of REC rates observed in the data. In any event, this suggests a strong relation between unemployment and REC rates. However, we also acknowledge that some potential problems remain with respect to identification and that we can not definitely settle the causality issue.[14]

Sensitivity Analysis

Table 3 presents the results from some additional model specifications. First, we estimate the model in first differences as an alternative way of eliminating any unobserved but time-constant heterogeneity across states. Column (1) of Table 3 shows that very similar estimates result independent of whether the model is estimated in differences or in levels (as long as state-specific time trends are included).

Table 3

The next seven columns show several dynamic models, including either lags in the dependent variable or lags in the unemployment rate. These models not only provide an alternative way for dealing with serial correlation in the error term, they also allow us to test whether the impact of unemployment on REC rates is lagged rather than immediate. More specifically,

[14]Specifically, the unemployment rate and the error term could be correlated due to several distinct reasons. For example, it is possible that law enforcement increases in states wherewhen unemployment increases in states, 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.

columns (2) to (4) test for a lagged impact of the dependent variable. It turns out that both 3-month and 6-month 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 neither changes the size nor the statistical significance of the unemployment coefficient. Columns (5) to (7) add different lags in 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 statistically 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 column (8). 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 significantly positive and quantitatively important impact on right-wing extremist crimes.

Finally, the last two columns provide a simple test for the assumption underlying consistency of our two estimators (Wooldridge, 2002, pp. 284-285). The lead of the unemployment rate should be statistically insignificant in the fixed effects model,. Indeed, we find that the coefficient of the lead of the unemployment rate turns out to be small and statistically insignificant. In the final column, we add the current unemployment rate to the model estimated in first differences. In this case, the coefficient of the contemporaneous unemployment rate should be statistically insignificant. Again the test turns out favorably, as the coefficient of the current unemployment rate is very small and not statistically different from zero.

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 it is due to the poorer 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 reunification 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

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 began with the fall of the Iron Curtain and the German reunification in 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 – to be 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.

We use the results above to shed light on this issue in the following paragraphs. We take the results from our preferred specification as a benchmark (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 due to differences in unemployment and (ii) a component 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 if unemployment rates in East-Germany were to diminish 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 the origins of East-West differences in REC rates in more detail. 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. We hypothesize that right-wing extremist crime is an interactive process between right-wing extremist criminals and a large number 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.[15]

To further explore this hypothesis, 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 the incidence of RECs in East Germany indeed increases more strongly to a given change in the unemployment rate. The estimated effect, however, 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 that 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, $\mathbf{1}(\mathrm{UR}_{it} > \overline{\mathrm{UR}}_{it})$, 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 unemployment rate. This spline-specification allows for a piecewise linear relationship between the unemployment rate and REC. In particular, it allows us to 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 hardly affects

[15] 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 not only tolerated the violence, but actually supported it by applauding and verbally supporting it.

total REC rates (the corresponding point estimate is very small, -0.002, and does not reach statistical significance). In contrast, if unemployment is above average, a one percentage point increase in the unemployment rate increases REC rates by 0.249 ($= 0.251 - 0.002$).

The remaining columns of Table 4 also allow for differential effects of unemployment on right-wing extremist crime simply by including additional polynomial terms in our key regressor. To ease interpretation, we use centered polynomials so that the coefficient on the first polynomial term of unemployment directly corresponds to the marginal effect at the mean unemployment rate. The estimates reported in Table 4 support the explanation based on a non-linear impact of unemployment on REC. All three specifications imply that the effect of unemployment on REC tends to get larger, the higher the unemployment rate is.

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 above, 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 make up less than 10% of all crimes.[16] For violent crimes, the pooled model without covariates 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, unemployment does not seem to affect violent crimes significantly. While the corresponding point estimate indicates a steeper slope once 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 that

[16]Note, however, that a violent crime has a far higher impact than a non-violent one in terms of severity and damage.

