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How does the welfare state reduce crime? The effect of program characteristics and decommodification across 18 OECD-countries

Maximilian Rudolph^a, Peter Starke^{b,*}

^a Land Office for Land Surveying and Geospatial Information of Schleswig-Holstein, Mercatorstrasse 1, 24106 Kiel, Germany

^b Danish Centre for Welfare Studies (DaWS), University of Southern Denmark (SDU), Campusvej 55, Odense M, 5230 Odense, Denmark

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ABSTRACT

Purpose: The article revisits the negative effect of welfare state schemes on crime rates with a focus on the pathways of that effect. Social support theory (SST) and institutional anomie theory (IAT) are two related theoretical approaches to explain why – and how – the welfare state might prevent criminal behavior. This article tests the relevance of these theories for cross-country and over-time variation in homicide rates with more precise disaggregated welfare state indicators than used previously.

Methods: We use panel regressions with country fixed effects and data for 18 OECD countries between 1990 and 2011. Disaggregated cross-national social expenditure and benefit generosity data is used to discriminate between pathways of welfare state influence on cross-national homicide.

Results: The welfare state suppresses crime particularly through social support via generous unemployment benefits. Overall decommodification, the key measure to test IAT, however, does not have any effect on homicide.

Conclusions: Only some welfare state interventions matter for homicide rates.

1. Introduction

Thinking about the connection between social programs and crime is as old as the modern welfare state itself. Famously, German criminologist Franz von Liszt stated already in 1898 – i.e. about a decade after Chancellor Bismarck had introduced the first national social insurance schemes in the world – that social policy “represents the best and most effective crime policy” (von Liszt, 1899: 22). In 1939 President Franklin D. Roosevelt claimed that “[t]hrough a broad program of social welfare, we struck at the very roots of crime itself” (cited in Fishback, Johnson, & Kantor, 2010: 715). In more recent decades, the public discourse and public policy in the United States (US) rather reflected the opinion that generous welfare policies do not reduce, but may even foster criminal activity and that stricter criminal prosecution would be the best way to reduce crime (Brown, 2016; Cullen, Wright, & Chamlin, 1999). Punitive responses to crime became widespread (Garland, 2001), together with harsher views on welfare (Wacquant, 2009). This stands in contrast to the criminological literature which, since the 1980s, has taken the idea of a negative association between welfare and crime more seriously and empirically tested it, first for the United States and later also cross-nationally. These studies overwhelmingly show that more generous welfare policies are associated with lower levels of crime, hence

unambiguously confirming Franz von Liszt's early intuition. Yet, the literature is also marked by two interrelated shortcomings: First, while there exists a variety of theoretical approaches to explain the relationship, their empirical implications at the hypothesis level are often hard to distinguish. Second, at the operational level, we find that scholars often employ the same, highly aggregate measures of welfare state size such as total social spending to test different theories, although a range of much more specific indicators are available.

Hence, while evidence of a negative effect is by now sufficiently well-established, we still do not know *how* the welfare state may reduce crime across countries. The view of the welfare state in this literature is quite simplistic and does not consider that different social policy schemes work in very different ways. We therefore need to disaggregate the welfare state to better understand which elements of social protection are responsible for the effect (see Worrall, 2005: 368). This is relevant for at least two reasons. On the one hand, understanding the pathway of the welfare effect concerns the theoretical explanations for the welfare-crime link. In order to shed light on which theories are most useful, we need to ask what the presumed mechanisms linking welfare and crime are and whether some connections are empirically better supported than others. On the other hand, this concerns the policy implications of a possible welfare-crime link. While matters of

* Corresponding author.

E-mail address: starke@sam.sdu.dk (P. Starke).

causation need to be treated with caution, the public and policymakers certainly wish to know what the exact policy implications this literature might have. How large is the effect on crime? Can just any welfare state expansion be expected to lead to lower crime rates or are certain kinds of social policy more relevant than others? After all, policymakers rarely just increase or cut back social spending per se but are typically concerned with one area in particular – e.g. unemployment spending or pensions – or even just a single program.

In this paper, we test the effect of the welfare state on homicide across 18 core OECD countries from 1990 to 2011 using panel regression models. In addition to testing the broad effect of social spending, we also derive and test more specific hypotheses from social support theory (SST) and institutional anomie theory (IAT). Overall, our findings confirm the general negative effect of the welfare state. Additionally, we find support for the expectation, derived from social support theory, that unemployment benefit generosity is particularly important. Yet, contrary to previous findings, we find no effects of overall levels of de commodification on crime rates.

The paper is structured as follows: We start off with a comprehensive review of all the studies available that empirically test the welfare-crime relationship and find that (1) almost all of them are showing a negative effect of welfare indicators on crime rates and (2) we do not have any studies testing the differential effect of the various sub-areas of the welfare state in terms of spending and/or generosity cross-nationally. We then formulate specific hypotheses based on SST and IAT. We describe methods and data in detail before presenting our results about the effect of welfare state policies on homicide rates. The last section concludes.

2. The welfare-crime link in the literature

A large and growing body of literature has empirically investigated the link between the welfare state and crime. Table A1 in the appendix contains information on all 41 published studies in English we are aware of that test the relationship with quantitative data.¹ These studies are mostly from criminology and sociology, with a few contributions by economists. Already at first sight the impressive empirical support for a negative relationship between welfare state indicators and crime rates becomes evident, with only nine studies reporting opposite, mixed or disconfirming results. While the existence of the welfare state effect thus seems largely uncontroversial, we argue that scientific progress is hampered by several methodological and data limitations of existing research. In terms of the *dependent variable*, Table A1 shows that homicide rates are the most widespread indicator. A much smaller number of studies include data property crime or on several types of crime (e.g. Hannon & DeFronzo, 1998a; Savage, Bennett, & Danner, 2008; Worrall, 2005). This can be partly explained by the much better data availability and reliability of homicide rates compared to other types of crime, especially cross-nationally (Harrendorf, 2018; Huang & Wellford, 1989).

When it comes to the key *independent variable*, much of the available literature uses relatively limited measures of the welfare state, often *either* highly aggregated social expenditure measures *or* spending on specific programs in the United States (especially spending on Aid to Families with Dependent Children [AFDC]). This has consequences for the ability to draw both theoretical and practical implications.

The geographical scope of the *samples* used in the literature is also restricted. About half of the studies examine the welfare-crime link in the United States. These studies typically focus on spending on social assistance such as AFDC and its successor Temporary Assistance for

Needy Families (TANF) and the effect on property and/or violent crime rates at the level of US cities or counties (e.g. Hannon & DeFronzo, 1998a; Liebertz & Bunch, 2018). Comparative studies tend to focus on the rich countries of the OECD (e.g. Tuttle, 2018), sometimes going somewhat beyond to include non-OECD countries in Latin America or Asia (as in Messner & Rosenfeld, 1997).

