

DISCUSSION PAPER SERIES

IZA DP No. 18282

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Persecution (updated research)**

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## ABSTRACT

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# Economic Consequences of Political Persecution (updated research)\*

We examine the consequences of political persecution under the communist regime on labor market outcomes using life history data from the Czech sample of the Survey of Health, Ageing and Retirement in Europe. The risk of persecution is instrumented using unique administrative data on the intensity of political oppression. We find strong evidence of career degradation as a consequence of persecution-driven job losses. Our estimates suggest that earnings in jobs following such a loss carried a penalty of over 60 percent that accumulated over time to substantially lower retirement benefits. We document the gravity of economic consequences for ordinary citizens persecuted by the authoritarian regime as well as effective compensating schemes implemented by democratic governments after 1989.

**JEL Classification:** J70, J31, N34, C21

**Keywords:** political persecution, discrimination, wage differentials, communist regimes, life histories

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\* This Discussion Paper updates and extends the analysis presented in IZA DP 11136. In the latest version we use life history data from two waves of the SHARELIFE survey (2008/09 and 2017) and extend our approach to identification with more detailed regional data on the intensity of political persecution in the communist Czechoslovakia. This paper uses data from SHARE Waves 1-9 (DOIs: from 10.6103/SHARE.w1.900 to 10.6103/SHARE.w9). The SHARE data collection has been funded by the European Commission, DG RTD through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812), FP7 (SHARE-PREP: GA 211909, SHARE-LEAP: GA 227822, SHARE M4: GA 261982, DASISH: GA 283646) and Horizon 2020 (SHARE-DEV3: GA 676536, SHARE-COHESION: GA 870628, SERISS: GA 654221, SSHOC: GA 823782, SHARE-COVID19: GA 101015924) and by DG Employment, Social Affairs and Inclusion through, SHARE-EUCOV: GA 101052589 and EUCOVII: GA 101102412. Additional funding from the German Federal Ministry of Education and Research (01UW1301, 01UW1801, 01UW2202), the Max Planck Society for the Advancement of Science, the U.S. National Institute on Aging (U01 AG09740-13S2, P01 AG005842, P01 AG08291, P30 AG12815, R21 AG025169, Y1-AG-4553-01, IAG BSR06-11, OGHA 04-064, BSR12-04, R01 AG052527-02, R01 AG056329-02, R01 AG063944, HHSN271201300071C, RAG052527A) and from various national funding sources is gratefully acknowledged (see [www.share-eric.eu](http://www.share-eric.eu)). The project in the Czech Republic is supported by the Ministry of Education, Youth and Sports of the Czech Republic (LM2023070) and the ERDF/ESF project AGEING-CZ (CZ.02.01.01/00/23 025/0008743). We are also grateful to Krzysztof Karbownik and Tymon Sloczynski for very helpful comments and to Guglielmo Weber, Pedro Mira, Howie Litwin, James Smith, Monika Butler, Filip Pertold, and seminar participants at Ca' Foscari, CERGE-EI, IHS, UAB, and the IIPF conference for their helpful suggestions on the early draft of the paper.

# 1 Introduction

It was a well-known anecdote in the 1980s that Prague had the most educated window cleaners in the world. Indeed, the first post-communist president of Czechoslovakia, Václav Havel, had been rolling barrels in a brewery, the Prime Minister, Petr Pithart, had worked as a stoker, a night watchman, and a forest worker, while the Secretary of State, Jiří Dienstbier, had been a tube cutter, a book packer, and a window cleaner. All had higher education, were active dissidents persecuted by the regime and were fired from their original occupations. As we show in this paper, these high-profile cases reflect the experience of numerous other ordinary individuals persecuted by the Czechoslovak communist regime between 1945 and 1989.

Over thirty years after the “velvet” revolution in Czechoslovakia and parallel transitions in other countries of Central and Eastern Europe, little is still known about the consequences of the communist regime’s oppression on the material well-being of the countries’ populations. This applies both to the question of their material conditions at the time and to the long-term consequences of the years spent under communism. The lack of quantitative studies applies in particular to evidence on the nature and functioning of labor markets, which under the communist regime were subject to very tight state control through the process of wage determination, job allocation, and the ability of the government to affect different aspects of the quality of work. The workplace was often the area where the power of the state over the individual presented itself most clearly.

The focus of this paper is the consequences of political persecution for labor market outcomes. We set the analysis in the context of the communist regime of the former Czechoslovakia, a country known for a highly oppressive political system and stringent labor rules, even by Central and Eastern European standards of the time. We examine the implications of persecution for career degradation, earnings losses, and long-term effects on retirement pensions. To the best of our knowledge, our paper is the first to examine these issues directly in a quantitative manner.

Our analysis draws on unique life history data from the Survey of Health, Ageing and Retirement in Europe (SHARE) collected in 2008/09 and 2017.<sup>1</sup> We combine detailed information on the experience of persecution collected as part of life history interviews (SHARELIFE) in the Czech Republic with a rich set of data on respondents’ labor market histories, job characteristics, childhood conditions as well as later life socio-economic conditions. The structure of the SHARELIFE interview enables

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<sup>1</sup>SHARE is a multidisciplinary and cross-national representative panel of micro data on health, socio-economic status, and social and family networks for individuals aged 50+ in 28 European countries and Israel. The survey is harmonized with the Health and Retirement Study (HRS), the English Longitudinal Study of Ageing (ELSA), and other ageing surveys. Wave 3, collected in 2008/09, focused on life histories through a detailed retrospective interview covering family, labor market, and health histories. The life history module was implemented again in wave 7 (2017) among participants who joined the survey in later waves. For more information, see [www.share-eric.eu](http://www.share-eric.eu).

us to identify persecution in specific jobs, thereby linking the experience of job losses or discrimination resulting from political persecution to earnings on the subsequent job spells and long-term consequences in the form of retirement pensions. Since the reported experience of persecution might be endogenous with respect to the analyzed outcomes, either due to self-selection into communist opposition or to biased reporting, we instrument our individual indicators of persecution. For this purpose, we compile archival data on judicial rehabilitation cases after 1989 and on the number of secret service agents and the cases these agents investigated. These data serve as indicators for the severity of political persecution at a specific point in time across different geographic regions. We show that this information correlates strongly with the incidence of persecution as declared by the survey respondents.

In the representative SHARELIFE sample in the Czech Republic, more than 13 percent of respondents declare experiencing persecution and the data confirm that a disproportional burden of persecution fell on the higher educated. Almost 7 percent experienced on-the-job politically motivated discrimination, while around 3 percent lost their jobs as a consequence. Controlling for an extensive set of contemporaneous and early-life characteristics and instrumenting the likelihood of persecution with archival proxies for its intensity, we find that the earnings of those who lost their jobs as a result of persecution recorded a job-to-job drop of over 60 percent. The long-term average loss in earnings for all jobs that followed a persecution-related job loss is about 33 percent. Additionally, job loss resulting from persecution had substantial life course consequences in career degradation and an accumulated retirement benefits penalty of around 40 percent.<sup>2</sup> The magnitude of the identified effects is remarkable given the egalitarian nature of the communist system. The results document the regime's control over people's daily lives and its power to punish dissenting individuals in both the short and long run. Finally, we examine the compensation schemes designed by the democratic governments after the communist regime collapsed in 1989. We can confirm that, after crucial legislative changes, current pensions recorded for the same sample no longer carry any penalties related to political persecution.