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 result resembles that obtained for total REC rates very closely. Columns (4) and (5) show that the coefficient of 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 offenders in right-wing extremist crimes. On the one side, it could be that the experience of unemployment induces individuals to commit right-wing crimes. On the other side, REC may reflect the general values in society, and economic hardship affects those values. In the latter case, young culprits may commit these crimes due to the unemployment experiences of their parents and relatives. To examine these hypotheses, 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). The regressions remain identical in all other respects.

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 heterogeneous unemployment effects yields a qualitatively similar picture to that above. However, the youth unemployment coefficients are quantitatively 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). We also 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, while the ratio of youth unemployment relative to total unemployment is insignificant. In sum, our results suggest that the way unemployment affects crime is unlikely to be through young individuals' own unemployment experiences. The more plausible mechanism is that overall unemployment leads to an erosion of values in society which induces young individuals to commit right-wing extremist crimes. This is in line with Siedler (2006) who shows that young individuals whose parents experienced unemployment are more likely to commit right-wing extremist crimes.[17]

V. Conclusions

Our results suggest a strong and systematic relationship between regional unemployment and the incidence of right-wing extremist crimes. First, we find a significantly positive relation between state level unemployment and the incidence of right-wing extremist criminal activities. The relation becomes 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 gap in unemployment rates between East and West Germany can almost entirely explain the dramatic differences in right-wing extremist crime between the two regions. The result that the relationship between unemployment and right-wing extremist crime is non-linear further strengthens this conclusion. 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, this relationship becomes very strong at high levels of unemployment. This suggests that right-wing extremist activities may become particularly problematic once unemployment has reached some critical level. Our empirical analysis also reveals a differential impact of unemployment on violent and non-violent right-wing crimes, two categories that comprise very different types of crimes. Our results for non-violent crimes are very similar to those obtained from analyzing the total incidence of crime, including the

[17]See also Öster and Agell (2007) who find an insignificant association between youth unemployment and crimes in general. They argue that young culprits are often still in school and that their parents' unemployment experience may have negative spillover effects on the children.

non-linearity in the impact of unemployment. In contrast, we do not find a strong relationship between unemployment and violent crime.

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 imply that those who are actually unemployed are more likely to commit right-wing extremist crimes. Despite the fact that most crimes are committed by young men, youth unemployment does not have a statistically significant effect on right-wing crimes. This result is consistent with the hypothesis is that high unemployment may foster right-wing criminal activities not through the young individuals' own experience of unemployment. In contrast, right-wing extremist crimes should be considered as the outcome of 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. It not only requires psychopathic people who are ready to lay violent hands on others, but also a large number of witnesses who fail to enforce social norms against (anti-foreigner) violence. When many individuals experience unemployment (or have a high risk of losing their jobs) the willingness to enforce such general norms and values erodes, thus encouraging right-wing extremist criminal activities.

References

Alesina, A. and Fuchs-Schündeln, N. (2007), Good-Bye Lenin (or Not?): The Effect of Communism on People's Preferences, *American Economic Review 97*, 1507-1528.

Carmichael, F. and Ward R. (2001), Male unemployment and crime in England and Wales, *Economics Letters 73*, 111-115.

Clark, A. and Oswald, A. (1994), Unhappiness and unemployment, *Economic Journal 104*, 648-659.

Dustmann, C., Preston, I., and Fabbri, F. (2004), Racial Harassment, Ethnic Concentration and Economic Conditions, CReAM Discussion Paper 0405.

Edmark, K. (2005), Unemployment and Crime: Is There a Connection?, *Scandinavian Journal of Economics 107*, 353-373.

Entorf, H. and Spengler, H. (2000), Socioeconomic and demographic factors of crime in Germany-Evidence from panel data of the German states, *International Review of Law and Economics 20*, 75-106.

Falter, J. and Klein, M. (1994), *Wer wählt rechts? Die Wähler und Anhänger rechtsextremistischer Parteien im vereinigten Deutschland*, C.H.Beck Verlag, München.

Fischer, S. and Modigliani, F. (1978), Towards An Understanding of the Real Effects and Costs of Inflation, *Review of World Economics 114*, 810-833.