In terms of the *time period* covered, only about a quarter (12 studies) use data from after 2000 to test the relationship, and many studies using data before the early 1990s therefore do not cover the “great crime drop” that happened in many countries from that time onwards (Van Dijk, Tseloni, & Farrell, 2012) nor many of the various welfare state cutbacks of the 1990s and 2000s (Korpi & Palme, 2003).

In terms of *research design*, about half of the analyses use cross-sectional data to test the relationship, although both crime rates and welfare state indicators typically exhibit sizeable variation across time in the medium to long term. With the exception of a handful of pioneering studies (Gartner, 1990; Worrall, 2005), time-series data have been used mostly from the 2010s onwards. As more comprehensive datasets have become available, using panel designs at the very least has the advantage of increased degrees of freedom when analyzing a sample of rich countries. Only a few studies control for unobserved heterogeneity between units, e.g. by using fixed effects estimations. Worrall (2005) is one of those studies. He also fails to find effects of overall welfare indicators on crime, which indicates that unobserved heterogeneity might be an issue.

Finally, there is a wide variety of *theories* tested or used to frame the empirical analysis yet the most important are strain theories, social support, social altruism, institutional anomie as well as various economic rationalist hypotheses which we lump together under “economic approaches”. Economic approaches tend to emphasize the material aspect of welfare payments and expect an effect on property crime rather than violent crimes (e.g. Foley, 2011). About half of the studies focus on one theory while the other half distinguishes between two and four theoretical approaches, often with considerable overlaps.

Taken together, the literature has made enormous progress since the first studies were published in the early 1980s. The overwhelming majority of these analyses clearly indicate that there is an empirical relationship between the welfare state and crime and that it is negative. Among these authors, it is generally assumed that this relationship is causal, i.e. that more generous welfare policies contribute to a decrease in crime, although this assumption should of course be examined further with research designs geared towards causal effects. Moreover, by becoming more comparative, theoretically explicit and methodologically sophisticated, partly thanks to better data availability, the literature has increased in terms of generalization.

However, what we lack are studies that combine the *breadth* of comparative and long-term inquiry with more *depth* in terms of the dependent and key independent variables. The key independent variable welfare state, in particular, has often been operationalized via either highly aggregate spending measures such as total social spending as a percentage of gross domestic product (GDP) or country-specific program spending figures which are often hard to compare to programs elsewhere. What is thus missing are studies that make use of the many disaggregated, but standardized indicators of welfare state policies that have become available over recent years at least for the richest or “core” OECD countries. Work using more disaggregated measures could help identify which welfare policies are likely to have the strongest impact on crime with a view to more clearly distinguishing between theoretical approaches. Also, analyses should make use of the latest available data for as many countries as is reasonable, preferably using a time-series cross-sectional design to leverage variation both within and across cases. In terms of the country sample, a balance must be struck between generalization and comparability. Some comparative studies include the richest OECD countries and low to middle-income countries in the same sample, which is problematic given the different kinds of social problems and state capacities these countries deal with. A more homogenous sample of only the core OECD world is therefore preferable, not least for theoretical reasons: As Chamlin

¹ We do not include the related literature on the impact of medical care on homicide (Harris, Thomas, Fisher, & Hirsch, 2002; Linde, 2018) in this review, as it is typically not framed in terms of criminological theories like social support or institutional anomie, but in terms of how the lethality of aggravated assault can be reduced through better medical technology and access to care.

and Cochran point out, many assumptions of institutional anomie theory are not necessarily given in more traditional, less developed societies and the sample should therefore be restricted to a set of so-called advanced industrialized societies (Chamlin & Cochran, 2007).

3. Theory: from strain theory to SST and IAT

3.1. The common root of strain theory

Overall, the theoretical explanations for the presumed existence of a welfare-crime link are extremely diverse and a wide range of theories has been tested in the empirical studies mentioned above. Yet, two have become particularly important in the literature: Social support theory (SST) and institutional anomie theory (IAT). SST and IAT “either explicitly or implicitly draw upon each other when specifying their core theoretical propositions.” (Pratt & Godsey, 2003: 416). The similarities and overlaps are not surprising because both theories build upon Merton's strain theory of crime (1938). Despite these overlaps, they are sufficiently distinct in their analytical focus and the mechanisms assumed to produce the empirical welfare-crime link so that specific empirical implications can be derived. SST and IAT differ in their expectations of *the ways in which* welfare states might influence crime which has to do with their specific conceptualizations of the exact processes involved in the production of crime in modern societies. While SST is mostly concerned with support mechanisms that may dampen strain of individuals especially at the margins of society, IAT focuses more on cultural and structural mechanisms that influence society-wide levels of anomie to explain crime (Savolainen, 2000: 1021–22). We will elaborate on the implications below. Note that we do not set out to empirically test SST and IAT in a comprehensive way, but merely their implications for the welfare-crime link.

3.2. Social support theory (SST)

The essence of SST is Francis T. Cullen's (1994) argument that “social support”, be it provided in the form of government social programs, communities, social networks, families, interpersonal relations, or the criminal justice system, reduces criminal involvement at both the individual and aggregate level. Cullen's seminal presidential address to the Academy of Criminal Justice Sciences starts from the observation that many criminological writings already implicitly contain the notion that a lack of social support – not just a lack of control, poverty or exposure to criminal cultures – is associated with crime. Consequently, criminal justice policies should be based on the view that support, rather than punishment, is integral to reducing crime. He finds, however, that the insights linking social support to crime differ widely and are not sufficiently systematized as to direct theoretical and empirical investigation (Cullen, 1994: 528–9). Cullen thus systematically approaches the idea of social support to ultimately contribute to a theory that can be empirically tested. He uses Lin's basic definition of social support as “the perceived or actual instrumental and/or expressive provisions supplied by the community, social networks, and confiding partners” (N. Lin, 1986: 18) and also emphasizes that social support is delivered through informal relations and by formal agencies, such as schools, the criminal justice system, and governmental assistance programs in the form of information, guidance, feedback, emotional support and companionship, or money (Pratt & Kunzi, 2010: 248). In rich contemporary societies, the welfare state provides a range of services that can function as social support. This does by no means imply that the welfare state is the *only* or even *the most important* source of social support, but it does imply that differences in the level of resources and the mix of specific services provided by the welfare state should matter for levels of delinquency across time and countries.