The contribution of this paper is threefold. First of all, we use microdata to document how the communist system, one of the most important socio-economic phenomena of the last century, combined its complex apparatus of coercion to impose material lifelong penalties on those who dared to oppose it. This historical angle contributes to a recent wave of papers focused on the short and long-term consequences of major events from the twentieth century, especially the effects of World War II and the Holocaust.<sup>3</sup> While for reasons of data availability, many of these contributions rely

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<sup>2</sup>Our results are robust to different specifications, robustness tests, matching as well as instrumental variable estimation for political oppression over time and across regions.

<sup>3</sup>Acemoglu et al. (2011) examine the long-term implications of the Holocaust for Russian cities, finding that regions that experienced the Holocaust most intensely have grown less, have lower wages and GDP per capita today and exhibit a higher vote share for communist candidates. Voth and

on aggregate regional statistics, a growing number of studies link early experiences to later life outcomes using micro-level data. Youssim et al. (2021) analyze the effects of exposure to the Holocaust on later life causes of mortality, and Zimmer et al. (2025) study the link of wartime experiences in Vietnam to old age frailty. Smith et al. (2014) and Haas and Ramirez (2024) exploit the SHARELIFE data to examine the long-term implications of childhood events during World War II on health. The same data were used to highlight differences between labor markets in communist countries (Perez-Izquierdo and Pronkina (2023)) and to show the importance of personal shocks over the life-course to health and well-being in old age, noting the particular importance of periods with high uncertainty during the regime transition (Costa-Font et al. (2025)). Our analysis makes a unique contribution to this strand of literature by examining in detail the communist regime’s ability to use the labor market and pension system to punish dissent and opposition.

Second, we document the level and dynamics of earnings in a highly controlled labor market. To our knowledge, we are the first to examine not only the consequences of political persecution under communism, but also to study the implications of layoffs and displacement under central planning. We also contribute to the literature on returns to education as well as earnings and pensions differentials related to various individual characteristics. We compare our results to empirical findings for market economies on race and gender (Cain (1986), Card and Krueger (1993), Altonji and Blank (1999), Altonji and Pierret (2001), Bjerk (2007), Fryer (2010), Goldin (2014), Blau and Kahn (2017), Blundell et al. (2025)), and displacement and unemployment (Neal (1995), Jacobson et al. (1993), Poletaev and Robinson (2008), Davis and von Wachter (2011), Schmieder et al. (2023)). While these earnings differentials may generally arise from tastes, statistical discrimination, or observables (Arrow (1973), Farber and Gibbons (1996), Heckman (1995), Heckman (1998), Carneiro et al. (2005)), in our case the origin is exceptional and lies with the totalitarian regime’s punitive use of the labor market. Perhaps the closest scenario is analyzed by Appleton et al. (2009), who document a similar political control of the labor market in China with a resulting wage premium of about 10-14 percent to Communist Party members, a magnitude similar to the premia of union members in market economies.<sup>4</sup> Finally, to address potential endogeneity of political persecution and reporting bias, and given the severity of the short- and long-term penalties related to persecution, we sought to provide instruments to account for the endogeneity problem and reporting bias in

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Voigtlander (2012) study the persistence of antisemitism during World War II. Waldinger (2016) compares the destruction of human and physical capital of scientific departments in Germany during World War II. Davis and Weinstein (2002) examine the consequences of the US bombing of Japanese cities during World War II; Brakman and Schramm (2004) do the same for Germany.

<sup>4</sup>For unionized workers, wage premia estimates are around 12 percent in OECD countries and 18 percent in the U.S. (Card (1996), Card et al. (2004), and Blanchflower and Bryson (2002)). In Black and Strahan (2001), employers in non-competitive markets have much more scope to reward employees along other criteria than productivity.

SHARELIFE data. We obtained unique data from the Archive of Security Services and court sentences from the Law on Judicial Rehabilitation of victims of the communist regime to account for the intensity of persecution.

Third, this paper contributes empirical evidence to the theory of transitional justice and to our understanding of successful compensation policies for political discrimination or oppression (Acemoglu and Robinson (2006), Carneiro et al. (2005), or Heckman (1998)). The Czech Republic was one of the few countries that not only returned confiscated property but also compensated people for a wide variety of harms inflicted by the former regime.<sup>5</sup> Indeed, while the losses in earnings and initial pensions were substantial, the current pensions reported in SHARE after 2006 no longer reflect any persecution effects. Whether this outcome can be considered a sufficient compensation remains, of course, an open question. Our data cover only the labor market outcomes of those individuals who survived the worst periods of oppression. This paper may serve as a reference for future analyses of reparation policies: a large and growing fraction of the world population still lives or has spent a substantial part of their lives in authoritarian regimes.

The paper is organized as follows. In Section 2, we briefly document periods of the most intensive deprivation of rights and freedoms in Czechoslovakia between the end of World War II and 1989 and describe the economic system. Section 3 presents the structure of the SHARELIFE interview and data. In Section 4 we lay out the estimation approach and discuss the variables used to instrument our indicators of persecution. Details on sample selection are given in Section 5, while main results showing the effects of persecution on earnings, career degradation, and pensions are presented in Section 6. Robustness analysis and conclusions follow in Sections 7 and 8, respectively. The Appendix contains detailed results, robustness analysis, supplementary material on SHARE data, legislation related to pensions as well as our discussion on the growing domestic and international pressure on governments to provide different forms of reparations for harms inflicted in the past.

## 2 A Brief Historical Background

A large majority of the respondents in the SHARE sample in the Czech Republic have spent most of their lives under the communist regime in Czechoslovakia between 1948 and 1989. The communist rule exerted significant pressure on the lives of not only those who actively opposed the regime but also those the regime targeted for their class origin (former entrepreneurs, land owners, intelligentsia), religion, for having family members who had emigrated, or for any other characteristics the totalitarian regime deemed convenient. Importantly, as a rule, the whole family would suffer with the

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<sup>5</sup>For the overview of transitional justice theory and the trade-off between the rule of law and the speed of economic transformation see Elster (2006), De Greiff (2006), or Olsen et al. (2011).

Population 1948	8,893,000
Arrests	205,000
Corrective Labor Camp	70,000
Penal Labor Camp	20,000
Military Penal Units	60,000
Clergy Detention Camps	10,300
Deaths	
Executed	248
Prison	4,500
Border	300
Total estimate*	15,000
Emigration	270,000
Job losses (1970s and 1980s)**	280,000

Notes: \*Only the Czech lands of Czechoslovakia in the current borders of the Czech Republic. Includes indirect deaths of individuals after their release from prison and labor camps, estimated at around 10,000. \*\*Job losses before 1970 not documented. Sources: The Bureau for Investigation and Documentation of the Crimes of Communism, The Institute for the Study of Totalitarian Regimes, Courtois et al. (1999), CSU (2010), Kaplan (1992), Kaplan and Palecek (2001), Naimark (1998), Radosta (1993).

Table 1: Persecution in Czechoslovakia 1948-1989

targeted member: children of persecuted parents could not pursue higher education and family members were denied access to jobs they were qualified for. Persecution was a life-changing experience with long-term consequences.

## 2.1 Political Persecution Between 1948 and 1989

The intensity of state oppression varied greatly over time. The most intense period of persecution occurred from 1948 until the end of the 1950s, with a large fraction of the population affected by imprisonment, political trials, forced collectivization, labor camps, dispossession, and other acts of violence. Table 1 presents estimates of the most severe cases of oppression between 1948 and 1989. During this period, more than 15,000 people were murdered or died as a direct consequence of persecution (Kaplan (1992)).<sup>6</sup> Just within two years in 1950 and 1951, there were 48,485 prison and labor camp sentences (Kaplan (1994)). It is worth noting that in the 1940s, 1950s, and even 1960s, persecution was often not the consequence of an individual's actions, but rather of belonging to a particular social group, practicing a religion, or being born into a household with certain characteristics. Persecution could end in death, long-term incarceration, and harsh consequences for close relatives. Milder forms of persecution included the loss of occupation, denied access to education, or deprivation of civil rights.