Fougère, D., Kramarz, F., and Pouget, J. (2009), Crime and Unemployment in France, *Journal of the European Economic Association 7*, 909-938.

Freeman, R. (1999), The Economics of Crime, in O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics 3C*, 3529-3572, Elsevier North-Holland, Amsterdam.

Frey, B. and Stutzer, A. (2002), *Happiness and Economics*, Princeton University Press, Princeton.

Frey, B. and Weck, H. (1981), Hat Arbeitslosigkeit den Aufstieg des Nationalsozialismus bewirkt?, *Jahrbücher für Nationalökonomie und Statistik 196*, 1-31.

Green, D., Strolovitch, D., and Wong, J. (1998), Defended Neighborhoods, Integration, and Racially Motivated Crime, *American Journal of Sociology 104*, 372-403.

Hernes, G. and Knudsen, K. (1992), Norwegians' Attitudes Toward New immigrants, *Acta Sociologica 35*, 123-139.

Hofstadter, R. (1963), The Pseudo-Conservative Revolt, in D. Bell (ed.), *The Radical Right*, 75-95, Transaction Publishers, New Brunswick.

King, G., Rosen, O., Tanner, M., and Wagner, A. (2008), Ordinary Economic Voting Behavior in the Extraordinary Election of Adolf Hitler, *Journal of Economic History 68*, 951-996.

Krueger, A. (2003), Education, Poverty And Terrorism: Is There a Causal Connection?, *Journal of Economic Perspectives 17*, 119-144.

Krueger, A. and Pischke, J. (1997), A Statistical Analysis of Crime Against Foreigners in Unified Germany, *Journal of Human Resources 32*, 182-209.

Leets, L. (2002), Experiencing Hate Speech: Perceptions and Responses to Anti-Semitism and Antigay Speech, *Journal of Social Issues 58*, 341-361.

Lipset, S. M. (1963), The Sources of the Radical Right, in D. Bell (ed.), *The Radical Right*, 307-372, Transaction Publishers, New Brunswick.

Lubbers, M. and Scheepers, P. (2001), Explaining the Trend in Extreme Right-Wing Voting: Germany 1989-1998, *European Sociological Review 17*, 431-449.

Neubacher, F. (1998), *Fremdenfeindliche Brandanschläge: eine kriminologisch-empirische Untersuchung von Tätern, Tathintergründen und gerichtlicher Verarbeitung in Jugendstrafverfahren*, Forum-Verlag Godesberg, Mönchengladbach.

Nielsen, L. B. (2002), Subtle, Pervasive, Harmful: Racist and Sexist Remarks in Public as Hate Speech, *Journal of Social Issues 58*, 265-280.

Öster, A. and Agell, J. (2007), Crime and Unemployment in Turbulent Times, *Journal of the European Economic Association 5*, 752-775.

Raphael, S. and Winter-Ebmer, R. (2001), Identifying the Effect of Unemployment on Crime, *Journal of Law and Economics 44*, 259-283.

Runciman, W. and Bagley, C. (1969), Status Consistency, Relative Deprivation, and Attitudes to Immigrants, *Sociology 3*, 359-375.

Siedler, T. (2006), Family and Politics: Does Parental Unemployment Cause Right-Wing Extremism? IZA Discussion Paper No. 2411.

Skogan, W. (1974), The Validity of Official Crime Statistics: An Empirical Investigation, *Social Science Quarterly 55*, 25-38.

Turpin-Petrosino, C. (2002), Hateful Sirens... Who Hears Their Song? An Examination of Student Attitudes Toward Hate Groups and Affiliation Potential, *Journal of Social Issues 58*, 281-301.

Willems, H., Würtz, S., and Eckert, R. (1993), *Fremdenfeindliche Gewalt: eine Analyse von Täterstrukturen und Eskalationsprozessen*, Bundesministerium für Frauen und Jugend, Bonn.

Winkelmann, L. and Winkelmann, R. (1998), Why Are the Unemployed So Unhappy? Evidence from Panel Data, *Economica 65*, 1-15.