Theoretical concerns about the role of government within the framework of SST have been voiced, as summarized by Knepper: “There is some disagreement among the proponents of social support theory

about whether government can truly stand-in for families and communities when they fail to provide nurturance, shared values, aid and comfort. Government programmes offer a soulless alternative to the experience of solidarity within a community” (2007: 27). And yet, empirical support for crime-reducing social support delivered by the welfare state has accumulated by now (e.g. Alzheimer, 2008; McCall & Brauer, 2014; Thames & McCall, 2014). Virtually all of these studies, however, use highly aggregated indicators of welfare effort (see previous section) which prevents insight into the exact means of social support that matter. More specific hypotheses based on SST can be formulated for three areas in particular: family policy, unemployment insurance and social assistance benefits.

Social support by families and for families receives some attention in Cullen's original formulation of SST (1994: 537–40) and is a support channel which is intimately linked to welfare state schemes, through family policies such as cash benefits, child care and paid family leave, with the idea being that this kind of social support reduces crime through a more nurturing family life and by alleviating (financial) strain. We therefore hypothesize that.

H1. More generous family policies are associated with lower crime rates.

In addition to family policies, other kinds of social transfers and services can also be expected to represent key forms of social support. Unemployment is a particularly disruptive event, leading not just to a loss of income, but also of status and social connections, which is part of the explanation for the effect of unemployment on crime (Cantor & Land, 1985; Hooghe, Vanhoutte, Hardyns, & Bircan, 2010; Jennings, Farrall, & Bevan, 2012; Lin, 2008; Phillips & Land, 2012; Raphael & Winter-Ebmer, 2001). The welfare state matters in this respect, because it doesn't just compensate for income losses through cash transfers but generous unemployment benefits can also influence the life satisfaction effect of the unemployed (Sjöberg, 2010). This ties in neatly with the notion of SST in the sense that the perception of support goes well beyond the provision of money and includes non-material dimensions of support even at the level of government assistance, thus countering the image of a “soulless” state. We therefore expect that.

H2. More generous unemployment insurance benefits are associated with lower crime rates.

Finally, while empirically still controversial, relative poverty is widely considered an important source of strain leading to higher levels of crime (Hsieh & Pugh, 1993; Pratt & Cullen, 2005; Pridemore, 2011). Again, specific welfare state schemes exist in virtually all rich countries that address this social problem. Minimum income benefits such as those accessed through social assistance schemes are typically targeted at those at the very bottom. As a “last resort” support, they are often available to individuals without access to other benefits or when unemployment insurance entitlement has run out. In contrast to “social security” benefits, they are aimed at poverty alleviation rather than lifecycle security or status maintenance (as many public pension insurance schemes are). Minimum income benefits vary considerably in their generosity, however, which should impact crime rates. Hence,

H3. More generous social assistance and minimum income benefits are associated with lower crime rates.

3.3. Institutional anomie theory (IAT)

The second major theory about welfare and crime drawing on Merton's work, IAT, assumes an even more straightforward role of the welfare state than SST. First outlined in their book *Crime and the American Dream* (Messner & Rosenfeld, 1994), its originators Messner and Rosenfeld elaborated and tested IAT in subsequent empirical work (Messner & Rosenfeld, 1997; Messner, Thome, & Rosenfeld, 2008). Like Merton's theory, IAT attributes crime levels to the interplay of a society's

cultural and structural characteristics. A culture that puts strong emphasis on monetary success and less and less emphasis on strictly legitimate ways to achieve this success exerts so-called “anomic pressures” on people. These pressures can translate into deviant behavior by which the culturally defined goals may be achieved. According to Messner and Rosenfeld, this harmful cultural arrangement can be primarily found in free market systems and is especially pronounced in America. *Cultural* pressures, however, can be dampened by a society’s *structural* dynamics which refer to more than just economic inequality. Compared to Merton’s anomie theory, IAT “broadens the *structural* [authors’ emphasis] focus of traditional economic distress or deprivation perspectives by directing attention to aspects of the economic organization of market societies beyond the stratification system, and to the interplay of the economy and other social institutions” (Messner & Rosenfeld, 1997: 1408). In other words, the focus is less on specific welfare state schemes and their effects on social problems than on the distinctive “institutional balance of power” embodied by advanced welfare states and the potential of the welfare state of holding back market mechanisms and the materialistic value orientation fostered by capitalism. The institutional structure that is especially prone to high levels of crime is one in which the economy dominates this institutional balance of power. Again, the US is regarded as a prime example for an institutional imbalance towards the economy. Together, a strong materialistic culture and weak social institutions result in high level of serious crime in the US.

In order to empirically test IAT, Messner and Rosenfeld were among the first to borrow from comparative welfare state research, namely Esping-Andersen’s (1990) notion of “decommodification” and his typology of three distinct welfare state regimes. Esping-Andersen derived the term decommodification from the writings of Marx and Polanyi and defines it as “the degree to which individuals, or families, can uphold a socially acceptable standard of living independently of market participation” (1990: 37; for critiques and extensions of decommodification, see Bamba, 2006; Huo, Nelson, & Stephens, 2008; Room, 2000; Scruggs & Allan, 2006). It should be stressed that this conceptualization is distinguished from accounts of the welfare state that focus on the social expenditure or “welfare effort”. According to Esping-Andersen, expenditures are “epiphenomenal to the theoretical substance of welfare states” (1990: 19) as money may be spent in ways that do not weaken – or even strengthen – inequality and the grip of the market. State-subsidized private or employer-based health insurance is an example of what he has in mind. While it may generate massive public spending, its effect on the workings and the outcomes of market processes is minimal. Instead, one needs to look at the structure and generosity of benefits, according to Esping-Andersen, and gauge their contribution to decommodify individuals. Decommodification “reflects the quality as well as the quantity of social rights and entitlements” (Messner & Rosenfeld, 1997: 1395), ranging from hardly poverty-proof subsistence benefits with strict eligibility conditions to universal and generous benefits. Messner and Rosenfeld use decommodification as a proxy for the strength of the polity/welfare state within the institutional balance of power and hypothesize that it should be negatively related to homicide. Since then, the crime-reducing effect of decommodification has been repeatedly tested, and this has generally confirmed the theory that the welfare state can reduce crime through lessening citizens’ dependence on the market. The core hypothesis for IAT is thus.

H4. Higher levels of decommodification are associated with lower crime rates.

While the emphasis on overall levels of decommodification is more relevant for IAT than for SST, some of the other hypotheses are unfortunately much less distinctive (unsurprisingly, given their common roots in strain/anomie theory). For instance, as the family is, in addition to the state, a key site of non-market interactions in IAT, confirmation of H1 could also be read as partial support for IAT. The following empirical test must therefore not be taken as a discriminatory contest between SST and IAT.