After a brief interlude of relative freedom in the 1960s during the Prague Spring, the Soviet occupation of Czechoslovakia led to massive emigration and another wave of

<sup>6</sup>The estimate of total deaths includes those who died after their release from prison or labor camps (Courtois et al. (1999)). These numbers are almost certainly underestimates of the real losses.



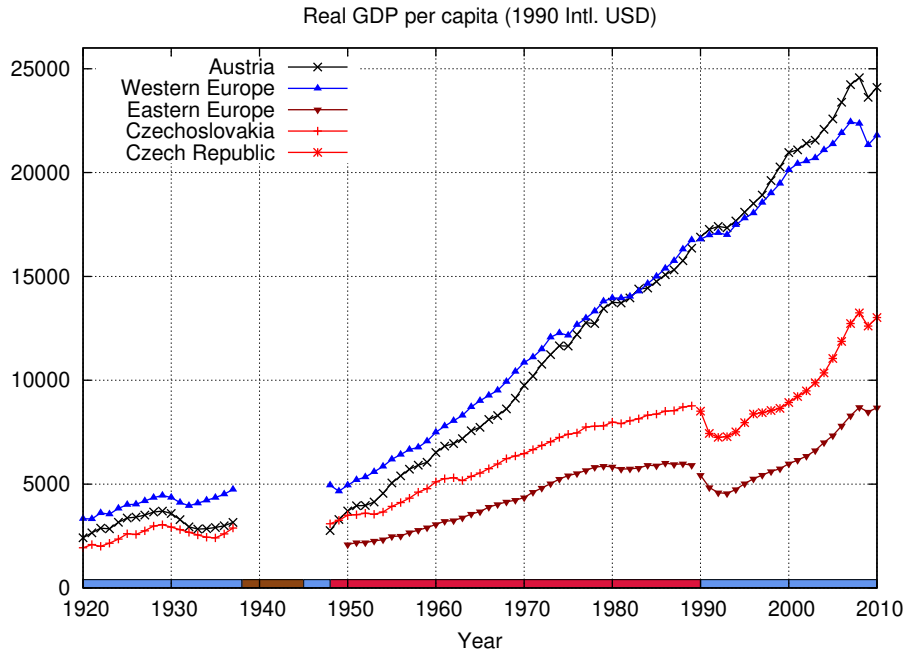


Figure 1: Real GDP Per Capita (1990 International Dollars)

Source: Maddison tables, Bolt and van Zanden (2013). W. Europe: Austria, Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Sweden, Switzerland, and the UK. E. Europe: Albania, Bulgaria, Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia.

persecution that lasted until the fall of the regime in 1989. This last phase of persecution took less severe forms relative to the 1950s but affected a significant proportion of the population. It is estimated that around 280,000 individuals lost their jobs during the 1970s and 1980s (Courtois et al. (1999)). In this late period of the communist system, individuals were often persecuted because they opposed or demonstratively boycotted the communist regime. Persecution often became a consequence of an individual's choice, with the cost of losing a job or a professional career, having no access to higher education, or being excluded from various benefits. At all times, however, individuals had to conduct their lives with the overpowering state strongly limiting their freedoms and using various forms of direct and indirect control and oppression.<sup>7</sup>

## 2.2 The Economic System

Czechoslovakia was among the most industrialized countries in Europe before World War II. Figure 1 shows that GDP per capita in Czechoslovakia was comparable to that of Austria, a country with which it shared most of its modern history as well as its socio-economic conditions and institutions. From the end of World War II, Czechoslovakia and Eastern European countries displayed a drastically different development path compared to the West. The implemented Soviet-type economic system was characterized by central planning, full employment (in Czechoslovakia, not having a job was considered a crime) as well as centrally set wages, prices, and output targets for

<sup>7</sup>For Czechoslovak history, see Courtois et al. (1999), Naimark (1998), or Davies (2005).

state-owned enterprises. The Czechoslovak communist regime imposed nationalization of production, heavy industrialization, and collectivization of agriculture: confiscating virtually all private productive property, including land, without compensation (Kuklik (2010)). Central planning operated through five-year output and investment plans, centralized financial flows, soft budget constraints and foreign trade integrated within the Soviet trading area. The totalitarian regime exerted full and exclusive control over job assignments, wages, pensions as well as the allocation of investment, housing, education, and the supply of all goods and services. Due to centrally planned allocations and prices, the system displayed a vast degree of shortages and inefficiencies. Ray (1991) shows that the productivity in Central and Eastern European countries in the mid-1980s ranged from around a third to half of that in OECD countries. There was virtually no association between wages and performance. Nesporova (1999) documents substantial over-employment and labor hoarding estimated at 15-30 percent of the total working time. Income distribution was maintained at relatively egalitarian levels with a Gini coefficient of earnings of around 0.2 in 1987 (Rutkowski (1996)). Incentives related to skills improvement and R&D investment were minimal, and output growth typically reflected an extensive use of inputs. In 1989, after forty years of the communist experiment, the ratio of Czechoslovak to Austrian real GDP per capita was 0.48 (see Figure 1). Czechoslovakia became a democratic country with an open market economy in the fall of 1989. The country split into two independent countries—the Czech Republic and Slovakia—on January 1, 1993.

### 3 Documenting Persecution in SHARE Data

Our analysis draws on data from life history interviews conducted in waves 3 and 7 of the Survey of Health, Ageing and Retirement in Europe (SHARE), a representative longitudinal survey of individuals aged 50+. Wave 3 (collected in 2008/09) was entirely designed as a life history interview, SHARELIFE, and focused on retrospective information on the lives of the individuals who had participated in the initial two waves. In wave 7 (2018), the SHARELIFE module was conducted again, this time collecting life history information among those who joined SHARE from wave 4 onward. We complement both SHARELIFE datasets with details concerning contemporaneous information collected in regular SHARE interviews in waves 2 and 4-7 (see the Appendix for further details).

### 3.1 SHARELIFE and Identification of Persecution

The principal sections of the SHARELIFE interview covered details of family, labor market and health history, childhood conditions, and health care.<sup>8</sup> The labor market history module recorded key characteristics of respondents' jobs, such as the year of starting and ending a job, the reason for its termination (layoff, displacement, retirement), its title and industry, and whether it was full- or part-time employment. Respondents were also asked to give the value of initial earnings in each job. Based on this information, we recreate the entire path of job spells for each individual. For pensioners, the data also provide the value of the initial pension and the year they retired.

In the final part of the interview, after details of the labor market, family, and health history had been answered, respondents were asked a set of general questions concerning major life experiences, including a section on the experience of persecution. This module opened with the following question:

*There are times in which people are persecuted or discriminated against, for example, because of their political beliefs, religion, nationality, ethnicity, sexual orientation or their background. People may also be persecuted or discriminated against because of political beliefs or the religion of their close relatives. Have you ever been the victim of such persecution or discrimination?*

Conditional on a positive answer to this question, a series of items on the form and consequences of persecution followed. Individuals were asked if they were ever dispossessed of their property as a result of persecution (and if so, in which year it happened) and whether the experience of persecution affected their employment history. In the latter case, they were asked if they were ever forced to stop working in a job as a consequence of persecution, and whether the experience of persecution at work resulted in discrimination in the form of denied promotions, assignment to tasks with fewer responsibilities, harassment, or pay cuts. Crucially, from the perspective of our analysis design, respondents were asked to assign these experiences to specific jobs they had previously listed in the labor market history module (a complete list of the reported jobs appeared on the interview screen).