Wooldridge, J. (2002), *Econometric Analysis of Cross Section and Panel Data*, The MIT Press, Cambridge.

Wooldridge, J. (2008), *Introductory Econometrics: A Modern Approach*, Thomson South-Western, Mason.

Yang, B. and Lester, D. (1994), Crime and Unemployment, *Journal of Socio-Economics 23*, 215-222.

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: The total REC rate corresponds to the total registered rightist extremist crimes per 100,000 inhabitants. The 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 in the last column are adjusted for clustering at the state level.

Table 2: Unemployment and RECs

	REC_Total					
Mean	1.127					
Standard deviation	0.874					
UR	0.168***	0.068	0.105	0.362***	0.204**	0.198**
	(0.032)	(0.117)	(0.096)	(0.121)	(0.079)	(0.082)
State fixed effects	No	Yes	Yes	Yes	Yes	Yes
Time fixed effects (monthly frequency)	No	Yes	No	No	No	No
Parametric trend	No	No	Yes	No	Yes	Yes
State-specific time fixed effects (quarterly frequency)	No	No	No	Yes	No	No
State-specific parametric trends	No	No	No	No	Yes	Yes
State-specific seasonal fixed effects	No	No	No	No	No	Yes
Observations	768	768	768	768	768	768
R-Squared	0.511	0.808	0.759	0.902	0.817	0.897
Adjusted R-Squared	0.511	0.791	0.754	0.853	0.805	0.855
Coefficient on lagged $\hat{\epsilon}$	0.719***	0.432***	0.417***	−0.244***	0.233***	0.211**
	(0.061)	(0.086)	(0.084)	(0.047)	(0.060)	(0.097)

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 coefficient on lagged $\hat{\epsilon}$ is the estimated parameter from a simple regression of $\hat{\epsilon}_{it}$ on $\hat{\epsilon}_{it-1}$, where $\hat{\epsilon}$ is the estimated regression residual. See also Table A1, showing estimates from analogous models including additional control variables.

Table 3: Unemployment and RECs: Alternative and dynamic specifications

	D.REC_Total	REC_Total								D.REC_Total
Mean	0.000	1.136	1.144	1.185	1.136	1.144	1.185	1.185	1.138	0.000
Standard deviation	0.459	0.884	0.886	0.896	0.884	0.886	0.896	0.896	0.882	0.459
D.UR	0.258***									0.278***
	(0.054)									(0.047)
UR		0.241***	0.231***	0.195**	0.243***	0.227***	0.208**	0.190**	0.278**	0.016
		(0.075)	(0.067)	(0.090)	(0.067)	(0.068)	(0.083)	(0.067)	(0.106)	(0.017)
L3.UR					−0.012			0.070		
					(0.071)			(0.060)		
L6.UR						−0.068		−0.070		
						(0.040)		(0.061)		
L12.UR							0.085	0.038		
							(0.095)	(0.077)		
F3.UR									−0.081	
									(0.062)	
L3.REC_Total		−0.055						−0.041		
		(0.059)						(0.052)		
L6.REC_Total			−0.094					0.003		
			(0.066)					(0.048)		
L12.REC_Total				0.259***				0.244***		
				(0.031)				(0.026)		
Observations	752	720	672	576	720	672	576	576	720	752
R-Squared	0.056	0.831	0.829	0.870	0.830	0.828	0.858	0.870	0.820	0.058
Adjusted R-Squared	0.016	0.819	0.815	0.857	0.818	0.814	0.845	0.857	0.806	0.016
Coefficient on lagged $\hat{\epsilon}$	−0.333***	0.251***	0.211***	0.053	0.256***	0.223***	0.081*	0.048	0.219***	−0.340***
	(0.050)	(0.055)	(0.060)	(0.052)	(0.052)	(0.057)	(0.046)	(0.053)	(0.061)	(0.048)

Notes: *, **, *** denotes statistical significance at the 10%, 5%, 1% level, respectively. Robust standard errors are given in parentheses and are clustered at the state level. All models are estimated by population-weighted least squares and, where possible, include state fixed effects and state-specific quadratic time trends. D.REC_Total and D.UR denote first differences of REC_Total and UR, respectively. Lx.REC_Total and Lx.UR denote the x-month lag of REC_Total and UR, respectively. F3.UR denotes the 3-month lead of UR. The coefficient on lagged $\hat{\epsilon}$ is the estimated parameter from a simple regression of $\hat{\epsilon}_{it}$ on $\hat{\epsilon}_{it-1}$, where $\hat{\epsilon}$ is the estimated regression residual.