4. Design, data and methods

We test the effect of several welfare state indicators on homicide with the aid of a quantitative panel regressions, which take cross-national differences as well as changes within countries over time into account and promise to give a more comprehensive picture of the association between welfare and crime. Furthermore, time-series data allow for the detection of time-lagged relationships that may exist between welfare spending and crime rates. In order to cover the general decline in crime and the various welfare state cutbacks, this study covers a maximum time period of 22 years from 1990 until 2011. The units of analysis are countries as the correct analytical level for both theories. SST explicitly states that social support can be a property of “larger ecological units” (Cullen, 1994: 531) or “macrolevel social units” (Cullen et al., 1999: 190) and IAT is inherently a “macrosocial perspective” typically applied in a cross-national context (Messner & Rosenfeld, 1997: 1349). The sample consists of 18 core-OECD countries that are economically highly developed and have an extensive social security system.² As mentioned, this excludes developing countries where theoretical assumptions about the effects of modernization and a dominance of the values and problems associated with developed market societies might not be given in the first place.

4.1. Dependent variable

Ideally, one would test various types of crime, although the mechanisms linking welfare and crime in SST and IAT are not specific to certain offences. Still several studies have shown effects in either violent crimes or property crimes or different effect sizes. As we pointed out earlier, the reliability and availability of cross-national property crime rates is questionable, which is why we restrict our analysis to homicide rates. From a certain perspective, testing the theory on homicide data represents a conservative test, given that many welfare state schemes are first and foremost about material transfers and an effect should therefore be less visible in mostly non-material, “expressive” offences like homicide.

The dependent variable is operationalized as the age-standardized homicide rate for both sexes per 100,000 world standard population in each nation, based on reported offences. Data from victimization surveys might be preferable for various reasons (Van Dijk, 2015), but availability is still relatively limited (e.g. with survey rounds only every 5 years). Our data are taken from the World Health Organization (WHO) Mortality Database and reflect figures collected by national civil registration systems in accordance with the rules of the International Classification of Diseases. The only other currently existing source of cross-national homicide data, the United Nations (UN), does not provide data for the years before 1995 and thus does not sufficiently cover the “great crime drop”. Although there is yet no clear consensus among scholars on which source (UN or WHO) provides the most reliable data, recent research indicates that the WHO data are more stable and reliable over time, and better suited for longitudinal analyses (Andersson & Kazemian, 2018). Following the convention of using multi-year averages of homicide rates to reduce the influence of random yearly fluctuations, we computed 3-year moving averages for the period 1990–2011 on the basis of the yearly data for 1988–2011. Currently, the WHO defines homicide according to the 10th Revision of the International Statistical Classification of Diseases and Related Health Problems as death “inflicted by another person with intent to injure or kill, by any means” (ICD-10 × 85-Y09, Y871). Comparable with that is the previous definition according to the 9th Revision as death

²The countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, and the United Kingdom. The United States was initially included in the dataset, but as a strong outlier had to be excluded from the analysis, due to the exceptionally high homicide rate.

“purposely inflicted by other persons” (ICD-9 E960–969). The WHO Mortality Database contains data according to ICD-9 and ICD-10. The few missing data could be replaced by ICD-8 data (also taken from WHO data sets) and by estimates based on linear interpolation.

4.2. Independent variables

Although not the focus of this study, a variable representing total social expenditures as percent of gross domestic product (GDP) was included in the analysis as a baseline test as several other studies on the welfare-crime link include this or a similar spending indicator. The variable reflects aggregate public expenditures on old age, survivors, incapacity-related benefits, health, family, active labor market programs, unemployment, housing, and other social policy areas. The data are taken from the OECD Social Expenditure Database (SOCX) (OECD, 2016).

We use family policy spending from SOCX to test our first hypothesis H1. The variable measures public expenditures on families in percent of GDP and includes all benefits in cash and in kind from programs for family allowances, maternity and parental leave, early childhood education and care, home help and accommodation and other benefits in cash and in kind designated for families. As explained in the theory section, spending on family policies is assumed to primarily benefit the children. Family policy investments are therefore not expected to yield the strongest effect on crime rates immediately but with a significant time delay, namely when the children who have benefited from their country's family policies in their early years reach an age high enough to commit offences to be included in crime statistics. This is in line with research showing that investment in children (especially in terms of early childhood education and care) has long-term effects on individual offending (García, Heckman, & Ziff, 2019). To account for this long-term effect the variable values for spending on family policies are lagged by 10 years behind the dependent variable.

For the empirical test of H2, unemployment benefits are operationalized as unemployment benefit replacement rates. These data come from the Comparative Welfare Entitlements Dataset (CWED) (Scruggs, Jahn, & Kuitto, 2017) and represent (net) unemployment benefits, as defined in national social legislation, as a share of a (net) average production worker's wage. Two variables for different model household types are available for the analysis: 1) replacement rates for the fictive average production worker who works full time, lives alone and has no children or other dependents (single unemployment benefit replacement rate) and 2) replacement rates for families that consists of one full time average production worker who cohabitates with a dependent spouse with no earnings and two children aged 7 and 12 (family unemployment benefit replacement rate).

Data on minimum income benefits to test H3 are taken from Wang and van Vliet's Social Assistance and Minimum Income Levels and Replacement Rates Dataset (Wang & van Vliet, 2016). They define net minimum income benefits as the net income from a benefit package consisting of basic social assistance, child supplements, refundable tax credits, and other benefits. We include benefit levels for single households without children in our analysis, as these should be more likely to offend.³

To test the hypothesis derived from IAT (H4), most previous studies, including the seminal Messner and Rosenfeld study, have used a proxy measure of decommodification based on social spending indicators (see

also Altheimer, 2008). As shown in the theory section, this goes against the spirit of Esping-Andersen's conceptualization of decommodification which was explicitly developed as an *alternative to spending-based* accounts of welfare state variation. We follow Esping-Andersen and use a measure based on the quality of social rights, which better captures the degree to which individuals and households are made independent from the (labor) market than spending measures. We believe that this also better represents what is at the heart of IAT, namely the idea that the dominance of the market economy in society via an individual dependence on market outcomes breeds crime. We do not use Esping-Andersen's own index, which has been criticized on methodological grounds (Scruggs & Allan, 2006) and does not measure variation over time, but the conceptually equivalent, but time-varying social welfare generosity index as provided by the CWED until the year 2010 (Scruggs, Jahn, & Kuitto, 2017). To construct the generosity index, z-scores for each country-year characteristic were created, normed on the cross-sectional mean and standard deviation in 1980, which is the same base year Esping-Andersen used for his decommodification index. The sum of the characteristics z-scores for each program – namely unemployment insurance, sick pay, and public pensions – were then multiplied by the coverage ratio for each program and the take-up rate for public pensions (for details of the calculation see Scruggs, 2014).