Altogether, we use the SHARELIFE questionnaire to identify four job-specific treatments. The first two are related to persecution,

**Persecution: job loss** — a persecution-related job loss; and

**Persecution: discrimination** — a persecution-related discrimination on the job.

Our goal is to quantify the effects of these politically motivated treatments on subsequent labor market outcomes and compare them to effects from two common job termination reasons, namely,<sup>9</sup>

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<sup>8</sup>Over the years, numerous studies have drawn on SHARELIFE data. See, for example, Brunello et al. (2017), Myck and Oczkowska (2018), or Wahrendorf et al. (2020).

<sup>9</sup>For theoretical and empirical research see Jacobson et al. (1993) and Gibbons and Katz (1991).

**Layoff** — being laid-off for a reason other than persecution; and

**Displacement** — losing a job due to plant closure or downsizing.

Finally, the precise timing of each job spell will also enable us to apply external measures of the regime’s oppression needed for addressing the potential endogeneity of self-declared persecution experiences.

## 4 Identifying the Effects of Persecution

In this Section, we outline the approach to identifying the effects of political persecution on the examined economic outcomes. Our analysis is conducted at two levels: for the analysis of earnings and job transitions we examine job-level data, while for the analysis of pensions we use person-level information. In the first case, we use the reported initial monthly earnings received in a given job spell. The analysis of pensions examines the level of benefits reported in the SHARELIFE survey as the ‘first’ pension payment after retirement as well as the benefits reported as the ‘current’ pension at the time of the regular SHARE interview.<sup>10</sup> Below we explain our estimation approach in these two cases and discuss the instrumental variables approach we use to address the potential treatment endogeneity problem.

### 4.1 Estimation Approach

In our analysis of the effect of persecution on earnings, we focus on the implications of the examined treatments on the dynamics of earnings between jobs. Given that we only have information on job spell-specific *initial* earnings, we first estimate the following equation in **earnings first differences**,

$$\Delta \ln(Earn_{i,j,t,r}) = \alpha T_{i,j-1} + \gamma' X_i + \delta' W_{i,j} + \kappa' G_{t,r} + v_{i,j,t,r}, \quad (1)$$

where  $\Delta \ln(Earn_{i,j,t,r}) = \ln(Earn_{i,j,t,r}) - \ln(Earn_{i,j-1,s,p})$  is the difference in log earnings of individual  $i$  between job  $j$  (which started at time  $t$ ) and job  $j - 1$  (which started at time  $s$ ). All jobs are also indexed by NUTS2 regions,  $r$  and  $p$ , in which the respondent lived at times  $t$  and  $s$ , respectively. This change in earnings is a function of individual-level characteristics prior to treatment,  $X_i$ , and job  $j$ ’s characteristics,  $W_{i,j}$ . We additionally control for macroeconomic conditions with aggregate statistics at the regional level  $G_{t,r}$ . The *treatment indicator* takes the value 1 if individual  $i$  experienced treatment  $T$  in the previous job,  $j - 1$ , and zero otherwise. Thus, under standard assumptions, our coefficient of interest,  $\alpha$ , should reflect the earnings difference in the job immediately following the treatment experienced at job  $j - 1$ .

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<sup>10</sup>All earnings and pensions are expressed as monthly net values in 1980 Czechoslovak koruna (CZK) indexed according to data from the Czech Statistical Office.

To analyze the implications of a treatment  $T$  over all subsequent jobs after the treatment, we estimate the following equation in **earnings levels**,

$$\ln(Earn_{i,j,t,r}) = \alpha T_{i,k < j} + \beta \ln(Earn_{i,j-1,s,p}) + \gamma' X_i + \delta' W_{i,j} + \kappa' G_{t,r} + \epsilon_{i,j,t,r}. \quad (2)$$

In this case, we regress the (log) initial monthly earnings,  $\ln(Earn_{i,j,t,r})$ , on  $X_i$ ,  $W_{i,j}$  and  $G_{t,r}$ , additionally controlling for the initial (log) earnings in the previous job  $j - 1$  at time  $s$ . The treatment indicator  $T_{i,k < j}$  now equals 1 if an individual  $i$  experienced a treatment (e.g., a job loss due to persecution) in any of the jobs  $k \in \{1, \dots, j - 1\}$  prior to job  $j$ , and zero otherwise.

For each of these estimated models, we require earnings information on at least two jobs. Therefore, the number of observations equals  $\sum_{i=1}^N (J_i - 1)$ , where  $N$  is the number of individuals and  $J_i$  is the total number of valid initial earnings observations for an individual  $i$ . In each case, the identified effect is the average treatment on the treated. Since in both estimations we may have multiple observations per respondent, we cluster the standard errors at the level of the individual.

For the pension analysis, we use one observation per individual,

$$Y_{i,t,r} = \alpha T_i + \gamma' X_i + \delta' W_i + \kappa' G_{t,r} + \nu_{i,t,r}, \quad (3)$$

and analyze two outcomes  $Y_{i,t,r}$ , namely, the reported (log) value of net monthly:

**First pension**  $\ln(FPens_{i,t,r})$  in the SHARELIFE life history interview for year  $t$  of retirement; and,

**Current pension**  $\ln(CPens_{i,t,r})$  at time  $t$  of the regular SHARE interview (i.e. after 2006).

Each pension outcome is regressed on the same set of individual-level characteristics  $X_i$  as in the case of earnings regressions, macroeconomic and regional controls (at time  $t$ ), and a vector of labor market controls  $W_i$ . The latter collects a set of career indicators such as industry, part-time work, and white/blue collar occupation. Since the estimations are defined at the individual level, these controls reflect the entire labor market history (e.g., having ever worked in a specific industry). A treatment  $T_i$  takes the value 1 if it was *ever* experienced by the individual during his or her entire working career.

## 4.2 Instrumental Variables

There are two main reasons why the persecution treatment variables could be endogenous with respect to the analyzed outcomes. First, although we include a number of childhood and parental controls collected in the SHARELIFE interview, there may be unobservable characteristics that could have made some individuals more prone to experiencing persecution and, at the same time, be correlated with earnings. This would

be the case, for example, if characteristics that determine self-selection into opposition against the regime were also associated with earnings. While in the early decades of the regime persecution often depended on family history, the majority of SHARE respondents spent most of their working careers between 1960 and 1989 when opposition to the regime was rather a reflection of personal attitudes. The second reason for a potential bias is related to the retrospective nature of the survey. Respondents could have, for example, associated their career setbacks with persecution to justify for themselves negative outcomes and developments.<sup>11</sup>

To address this potential endogeneity bias, we instrument the persecution treatment variables by external indicators that reflect the intensity of communist persecution in a particular year and a NUTS2 region. These indicators are based on unique judicial and security service archival data:

**Number of rehabilitation cases** from the Act on Judicial Rehabilitation (1990).

The Act listed all legal provisions the communist regime had used to persecute and incriminate people between 1948 and 1989 and abolished such sentences *ex lege*. We aggregate information on 100,425 individual rehabilitation cases by year and across NUTS2 regions;<sup>12</sup>

**Number of agents recruited** by the Secret Service (StB) of the Ministry of Interior in a given year across the NUTS2 regions and at the federal level; and,

**Number of new investigation cases** initiated by the Secret Service (StB) of the Ministry of Interior against individuals in a given year across the NUTS2 regions and at the federal level.