Table 4: Unemployment and RECs: Non-linearities

	REC_Total					
Mean			1.127			
Standard deviation			0.874			
UR	0.204**	0.127		0.146	0.263*	0.342**
	(0.079)	(0.163)		(0.096)	(0.133)	(0.149)
UR·East		0.097				
		(0.186)				
$(UR - \overline{UR})$			−0.004			
			(0.109)			
$(UR - \overline{UR}) \cdot \mathbf{1}(UR > \overline{UR})$			0.253*			
			(0.142)			
$(UR - \overline{UR})^2$				0.009	0.018	0.007
				(0.008)	(0.011)	(0.016)
$(UR - \overline{UR})^3$					−0.003	−0.004
					(0.002)	(0.003)
$(UR - \overline{UR})^4$						0.000
						(0.000)
Observations	768	768	768	768	768	768
R-Squared	0.817	0.817	0.819	0.818	0.820	0.820
Adjusted R-Squared	0.805	0.805	0.807	0.805	0.807	0.807
Coefficient on lagged $\hat{\epsilon}$	0.233***	0.234***	0.232***	0.235***	0.230***	0.229***
	(0.060)	(0.062)	(0.060)	(0.061)	(0.059)	(0.058)

Notes: *, **, *** denotes statistical significance at the 10%, 5%, 1% level, respectively. Robust standard errors are given in parentheses and are 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. $\overline{UR}$ corresponds to the average unemployment rate. $\mathbf{1}(\cdot)$ denotes the indicator function. The coefficient on lagged $\hat{\epsilon}$ is the estimated parameter from a simple regression of $\hat{\epsilon}_{it}$ on $\hat{\epsilon}_{it-1}$, where $\hat{\epsilon}$ is the estimated regression residual.

Table 5: Unemployment and violent/non-violent RECs

	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)	
$(\text{UR} - \overline{\text{UR}})$			0.006			−0.010
			(0.008)			(0.107)
$(\text{UR} - \overline{\text{UR}}) \cdot \mathbf{1}(\text{UR} > \overline{\text{UR}})$			0.002			0.250*
			(0.009)			(0.140)
Observations	768	768	768	768	768	768
R-Squared	0.448	0.595	0.595	0.482	0.816	0.818
Adjusted R-Squared	0.448	0.568	0.568	0.481	0.804	0.806
Coefficient on lagged $\hat{\epsilon}$	0.275***	0.018	0.018	0.739***	0.243***	0.242***
	(0.045)	(0.015)	(0.015)	(0.060)	(0.064)	(0.064)