In order to capture the effects of the selected welfare policies on homicide rates as precisely as possible, the following control variables representing macro-factors commonly studied in the criminological literature, were included in the models: age structure, GDP per capita, the unemployment rate, income inequality, urbanization and divorce rates. A control variable reflecting the size of the young age group is included since the prevalence of criminal behaviour is typically expected to be relatively high among the youth and young adults, although the evidence for a cross-national effect is surprisingly mixed (Phillips, 2006; Steffensmeier & Harer, 1999). Secondly, for the purpose of this study, including an indicator for the age composition is particularly important as, *inter alia*, the relationship between family expenditures and crime is examined. Spending on family policies is assumed to primarily benefit very young age groups, mainly infants (e. g. child allowances, early childhood care and education). The analysis thus includes a country's population between 0 and 24 years of age as a percentage of the total population as control variable. The data are provided by the United Nations (UN) Population Division in the 2017 Revision of the “World Population Prospects” (2017).

Most criminological theories – including SST and IAT – acknowledge some importance of the economy for explaining crime rates. Economic strain is typically regarded as a criminogenic factor, although we can only take the economic situation at the country level into account, not individual economic problems. As a broad indicator of the economic situation, the GDP per capita in US dollars at current prices and current purchasing power is incorporated into the analysis. This variable is also important as control for the key independent variables reflecting spending as percent of GDP (total social spending, family and education policy spending). The data are provided by the OECD National Accounts Statistics (2019c). Harmonised unemployment rates are provided by the OECD Labour Force Statistics (OECD, 2019b). Missing values have been replaced by modelled estimates provided by the International Labour Organization (ILO) as from 1991 (ILOSTAT, 2018)

As classical strain theory and institutional-anomie theory predict that relative deprivation increases crime, economic inequality is controlled for through the Gini index of disposable income (Fajnzylber, Lederman, & Loayza, 2002; Kelly, 2000; Neumayer, 2005). This index is the common measure for the level of income inequality after taxes and transfers. The data come from the Standardized World Income Inequality Database (SWIID) which by its own account provides income inequality estimates based on thousands of reported Gini indices from hundreds of published sources, among them the OECD, Eurostat, the World Bank, the UN and the Luxembourg Income Study (Solt, 2019).

³As opposed to Scruggs, Jahn, and Kuitto's calculation of unemployment benefits, the benefit package considered by Wang and van Vliet does not refer to a specific age of the recipient. Social assistance payments for unexpected and urgent needs or regular supplements for exceptional needs as well as housing benefits are also not included. In total we checked for the effect of two different minimum income variables: benefit levels and replacement rates (i.e. the ratio of net benefits to the net average production worker wage). We also ran tests with various household types, but we report only inflation-adjusted benefit levels for single person households in the results section. The substantive results do not change.

Table 1
Descriptive statistics for homicide rates and control variables, 1990–2011, N = 18 countries (396 country-years).

Variable	Overall mean	Overall standard dev.	Min.	Max.	Data source
Homicide rate, homicides per 100,000 population	1.13	.54	.3	3.3	WHO Mortality Database
Homicide rate (3-year-moving-average), homicides per 100,000 population	1.16	.53	.3	3.1	WHO Mortality Database
Total social expenditure, percent of GDP	24.83	4.64	11.09	37.13	OECD Social Expenditure Database
Public expenditures on family policies, percent of GDP	1.99	1	.15	4.45	OECD Social Expenditure Database
Unemployment benefit replacements (singl'es), percent of average production worker wage	56.07	18.53	16.6	90.5	Comparative Welfare Entitlements Dataset
Unemployment benefit replacements (families), percent of average production worker wage	66.53	11.6	28.2	91.4	Comparative Welfare Entitlements Dataset
Minimum income benefit levels, yearly amounts in US \$, adjusted for purchasing power and inflation	6831	1941	4243	11,745	Social Assistance and Minimum Income Levels and Replacement Rates Dataset
Decommodification ^a , sum of unemployment, sickpay, and pension generosity indices	32.66	6.48	20.4	45.8	Comparative Welfare Entitlements Dataset
Age group 0–24 years, percent of total population	31.15	3.74	23.16	45.13	United Nations Population Division
GDP per capita in US \$, adjusted for purchasing power	29,315	9044	13,463	62,146	OECD National Accounts Statistics
Unemployment rate	7.35	3.49	1.72	22.05	OECD Labour Force Statistics
Income inequality, Gini index	28.51	3.45	21	34.5	Standardized World Income Inequality Database
Urban population, percent of total population	77.90	9.16	56.93	97.7	United Nations Population Division
Divorce Ratio, divorces as percent of marriages	41.66	14.83	0	76.92	OECD Family Database

^a Representing 1990–2010, 378 country-years.

Following empirical evidence that crime rates are higher in urban areas (e.g. Harries, 2006), the size of the urban population is also controlled for. The variable reflects the annual percentage of a country's total population residing in urban areas as provided by the 2018 Revision of the United Nations Population Division's "World Urbanization Prospects" (2018).

Furthermore, family disruption has been found to be a relevant predictor of offence rates (Pratt & Cullen, 2005). Using the number of divorces and marriages per 1000 population from the OECD Family Database, we calculated the divorces/marriages ratio as proxy for family stability (2019a). It should be noted, however, that the effect of divorce rates could also be negative, as the decline of intimate partner homicides in rich countries has been linked to higher divorce rates (Dugan, Nagin, & Rosenfeld, 1999). All variables used in the analysis are listed in the descriptive Table 1.

4.3. Method

The effects of the selected welfare policy indicators on homicide rates were estimated using fixed effects regressions. Fixed effects models have the advantage that they control for unobserved heterogeneity, i. e. for countries' individual time-invariant characteristics, like for example a nation's religion, culture or political system, that may influence crime rates but could not be included in the model. More precisely, using country fixed effects, we are able to estimate the effect of our independent variables on homicide net of unknown and constant country-specific effects. However, one should be aware that by ignoring all relationships with predictors that do not change over time, fixed effects models can never give a fully comprehensive picture of the phenomenon of crime (Bell, Fairbrother, & Jones, 2019: 1058). In order to tackle common panel data estimation issues, we conducted the fixed effects regressions with Driscoll-Kraay standard errors, which are robust to heteroscedasticity, serial correlation, and cross-sectional dependence (Hoechle, 2007). To check for robustness, we also estimated the welfare policy effects using Prais-Winsten regressions with panel-corrected standard errors. As Beck and Katz (1995) have shown, this technique produces relatively efficient results for time-series cross-sectional data of the type that is typically used in cross-national macro analysis and for sample sizes similar to the one used in this study. High correlations (0.7 and above) can be observed only between the unemployment benefit indicators and between minimum benefit income indicators, which was considered in the choice of the different model specifications. Given that no variance inflation factor of the predictor variables exceeds a value of 4, no problem of multicollinearity is expected across specifications (Fox, 1991).