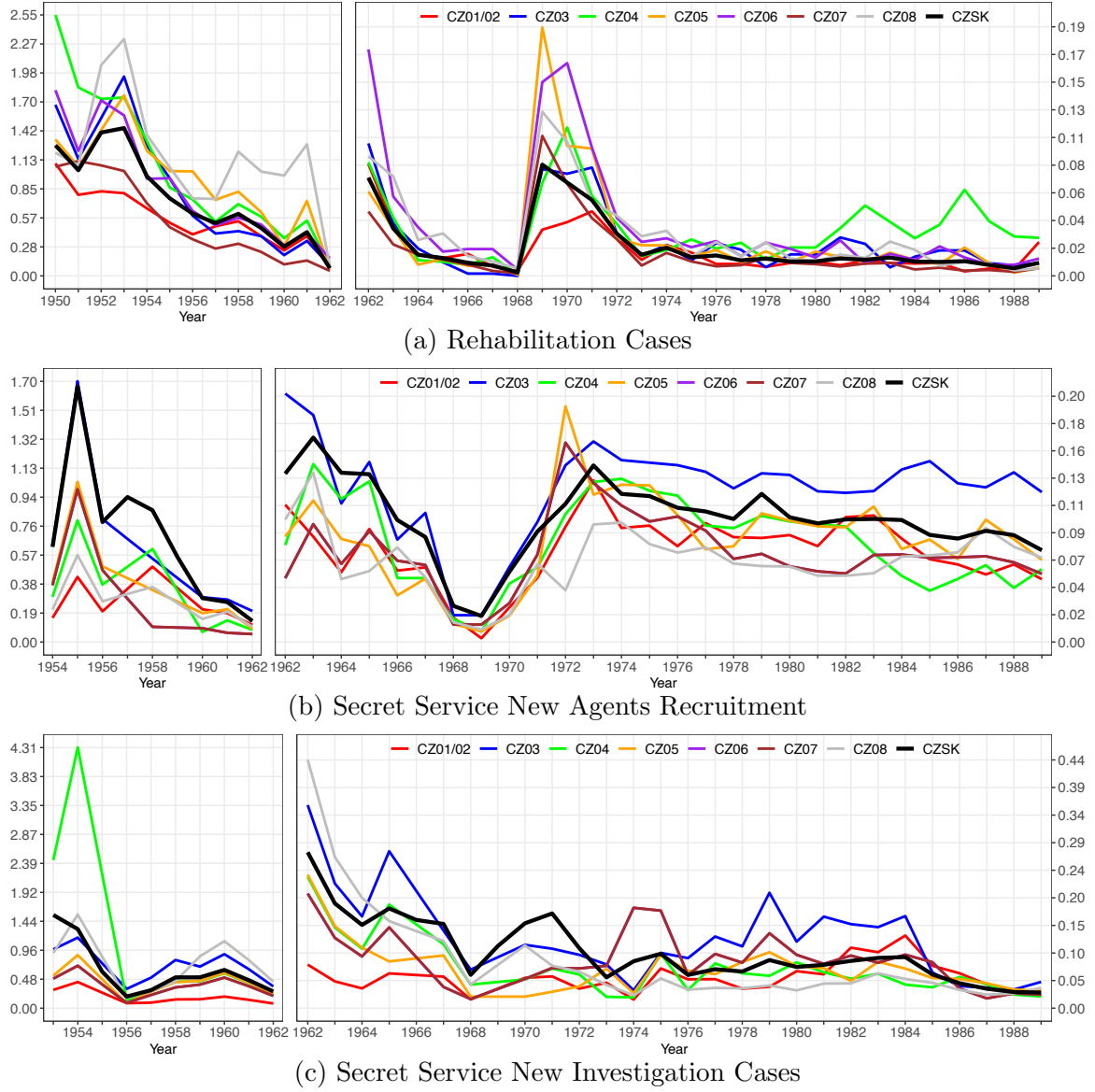
For each of the last two items, we follow the Secret Service (StB) organizational structure and use two separate instruments: one based on data for operations in each NUTS2 region, and another instrument for the more important central operations at the federal (Czechoslovak) level. Each of the total five instruments is measured in units per 1,000 country or region inhabitants in each year between 1948-1989.<sup>13</sup> The numbers of newly recruited agents or newly filed investigations capture better the actual activity of the StB than the absolute level of agents or the total number of often protracted investigations.

Figure 2 shows the varying intensity of these instruments over time and across regions. For clarity, each panel is divided into two periods: the left part represents the extreme levels of persecution during the 1950s up to the release of the majority of

<sup>11</sup>In the questionnaire, the labor market history was asked first, the persecution modules came at the end of the interview (after all the details of jobs and earnings had been collected). While this survey design limits the source of bias, it cannot be ruled out *a priori*.

<sup>12</sup>From the total of 195,672 individual cases, we subtract 95,247 against people who were sentenced for emigrating from the country. For details, see the Appendix and Kritz (1995). For the rehabilitation process see Gebauer et al. (1993).

<sup>13</sup>Data on Secret Service (StB) agents and investigation cases were collected from the annual reports of regional and federal secret service units from the archive at the Institute for the Study of Totalitarian Regimes (ÚSTR). There were eight NUTS2 regions; Prague (CZ01) and Central Bohemia (CZ02) shared the same state security administration. The federal level is denoted as CZSK.



Source: Institute of Contemporary History of the Czech Academy of Sciences (Gebauer et al. (1993)) and the Security Service Archive of the Institute for the Study of Totalitarian Regimes. Regions: CZ01 Prague; CZ02 Central Bohemia; CZ03 České Budějovice (Southern Bohemia); CZ04 Plzeň (Western Bohemia); CZ05 Ústí n/L (Northern Bohemia); CZ06 Hradec Králové (Eastern Bohemia); CZ07 Brno (Southern Moravia); CZ08 Ostrava (Northern Moravia); CZSK: Czechoslovakia (federal level).

Figure 2: Instrumental Variables

political prisoners during the amnesties in the early 1960s.<sup>14</sup> The second period on the right-hand side corresponds to the post-Stalinist era when the regime micro-controlled political oppression in a more targeted, individualized, and softer fashion. All of our instrumental variables point to the late 1960s as the period of political liberalization (the so-called Prague Spring) that ended with the Soviet invasion in 1968. After a significant increase in repression that followed, the system stabilized during the period of “normalization” which lasted from the second half of the 1970s to the end of the

<sup>14</sup>There were several amnesties following Stalin’s death in 1953, 1955, 1957, with the final large wave in 1960-1962. It is known that a fraction of amnestied prisoners was released conditional on their cooperation with the secret service.

communist regime in 1989.

Since the design of the SHARELIFE interview enables us to identify the jobs individuals lost due to persecution and in which they suffered discrimination, we can precisely match these instrumental variables as external *measures of persecution intensity* to the timing and location of specific jobs.<sup>15</sup>

## 5 Sample Selection and Descriptive Statistics

Apart from the set of individual-level characteristics, our analysis of the consequences of persecution on earnings requires job-level information about earnings on both current and previous jobs as well as additional job characteristics (such as industry, occupation, full- or part time, etc.). Since the consequences occur during subsequent labor market developments, the left-hand side information in earnings regressions necessarily comes from the second and subsequent jobs. We therefore require that individuals report at least two jobs in their labor market history interview. Lastly, because of unreliable earnings data from the 1950s (due to the monetary reform in 1953), we narrow the analysis to job histories where the second and subsequent jobs started between 1960 and 1989 (the fall of the regime).