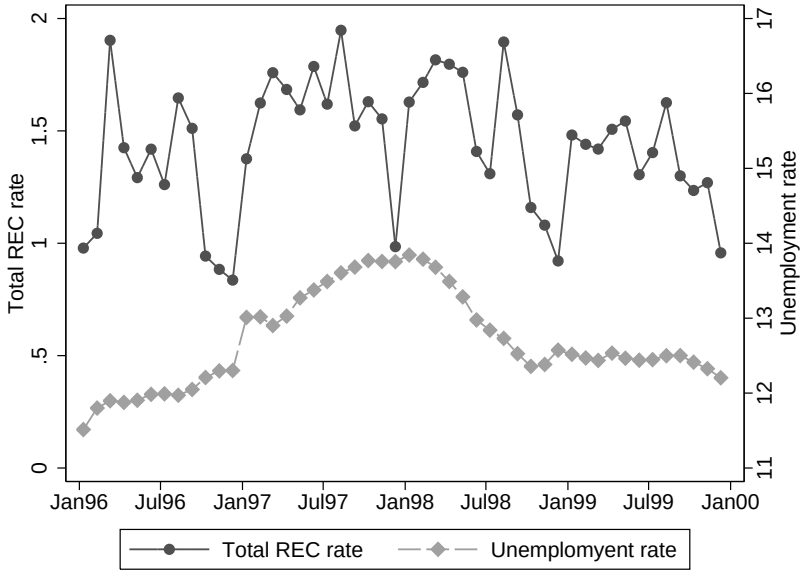
Notes: *, **, *** denotes statistical significance at the 10%, 5%, 1% level, respectively. Robust standard errors are given in parentheses and are clustered at the state level. All models are estimated by population-weighted least squares and include state fixed effects and state-specific quadratic time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

Table 6: Overall versus youth unemployment rate

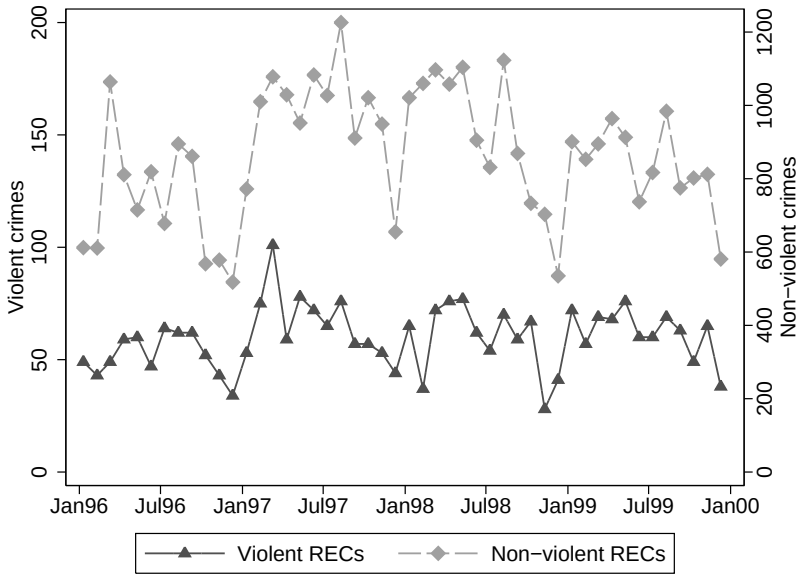
	REC_Total					
Mean			1.127			
Standard deviation			0.874			
UR	0.204**				0.232**	0.198**
	(0.079)				(0.084)	(0.082)
YUR		0.055	−0.003		−0.039	
		(0.046)	(0.037)		(0.033)	
YUR·East			0.120			
			(0.080)			
$(\text{YUR} - \overline{\text{YUR}})$				0.019		
				(0.076)		
$(\text{YUR} - \overline{\text{YUR}}) \cdot \mathbf{1}(\text{YUR} > \overline{\text{YUR}})$				0.062		
				(0.090)		
UR/YUR						0.466
						(0.427)
Observations	768	768	768	768	768	768
R-Squared	0.817	0.810	0.811	0.810	0.817	0.817
Adjusted R-Squared	0.805	0.797	0.798	0.797	0.805	0.805
Coefficient on lagged $\hat{\epsilon}$	0.233***	0.254***	0.252***	0.256***	0.229***	0.231***
	(0.060)	(0.064)	(0.064)	(0.064)	(0.060)	(0.060)

Notes: *, **, *** denotes statistical significance at the 10%, 5%, 1% level, respectively. Robust standard errors are given in parentheses and are 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. $\overline{\text{YUR}}$ corresponds to the average youth unemployment rate. $\mathbf{1}(\cdot)$ denotes the indicator function. The coefficient on lagged $\hat{\epsilon}$ is the estimated parameter from a simple regression of $\hat{\epsilon}_{it}$ on $\hat{\epsilon}_{it-1}$, where $\hat{\epsilon}$ is the estimated regression residual.