5. Analysis and discussion

The results of the fixed effects regressions for homicide rates are depicted in Table 2 (results from Prais-Winsten regressions with panel-corrected standard errors are reported in the Appendix, Table A2:). Due to multicollinearity, we ran 7 separate regressions, with different combinations of the main variables of interest. The first model is a baseline model with the macro-controls only. The majority of effects regarding the control variables are statistically significant and signed as expected. The coefficient for income inequality is, contrary to expectations, negative in the baseline model and the effect of the unemployment rate is not statistically significant. The youth ratio, GDP level, urban population and divorce ratio are, however, statistically significant, signed as expected and quite robust across specifications.

With respect to our main variables of interest, Model 2 includes total social spending as a percentage of GDP, in line with many previous studies. Confirming existing research, total social spending has a negative effect on homicide rates, which is also significant. Raising social spending by a mere percentage point is associated with 0.023 fewer homicides per 100,000 people – which is a sizeable effect given the

Table 2
Effects on homicide rates across 18 advanced welfare states from 1990 to 2011.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total social expenditure		-.023*** (.008)					
Family policy expenditure			-.017 (.024)				
Unemployment benefit replacement rates (singles)				-.016*** (.003)			
Unemployment benefit replacement rates (families)					-.013*** (.003)		
Minimum income benefit levels (singles)						5.19e ⁻⁶ (.000)	
Decommodification							.009 (.01)
Population aged 0–24 years	.026** (.01)	.011 (.014)	.025** (.01)	.018* (.009)	.017* (.01)	.027** (.01)	.025* (.013)
GDP per capita	-.000*** (1.54e ⁻⁶)	-.000*** (1.8e ⁻⁶)	-.000*** (1.68e ⁻⁶)	-.000*** (1.9e ⁻⁶)	-.000*** (1.65e ⁻⁶)	-.000*** (2.6e ⁻⁶)	-.000*** (1.68e ⁻⁶)
Unemployment rate	-.002 (.006)	.011 (.01)	.003 (.006)	.001 (.005)	.005 (.005)	.007 (.007)	.004 (.005)
Income inequality	-.077*** (.01)	-.088*** (.011)	-.076*** (.011)	-.1*** (.014)	-.1*** (.015)	-.073*** (.014)	-.066*** (.016)
Urban population rate	.025*** (.008)	.026*** (.006)	.024*** (.008)	.027*** (.008)	.024*** (.008)	.029*** (.008)	.026*** (.008)
Divorce ratio	.006*** (.002)	.007*** (.002)	.006** (.002)	.008*** (.002)	.008*** (.002)	.007** (.003)	.006** (.002)
N (countries/country-years)	18/396	18/396	18/396	18/396	18/396	18/360	18/378

Notes: Regression coefficients from fixed effects regression, Driscoll-Kraay standard errors in parentheses. * $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$.

small absolute number of homicides per year in many countries outside of the US. However, as argued earlier, this is also somewhat uninformative, as it does not tell us anything about the way in which social policy might have an impact on homicide. Total social spending comprises cash transfers and services for many kinds of contingencies and target groups, from sick to old people, and from children to the unemployed. With more specific spending and program generosity measures, we therefore probe into some of the most likely channels of influence.

Turning to our specific hypotheses for social support, we find that the effect of 10-year lagged family policy spending on homicide (H1) in model 3, while negative, is not statistically significant at conventional levels.

Hypothesis 2 on unemployment benefit generosity (H2), by contrast, is confirmed by models 4 and 5 both for singles and for families. High replacement rates in the case of unemployment preserve the status of working-age citizens in times of joblessness – at least during the first months until second-tier, often considerably lower, unemployment assistance or social assistance benefits kick in. Given the importance of the labor market as the central locus of integration in a modern capitalist society and wage income as an important marker of status, this mechanism is quite plausible. The vulnerability and loss of status induced by low replacement rates may have important emotional consequences in terms of self-worth and life satisfaction. Studies show that the generosity of “passive” unemployment compensation has large moderating effects on the life satisfaction of the unemployed (Sjöberg, 2010; Wulfgramm, 2014). This fits well with explanations of criminal behavior that focus on individual strain. The size of the effect is, again, far from trivial. An increase of the unemployment benefit replacement rate for single households by one percentage point decreases the homicide rate by 0.016 homicides per 100,000 population. The same increase of the unemployment benefit replacement rate for families decreases the homicide rate by 0.013 homicides per 100,000 population. This finding is of high practical significance, if we assume causality. Whereas an increase of a country's total social spending by several percentage points with the aim of reducing crime would probably not be feasible, an increase of unemployment replacement rates by for example 10 percentage points might be realistic. The effect would be

considerable. According to our model, a 10-percentage point increase in unemployment benefit replacement rates for singles would decrease the mean homicide rate of 1.13 homicides to 0.97 homicides per 100,000 population. Note, however, that when applying Prais-Winsten regressions with panel-corrected standard errors but without fixed effects, we find a statistically significant effect only for the single benefit levels, not for families, and that the effect size is smaller (see Appendix).

Perhaps most surprisingly, we find that none of the minimum income variables to test yields significant effects on homicide rates (only minimum income benefit levels for single person households are reported as model 6 in Table 2). This is unexpected as many existing studies on the US case do find effects when using social assistance spending and/or generosity (for programs like general assistance, AFDC or TANF). We can only speculate what produces this result. It might be that in a comparative setting, many of the social support functions that a scheme like TANF has are fulfilled by family benefits or unemployment benefits, which tend to be larger and more generous in Europe than in the US. It could also be that the crime-reducing effect of social assistance benefits is counteracted by the often considerable stigma attached to receiving these benefits.

Finally, the decommodification effect is not confirmed in our fixed effects model (Model 7). Given the empirical support this effect has received in previous studies, this is puzzling. However, we believe that it becomes much more reasonable when we take two important facts into account: First, the indicators of decommodification typically used in criminological research were based on spending and thus did not follow Esping-Andersen's harsh critique of spending-based notions of the welfare state or decommodification. Once we correct for this mismeasurement of the concept of decommodification, the effect disappears. (Note that our own results do find total spending to have an overall effect on homicide, much in line with previous research.) Second, unobserved country characteristics such as historical legacies or culturally mediated ideas of the proper role of the state may correlate with high levels of decommodification to be found in parts of Europe. Once we take such heterogeneity into account via unit fixed effects, decommodification ceases to influence crime. Future research should therefore try to explore the wider social and political background against which high decommodification and low homicide figures emerged.