	Individuals	Jobs	
		2nd and subsequent	All
Respondents in SHARELIFE (wave 3 and 7)	5,107		
with at least one reported job	5,087	8,081	13,168
with at least two reported jobs	3,500	8,081	11,581
with 2nd and subsequent jobs starting in 1960-1989	2,617	4,428	7,045
with item response to key variables at individual level	2,607	4,415	7,022
with item response to key variables at job level	2,547	4,291	6,838
with information on previous job, including job ending	2,545	4,289	6,834
with IV/macro variables matched by year and region	2,254	3,744	5,998
with earnings on current job	1,889	3,036	4,925
with earnings on any previous job	1,696	2,762	4,458
with earnings on first job	1,601	2,629	4,230

Source: Authors' calculations using SHARE data.

Table 2: Individuals and Jobs in the Earnings Sample

Table 2 shows that out of 5,107 Czech respondents who participated in the SHARELIFE interviews, 3,500 report having at least two jobs, and 2,617 respondents have 4,428 second and subsequent jobs in the relevant time period. Of these, 2,254 respondents also provided information necessary for matching macroeconomic and instrumental variables for each year and a NUTS2 region. For estimating equations (1)

<sup>15</sup>The job-treatment matching is not possible in the pension regressions that cover the whole working career. For pensions, we match the instruments to the year of the first job. We experimented with alternative assumptions, obtaining very similar results. For the treatment effects literature see Heckman et al. (1998), Blundell and Costa Dias (2009), and Imbens and Wooldridge (2009).



and (2), we need information on the current and previous job(s) earnings as well as earnings on the first job, arriving at the final sample size of 1,601 individuals with 2,629 second and subsequent jobs.<sup>16</sup>

	Individuals
Respondents in SHARELIFE (wave 3 and 7)	5,107
with reported retirement	3,982
with first pension before year 2006	2,705
with jobs starting in years 1960-1989	1,852
with information on key variables at individual level	1,652
with matched IV/macro variables by year of first job and region	1,597
with information on <i>current</i> pension	1,512
with information on <i>first</i> pension	1,330
with information on <i>first</i> and <i>current</i> pension	1,270

Source: Authors' calculations using SHARE data.

Table 3: Individuals in the Pensions Sample

Table 3 shows a more straightforward sample selection for the individual-level analysis of persecution effects on pensions in equation (3). The level of the *first* pension reported in the SHARELIFE interview reflects the pension benefits assigned according to the rules of the communist regime. The *current* pension reported in a regular SHARE interview comprises all legislative changes and compensation schemes for persecuted individuals implemented by legislative acts after the fall of the regime.<sup>17</sup> Of the 3,982 retired respondents, 1,852 had jobs starting between 1960 and 1990. Conditional on valid reported values for the first and current pensions and other key variables, our final sample for the individual-level analysis consists of 1,270 individuals.

In Table 4 we show descriptive statistics for the two samples. Naturally, younger respondents and males are more represented in the earnings sample than in the pensions sample. In both samples, about 20% of respondents have a tertiary education. 13.2% and 15.3% of respondents declare having ever experienced persecution in the two samples, respectively. Similarly, over 13% of the respondents ever experienced dispossession. In labor market careers, 4.6% of individuals experienced on-the-job discrimination due to persecution and 1.8% lost their jobs as a result of persecution (6.7% and 3.1% in the pensions sample). Slightly more respondents experienced layoffs while displacement was far more common (21.4% in the earnings sample and 14.1% in the pensions sample). Among early life conditions, 45.9% (51.6%) of individuals were born into families with home ownership, 34.5% (42.0%) were born in a village. We control for early-life circumstances that might have affected the likelihood of persecution.

Sample statistics at the job level are presented in Table 5, separately for the first job (column 1) and for second and subsequent jobs (column 2). The average starting

<sup>16</sup>The survey item non-response for earnings, largely due to the retrospective nature of the survey, is relatively high. Our robustness analysis in Section 7 shows that earnings non-response is unrelated to observables and is unlikely to affect the results.

<sup>17</sup>For legislation and compensation rules enacted in 1991-1993 and 2004-2005, see the Appendix.

	Earnings sample Mean (s.d.)	Pensions sample Mean (s.d.)
Year of birth	1949.303 (7.856)	1941.604 (6.653)
Female	0.559 (0.497)	0.694 (0.461)
Education: primary	0.113 (0.316)	0.151 (0.359)
Education: secondary	0.681 (0.467)	0.647 (0.478)
Education: tertiary	0.207 (0.405)	0.202 (0.402)
Years of education	12.784 (2.921)	12.195 (2.929)
Residence in country of birth	0.965 (0.185)	0.939 (0.240)
General experience of persecution	0.132 (0.339)	0.153 (0.361)
General experience of dispossession	0.135 (0.342)	0.133 (0.340)
Labor market experiences:		
Year of start of first job	1967.378 (8.296)	1959.544 (6.922)
Total number of jobs	3.950 (1.805)	3.254 (1.736)
Total labor market experience (years)	29.898 (12.118)	27.993 (8.808)
Persecution: ever lost a job	0.018 (0.134)	0.031 (0.172)
Persecution: ever discriminated on a job	0.046 (0.209)	0.067 (0.251)
Layoff: ever	0.067 (0.250)	0.059 (0.236)
Displacement: ever	0.214 (0.410)	0.141 (0.349)
Childhood conditions:		
Home ownership at birth (parents)	0.459 (0.540)	0.516 (0.529)
Born in: village	0.345 (0.477)	0.420 (0.494)
Born in: town	0.218 (0.413)	0.191 (0.393)
Born in: city	0.438 (0.498)	0.390 (0.489)
Age 10: few books at home	0.260 (0.458)	0.379 (0.502)
Age 10: living with both parents	0.876 (0.350)	0.871 (0.356)
Number of observations (individuals)	1,601	1,270

Notes: see Tables 2 and 3 for sample selection details. Weighted by cross-section weights. Source: Authors' calculations using SHARE data.

Table 4: Descriptive Statistics at Individual Level

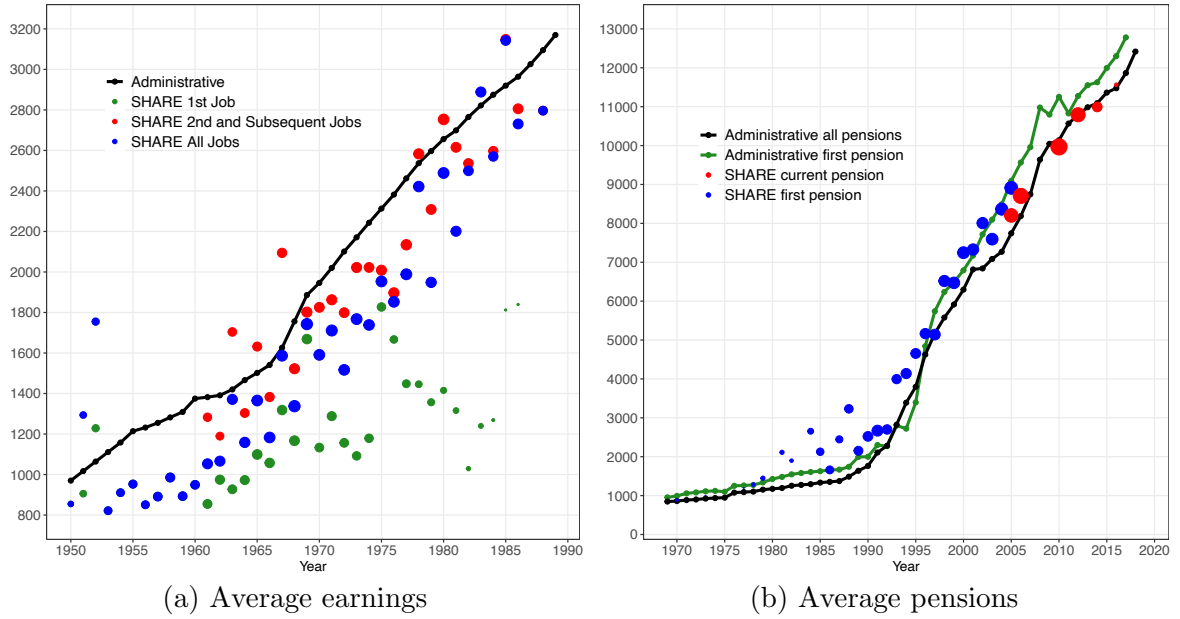
date of the latter is nearly ten years later, and we see a significant increase in average initial nominal earnings. Among second and subsequent jobs, 4.7 percent follow a job in which the respondents were discriminated against due to political persecution and 2.4 percent are jobs after an incident of a persecution-related job loss. Layoffs for reasons other than persecution in a communist labor market were rather infrequent (6.6 percent), while a relatively high proportion of job changes followed displacement, reflecting the ‘top-down’ approach to economic activity under central planning.