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



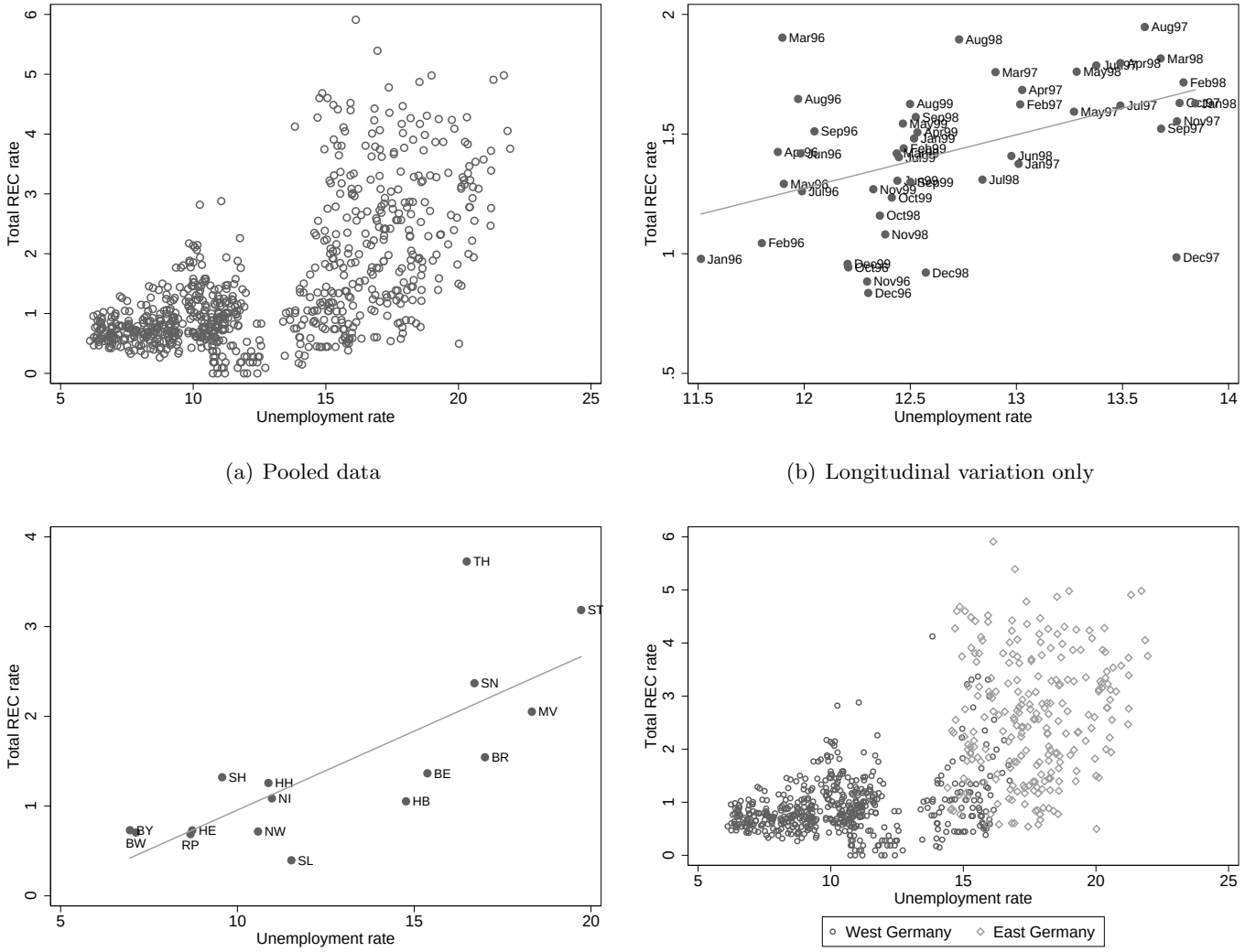
(a) Right-wing extremist crime rate and unemployment rate



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

Notes: Panel (a) shows the total REC rate (total number of right-wing extremist crimes per 100,000 residents) and the overall unemployment rate. Panel (b) shows the absolute number of violent and non-violent right-wing extremist crimes, respectively. Both figures show unweighted data.