6. Conclusion

We have assessed two highly influential accounts of the welfare-crime link, SST and IAT, with high-quality welfare program data and a new decommodification index across the core-OECD for the first time. Although the analysis should not be seen as a horse-race test between SST and IAT, the results of our empirical investigation suggest that the effect of the welfare state on crime is explained through the support provided particularly by generous unemployment benefits. Overall decommodification, if measured in line with the original theory by Esping-Andersen, does not have any effect on homicide. This suggests that the causes and mechanisms of the preventative effect on crime of advanced welfare states most likely do not lie at the society-wide level but are more specific and closely connected to material support in critical life-situations provided by distinct policies. This does not necessarily mean that purely materialist mechanisms produce the welfare-crime effect. On the contrary, the lack of an effect of minimum income generosity indicates that it's not just about the money. One characteristic of social assistance is the stigma attached to its receipt. The nature of unemployment benefits which are typically status-preserving and hence much less stigmatizing helps to send a positive signal to those at risk of offending which might be much better at relieving individual strain.

Future research should therefore examine the effect of labor market policies more thoroughly. After all, the last decades have seen some retrenchment, but perhaps more importantly a turn away from purely “passive” income-replacement for the unemployed and towards various forms of “activation”. It is not unlikely that the style of “activation” matters also for crime effects (Fallesen, Geerdsen, Imai, & Tranæs, 2014). While there is general agreement that some forms of “activation” are more supportive or “enabling” and others more punitive and “workfare”-oriented (Dingeldey, 2007), we still lack good comparative measures to test these differences and their potential effect on crime empirically (but see Ochsen, 2010). A second way to explore the welfare-crime connection further would be to link country-level analysis

systematically to individual-level research. After all, one important limitation of this study – as well as the preceding 41 studies on the topic – is its macro-level focus, which entails the risk of faulty ecological inference. Individual-level research on the welfare state effect is still quite limited. Some research focuses more narrowly on benefits as part of rehabilitation schemes, e.g. by demonstrating that transitional unemployment compensation after release from prison decreased recidivism (Berk, Lenihan, & Rossi, 1980; Rauma & Berk, 1987). Other studies are more mixed (Verbruggen, Apel, Van der Geest, & Blokland, 2015). Relatedly, Fallesen et al. (2014) show how a local active labor market scheme in Denmark led to lower property crime probably not due to higher earnings but mostly through incapacitation, that is, by restricting the free time of program participants.

Beyond theoretical implications, what do these results mean in terms of using welfare as a preventive strategy? Do they have any policy implications? Generally, given that our design does not allow to directly test for causal effects, we need to be careful with big conclusions. However, the results suggest that policymakers should not be indiscriminate with welfare state expansion for crime prevention. Although we find a statistically significant negative effect of total spending on homicide, this does not mean that more generous welfare programs are necessarily better at fighting crime. First, raising overall levels of decommodification – which reflects the inclusiveness and generosity of social policy across several areas – does not seem to have an effect, either. Second, when looking at effects for sub-areas of social policy, it becomes clear that some areas, including family policy spending and general social assistance do not have the expected effect. In other words, the welfare state clearly has a role to play in preventing crime, but our results suggest that it is unemployment benefits in particular, which should be strengthened.

Declarations of competing interest

None.

Appendix

Table A1
Existing empirical tests of the welfare-crime link.

Author (year)	Dependent variable(s)	Key welfare variable(s)	Method	Max. no. entities covered	Time period	Theory
Negative effect on crime						
Alzheimer (2008)	Homicide rates	Welfare, education, health spending; decommodification; HDI	cross-sectional	51 countries	1996–1999	Social Support
Beach and Lopresti (2019)	Property crime rates	Unemployment insurance generosity	time-series	around 3.000 US counties	1990–2007	Economic approaches
DeFronzo (1983)	Rates of various types of offences	AFDC payments	cross-sectional	39 US SMSAs	1970	no concrete theory; emphasis on “economic factors”
DeFronzo (1996a)	Burglary rates	AFDC payments	cross-sectional	141 US cities	around 1991	Strain and control theories, social disorganization-strain
DeFronzo (1996b)	Burglary rates	AFDC payments	cross-sectional	140 US cities	around 1991	Strain theory
DeFronzo (1997)	Homicide rates	AFDC payments	cross-sectional	141 US cities	around 1991	Strain, social disorganization-strain perspective
DeFronzo and Hannon (1998)	Homicide rates	AFDC payments, US General Assistance	cross-sectional	437 US metropolitan counties	1990	strain, social support
Fiala and LaFree (1988)	Homicide rates (children)	Government revenue, social security and social security family expenditures	cross-sectional	58 countries	around 1970	Economic stress, social disorganization, culture of violence, social isolation
Fishback, Johnson, and Kantor (2010)	Rates of various types of offences	Relief spending per capita	time-series	81 US cities	1930–1940	Economic approaches
Foley (2011)	Major crimes	TANF and SSI payments, food stamps	cross-sectional	12 US cities	around 2004–2006	Economic approaches
Gartner (1990)	homicide rates	Welfare spending as percent of GNP	time-series	18 countries	1950–1980	Strain, cultural approaches, social disorganization, routine activity

(continued on next page)

Table A1 (continued)