In Figure 3, we plot self-reported earnings and pensions together with their respective official averages based on administrative data from the Czech Statistical Office. Since the earnings recorded in the SHARELIFE interviews focus on specific cohorts and refer to initial earnings in each job spell, we should not expect a perfect match between the reported information and the administrative official statistics based on averages across all jobs: on the left panel, the initial earnings on first jobs (green) are lower compared to those calculated for subsequent jobs (red), with the latter series overlapping closely with the official statistics. The right panel shows that the average first and current

	First job Mean (s.d.)	Second and subsequent jobs Mean (s.d.)
Year starting a job $j$	1967.38 (8.30)	1976.68 (7.48)
Sector of job $j$ :		
Agriculture	0.170 (0.376)	0.169 (0.375)
Industry	0.471 (0.501)	0.409 (0.492)
Services	0.361 (0.483)	0.422 (0.494)
Occupation in job $j$ : white collar	0.421 (0.521)	0.540 (0.499)
Job $j$ was full time	0.978 (0.148)	0.953 (0.211)
Initial earnings in job $j$	1775.49 (1489.02)	2623.08 (2090.20)
Reason for termination of job ( $j - 1$ )		
Persecution: job loss	—	0.024 (0.154)
Layoff	—	0.066 (0.249)
Displacement	—	0.251 (0.434)
Persecution: discrimination on job ( $j - 1$ )	—	0.047 (0.212)
Number of observations (jobs)	1,601	2,629

Notes: Monthly nominal earnings in 1980 CZK. See Tables 2 and 3 for sample selection details. Source: Authors' calculations using SHARE data.

Table 5: Descriptive Statistics at Job Level



Source: SHARELIFE data (wave 3 and 7) for earnings and first pensions; SHARE (wave 2-7) for current pension; Czech Statistical Office for administrative data. Nominal values in 1980 CZK. Points proportional to sample size.

Figure 3: Earnings and Pensions in SHARE and Administrative Data

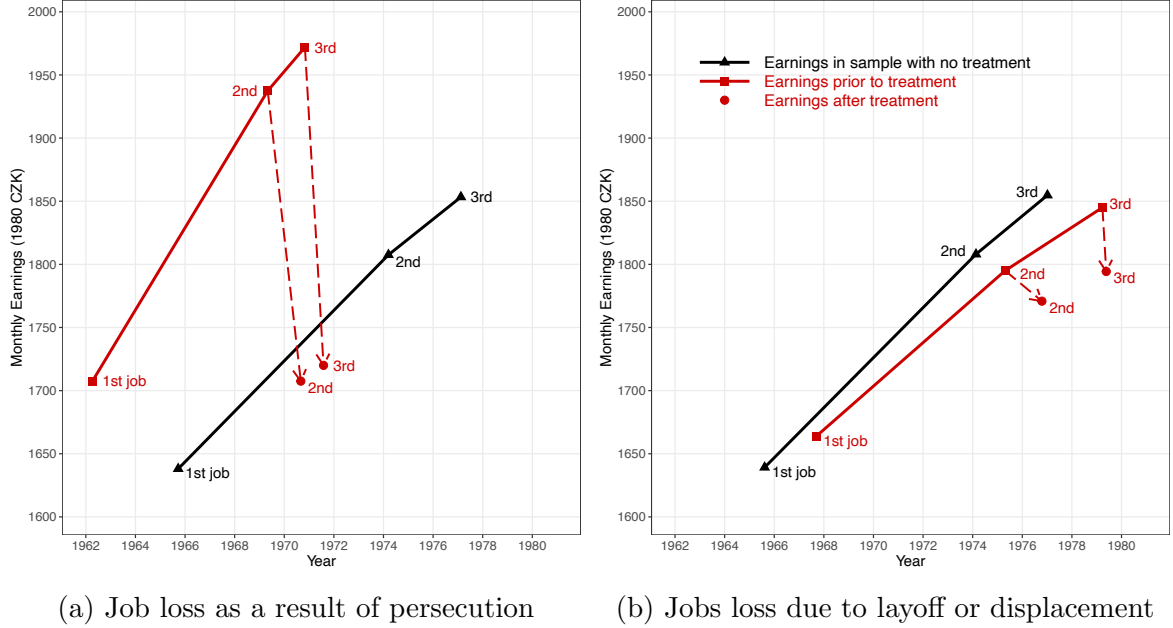
pensions reported by SHARE respondents closely match the official data.<sup>18</sup>

## 6 Main Results

As a preview, Figure 4 illustrates our main results by plotting the average monthly earnings for the first, second, and third jobs of all respondents in our sample (average

<sup>18</sup>For details and the distribution of earnings and pensions, see the Appendix and Figure A.1.

starting years are on the horizontal axis). On the left panel, the treatment for a job termination is persecution. Averages for individuals who never experienced such a job loss are denoted by black color and triangles: their earnings on the first three jobs grow almost linearly. Respondents who are not yet treated but would later lose a job due to persecution are in red color with squares. Before treatment, the red line indicates that they start their job spells earlier and receive significantly higher earnings—until they become treated: Earnings on the second or third job that follows a job loss due to persecution fall dramatically (dashed red lines with arrows pointing to red circles).



Source: SHARELIFE data (wave 3 and 7). Each point is the average monthly earnings in the 1st, 2nd, and 3rd job in specific samples: individuals who never experienced a treatment (black triangles), individuals who experienced a treatment (red square before the treatment, red circle after the treatment). The dashed line is the path from a job separation induced by the treatment. Treatment is a job loss due to: (a) persecution, (b) layoff or displacement.

Figure 4: Dynamics of Initial Earnings After Different Treatments

The right-hand panel contrasts this feature by plotting earnings in the same way for non-political job termination treatments (layoff or displacement). Both never-treated and treated subsamples now show very similar trajectories and levels. Earnings losses from non-political job separations appear to be very small, as one would expect from a state-controlled, egalitarian labor market with limited incentives.