Figure 2: Total right-wing extremist crime versus unemployment



(a) Pooled data

(b) Longitudinal variation only

(c) Cross-sectional variation only

(d) West and East Germany

Notes: Panel (a) shows data at the level of state×month, while panel (b) and (c) show cross-sectional and longitudinal averages, respectively. Panel (d) highlights observations from West Germany (circles) and East Germany (diamonds). All figures show unweighted data.

Table A1: Unemployment and RECs: models including control variables

	REC_Total					
UR	0.101	0.130	0.152*	0.310**	0.167**	0.148*
	(0.071)	(0.104)	(0.083)	(0.118)	(0.075)	(0.082)
Real GDP per capita in 1,000 DM (in prices of 1995)	0.015	0.013	0.073*	0.586***	0.006	−0.387**
	(0.014)	(0.055)	(0.040)	(0.172)	(0.066)	(0.150)
Percentage of population male and aged 15 to 25	0.240	−2.345**	−2.167**	−19.144	1.166	3.331
	(0.407)	(0.992)	(0.917)	(12.761)	(1.551)	(2.250)
Percentage of population foreign	−0.044	0.036	0.098	−3.257	0.092	−0.037
	(0.036)	(0.083)	(0.090)	(2.992)	(0.071)	(0.084)
Percentage of school leavers:						
with extended elementary school degree ("Hauptschule")	−0.144	−0.082	−0.142**	4.555	−0.059	0.129
	(0.090)	(0.084)	(0.058)	(4.083)	(0.119)	(0.154)
with secondary school degree ("Realschule")	−0.122	−0.152*	−0.169**	4.792	−0.058	−0.012
	(0.092)	(0.084)	(0.071)	(4.929)	(0.096)	(0.109)
with college degree ("Fachhochschule")	−0.087	−0.183	−0.220	1.024	−0.481	−0.364
	(0.085)	(0.200)	(0.196)	(2.018)	(0.313)	(0.293)
with university degree ("Universität")	−0.123	−0.008	−0.043	3.904	−0.211	0.005
	(0.074)	(0.102)	(0.093)	(3.248)	(0.124)	(0.159)
Probability of conviction, non-violent crimes	0.022	0.085***	0.113***	0.343	0.069	−0.035
	(0.017)	(0.026)	(0.023)	(1.359)	(0.047)	(0.038)
Probability of conviction, violent crimes	0.007	0.022	0.029	−2.466	0.047	0.063
	(0.048)	(0.062)	(0.056)	(2.200)	(0.046)	(0.052)
Real youth welfare service spending per male inhabitant aged 18 and 25	−0.006	0.009	0.015	−0.453	0.022	−0.001
	(0.009)	(0.010)	(0.010)	(0.349)	(0.019)	(0.015)
Real social welfare spending per capita	0.034	0.390	−0.315*	−47.358**	−1.020***	0.417
	(0.364)	(0.340)	(0.176)	(18.366)	(0.325)	(0.595)
State fixed effects	No	Yes	Yes	Yes	Yes	Yes
Time fixed effects (monthly frequency)	No	Yes	No	No	No	No
Parametric trend	No	No	Yes	No	Yes	Yes
State-specific time fixed effects (quarterly frequency)	No	No	No	Yes	No	No
State-specific parametric trends	No	No	No	No	Yes	Yes
State-specific seasonal fixed effects	No	No	No	No	No	Yes
R-Squared	0.636	0.823	0.782	0.903	0.828	0.902
Adjusted R-Squared	0.630	0.804	0.774	0.854	0.813	0.859

Notes: Real GDP, real youth welfare spending and real social welfare spending are given in 1,000 DM and in prices of 1995. Data are taken from the German Federal Employment Agency (unemployment rates) and from the Federal Statistical Office Germany.