Author (year)	Dependent variable(s)	Key welfare variable(s)	Method	Max. no. entities covered	Time period	Theory
Hannon (1997)	Homicide rates	AFDC payments	cross-sectional	394 US labour market areas	1990	welfare-as-an-investment-in-youth, integrated strain-disorganization perspective
Hannon and DeFronzo (1998a)	Property crime rates	AFDC payments, welfare participation rates	cross-sectional	408 US metropolitan counties	1990	Strain, social support, version of social disorganization theory
Hannon and DeFronzo (1998b)	Property and violent crime rates	AFDC payments, welfare participation rates	cross-sectional	406 US metropolitan counties	1990	Anomie, institutional-anomie, social support
Liebertz and Bunch (2018)	Property and violent crime rates	Welfare restrictiveness (self-constructed index)	time-series	50 US states	1996–2012	Social disorganization, social support
Machin and Marie (2006)	Property and violent crime rates	Unemployment benefits	mixed methods including qual. Approach	45 police force areas in England and Wales	around 1995–2002	Economic approaches
Maume and Lee (2003)	Rates of various types of offences	welfare payments per poor person and proportion of poor families receiving welfare, educational expenditures per person	cross-sectional	454 US urban counties	around 1990	Institutional-anomie
McCall and Brauer (2014)	Homicide rates	Decommodification/“Welfare support”	time-series	29 European countries	1994–2010	Social support
Meloni (2014)	Rates of various types of offences	Argentinian Unemployed Heads of Household Programme (UHHP) payments	time-series	23 Argentinian provinces	2002–2005	Economic approaches
Messner and Rosenfeld (1997)	Homicide rates	Decommodification	cross-sectional	45 countries	primarily 1980s	Institutional-anomie
Nivette (2011)	Homicide rates	Decommodification	meta-analysis	/	/	11 main perspectives
Ochsen (2010)	Rates of various types of offences	benefit replacement rate, benefit duration, active labor market policy, education level	time-series	9 European countries	1991–1999	Social disorganization, lifestyle/routine activity, economic approaches
Pampel and Gartner (1995)	Homicide rates	“Collectivism”: corporatism, consensus government, left-wing government, governability, decommodification	time-series	18 countries	1951–1986	Very general “social context” approach
Pratt and Godsey (2003)	Homicide rates	Health care and public education spending	cross-sectional	46 countries	1989–1995	Social support/social altruism
Rogers and Pride-more (2017)	Homicide rates	Public social protection, voluntary private social protection	cross-sectional	31 OECD countries	2010–2014	altruism, social control, buffers from market forces, insulation from poverty
Savage, Bennett, and Danner (2008)	Homicide rates, theft	Welfare spending level	time-series	52 countries	1960–1984	Strain, subculture, institutional-anomie, liberalism/libertarianism, social threat
Savolainen (2000)	Homicide rates	Decommodification, welfare spending level, interaction with inequality	cross-sectional	46 + 7 countries	around 1990	Institutional-anomie
Shannon (2013)	Property and violent crime rates	US General Assistance	time-series	several US states and counties	1960–2010	Economic approaches, anomie, institutional-anomie, collective efficacy and others
Thames and McCall (2014)	Homicide rates	Social benefits expenditures per capita	time-series	247 European regions	2000–2009	Social support
Tuttle (2018)	Homicide and suicide rates	Social expenditures	time-series	31 OECD countries	1990–2005	Stream analogy of lethal violence, general strain, institutional-anomie
Worrall (2009)	Homicide rates	General relief	time-series	58 counties in California	1990–1998	Social support
Zhang (1997)	Property crime rates	Several cash and in-kind welfare programs	cross-sectional	50 US states + D.C.	1987	Economic approaches
No effects on crime and mixed results						
Bjerregaard and Cochran (2008)	Homicide rates, theft rates	Social security expenditures as percent of GDP	cross-sectional	49 countries	mostly 1997	Institutional-anomie
Brown (2016)	Property and violent crime rates	Various social assistance programs: spending per poor person	time-series	50 US states	1997–2006	Social support
Burek (2006)	Rates of various types of offences	TANF payments per county per recipient	cross-sectional	81 counties in Iowa	2000	No link to specific theories since there supposedly is no relationship
Chamlin, Cochran, and Lowenkamp (2002)	Homicide rates (different types)	Number of AFDC recipients	time-series	1 city (Oklahoma)	1976–1994	Social altruism, social threat
Gruner (2015)	Rates of various types of offences	TANF payments per recipient, percent of the poor on welfare	cross-sectional and time-series separately	50 US states	2000–2010	Strain, institutional-anomie, conservative argument, routine activities
Stack (1982)	Property crime rates	/	time-series	1 country (Sweden)	1950–1979	Opportunity, economic, deterrence, social bonds perspectives

(continued on next page)

Table A1 (continued)

Author (year)	Dependent variable(s)	Key welfare variable(s)	Method	Max. no. entities covered	Time period	Theory
Worrall (2005)	Rates of various types of offences	AFDC payments per recipient, per capita social service spending, general relief per recipient, per capita general relief, per capita family assistance	time-series	58 counties in California	1990–1998	Social support
Burek (2005)	Positive effects on crime Serious and less serious property crimes	AFDC payments	time-series	120 counties in Kentucky	1980–1990	Social disorganization, institutional anomie, social support (to explain positive (!) relationship)
Niskanen (1996)	Violent crime rates	AFDC payments	cross-sectional	50 US states	1992	Liberalism/Libertarianism

Source: own compilation.

Note: if not otherwise noted, all spending is in percent of GDP/GNP.

Table A2

Effects on homicide rates across 18 advanced welfare states from 1990 to 2011, Prais-Winsten regressions with panel-corrected standard errors.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total social expenditure		-.002 (.005)					
Family policy expenditure			-.021 (.028)				
Unemployment benefit replacement rates (singles)				-.005** (.002)			
Unemployment benefit replacement rates (families)					-.003 (.002)		
Minimum income benefit levels (singles)						2.71e ⁻⁶ (.000)	
Decommodification							.008 (.006)
Population aged 0–24 years	.035*** (.01)	.034*** (.01)	.036*** (.01)	.029** (.01)	.035*** (.01)	.027*** (.011)	.026*** (.01)
GDP per capita	-7.73e ⁻⁶ ** (3.54e ⁻⁶)	-8.05e ⁻⁶ ** (3.43e ⁻⁶)	-7.18e ⁻⁶ ** (3.67e ⁻⁶)	-8.18e ⁻⁶ ** (3.59e ⁻⁶)	-7.65e ⁻⁶ ** (3.53e ⁻⁶)	-.000*** (3.23e ⁻⁶)	-.000*** (2.95e ⁻⁶)
Unemployment rate	-.006 (.005)	.007 (.005)	.006 (.005)	.007 (.005)	.007 (.005)	.007 (.005)	.006 (.005)
Income inequality	-.034*** (.01)	-.035*** (.01)	-.035*** (.011)	-.043*** (.011)	-.038*** (.011)	-.029*** (.009)	-.037*** (.011)
Urban population rate	.01*** (.004)	.01*** (.004)	.01** (.004)	.01** (.004)	.01** (.004)	.011** (.004)	.01*** (.004)
Divorce ratio	.002 (.001)	.002* (.001)	.002* (.001)	.002* (.001)	.002* (.001)	.002 (.001)	.002* (.001)
R ²	.50	.51	.49	.5	.5	.53	.55
N (countries/country-years)	18/396	18/396	18/396	18/396	18/396	18/360	18/378

Notes: Regression coefficients from Prais-Winsten regression, panel-corrected standard errors in parentheses. *p ≤ 0.10; **p ≤ 0.05; ***p ≤ 0.01.

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- Peter Starke** is professor (mso) at the Department of Political Science and Public Management at the University of Southern Denmark. His main research interest lies in comparative welfare state research and political economy. He has published in journals such as *Politics and Society*, the *Journal of European Public Policy* and is co-editor of *Warfare and Welfare* (Oxford University Press, 2018).
- Maximilian Rudolph** is administrative officer at the Land Office for Land Surveying and Geospatial Information of Schleswig-Holstein, Germany. He holds a MSc in Comparative Public Policy and Welfare Studies from the University of Southern Denmark.