We now investigate these short-term earnings effects and their long-term consequences on pensions using econometric models with instrumental variables. The presented results are limited to the main coefficients of interest. In all regressions, we also control for individual characteristics (age, gender, education, birthplace, childhood, family), job characteristics (year, industry, occupation, experience) as well as time-specific regional and aggregate variables (see the complete results in the Appendix). For our binary endogenous explanatory variable, we follow the procedure in Wooldridge (2010) and use the fitted probabilities from a maximum likelihood logit

model as an instrument in the first stage of the linear 2SLS. For the logit model, we report Kleibergen and Paap (2006) rk Wald F statistics as a heteroskedasticity, cluster robust analogue to the first-stage F statistics.<sup>19</sup>

## 6.1 Political Persecution and Earnings Dynamics

The analysis of earnings is conducted at the job level, accounting for individual characteristics, important job spell features as well as a set of macro and regional indicators. To specifically isolate the effects of persecution in the workplace, we also control for the overall experience of persecution or dispossession. The outcome is measured in (log) net monthly 1980 CZK initial earnings in each job.

The top panel of Table 6 shows the main results for earnings differences defined in equation (1) for the following three models: The first model (columns 1 and 2) conveys the main result of the paper, the consequences of a job loss due to political persecution. The second model (columns 3 and 4) presents the consequences of experiencing discrimination. For these two models, we present the least-squares results as well as those obtained by instrumenting the experience of persecution: because we have only one set of instruments, we estimate each treatment separately. The third model (last column) includes both persecution treatments and the two non-political job separations (layoff and displacement).

Our key finding is the large and robust effect of persecution-related job loss on subsequent earnings. In the OLS version of model 1, experiencing a persecution-related job loss leads to a 43.3% reduction in earnings on the next job compared to an untreated job transition. In our preferred IV estimation, the point estimate is much higher at 62.4%.<sup>20</sup> These immediate effects persist in all subsequent jobs: the bottom panel shows the level estimation results for equation (2). Experiencing a persecution-related job loss translates into an overall 32.7% reduction in earnings when averaged over the initial earnings in the jobs following this treatment.

In all our results, we find a very consistent pattern: there is strong, robust evidence for the adverse effect of persecution-related job loss and no significant impact of on-the-job discrimination. The large adverse earnings effect of persecution-related job losses stands in stark contrast to the implications of job separations due to layoffs and displacement, which appear to have no consequences for earnings in the next or subsequent jobs. On the one hand, these results underscore the specificity of penalties associated with political persecution, and on the other, they reflect the nature of the labor market under communism, characterized by a full employment policy, low

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<sup>19</sup>The first-stage F statistics for the weak instrument test are strong relative to the critical values of 18.37 and 10.83 at a 5-percent and 10-percent maximal bias, respectively, as reported by Stock and Yogo (2005) for our set of instruments. For further discussion, see also Angrist and Krueger (2001).

<sup>20</sup>While the positive OLS specification bias is not statistically significant due to large standard errors, it is consistent with the hypothesis that those prone to persecution at a given point in time had unobservable characteristics positively correlated with earnings.

	Model 1		Model 2		Model 3
	OLS	IV	OLS	IV	OLS
Differences					
Treatment on job $j - 1$ :					
Persecution: job loss	-0.433** (0.183)	-0.624*** (0.196)			-0.529*** (0.204)
Persecution: discrimination			0.020 (0.094)	-0.076 (0.235)	0.212* (0.118)
Layoff	0.057 (0.138)	0.076 (0.136)	0.066 (0.138)	0.066 (0.138)	0.052 (0.140)
Displacement	0.019 (0.097)	0.047 (0.084)	0.029 (0.095)	0.031 (0.091)	0.020 (0.096)
Female	-0.062** (0.029)	-0.060** (0.030)	-0.060** (0.030)	-0.060** (0.030)	-0.061** (0.029)
Adj. R <sup>2</sup>	0.110	0.113	0.104	0.104	0.111
Levels					
Treatment on any prior job:					
Persecution: job loss	-0.298*** (0.091)	-0.327** (0.142)			-0.440*** (0.098)
Persecution: discrimination			0.093 (0.096)	0.096 (0.176)	0.277*** (0.080)
Layoff	-0.032 (0.072)	-0.044 (0.071)	-0.051 (0.073)	-0.050 (0.072)	-0.029 (0.074)
Displacement	-0.081 (0.075)	-0.086 (0.075)	-0.089 (0.077)	-0.088 (0.077)	-0.084 (0.075)
Female	-0.270*** (0.035)	-0.270*** (0.035)	-0.272*** (0.035)	-0.272*** (0.035)	-0.271*** (0.034)
Adj. R <sup>2</sup>	0.420	0.418	0.416	0.416	0.422
IV: Kleibergen-Paap rk Wald F stat. (p-value)		32.905 (0.000)		13.220 (0.021)	

Notes: \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ . Robust standard errors clustered at the individual level. Dependent variable: differences (top panel) and levels (bottom panel) in log nominal monthly earnings (net values in 1980 CZK). The first-stage regression is the same for both dependent variables. For sample selection criteria see Table 2, for extended results and the full list of control variables see Tables A.1-A.2 in the Appendix. Source: Authors' calculations using SHARE data.

Table 6: Treatments and Earnings Dynamics: OLS and IV Estimates

earnings inequality as well as a weak relationship between wages and productivity. These results suggest that earnings losses of the identified magnitude in the case of persecution-related job loss must have required determined actions by the regime with the specific aim to punish dissenting individuals in the labor market.

Model 3 combines all treatments, both political and non-political, in a single estimation. While we cannot apply instrumental variables for the latter, the OLS results reflect interesting features of how political persecution affected working careers. While the two political treatments are correlated (around a fifth of job losses due to persecution followed the experiences of discrimination on the same job), as long as the job did not end with a politically driven termination, a job change following political discrimination results in higher earnings. We interpret on-the-job discrimination as a form of

soft treatment that did not result in the enforcement of a job termination by the power structures of the totalitarian state. A mere case of on-the-job discrimination might have nudged the individual to leave the job with the possibility of finding a better job match and higher earnings. Conversely, a persecution-related job loss indicates an intervention by state power structures that resulted not only in job termination but, as we will see below, also in a drastically derailed working career.

In general, both the immediate and long-term reduction in earnings after a job loss due to persecution reflect dramatic implications for material well-being. It is also worth noting that both for earnings differences and levels, outcomes for women are significantly worse compared to those of men. Earnings progression and levels are lower by about 6 and 27 percent, respectively, after controlling for an extensive set of individual and job characteristics. Despite proclaimed equality and very high female employment rates in Czechoslovakia, women were paid much less compared to men.<sup>21</sup>

Detailed results of the earnings estimations are presented in the Appendix Tables A.1 and A.2. We find no statistically significant returns to education and minimal variation in earnings between sectors and blue/white collar occupations. Returns to experience tend to be high, with an average increase in earnings of about 30 percent after the first ten years of employment and about 50 percent after twenty years.<sup>22</sup>

## 6.2 The Mechanism of Earnings and Career Degradation

The dissident story from the Introduction pictured a path of career degradation for well-known opposition leaders. To capture such changes in occupation trajectories for ordinary citizens, we estimate the conditional probabilities for job-to-job transitions in the earnings sample. Using occupation codes reported for each job spell, we divide the jobs into white and blue collar and examine four types of transitions between these two categories. Of the 4,230 jobs considered in this analysis, 51% are blue-collar and 49% are white-collar.

The transition probabilities between the 2,629 jobs are presented in Table 7. The first column shows that while almost 80% of transitions were within the same category, only 6.5% involved moves from white to blue collar jobs. When we condition the transitions on a job separation due to political persecution (2nd column), the probability of moving from a white to a blue-collar job increases by a factor of four to 25.4%. Demoting people from white to blue collar jobs was a typical and effective way to punish non-complying individuals by reducing not only their earnings but also their social status.<sup>23</sup>

<sup>21</sup>Large gender differences appear already in first-job earnings in the robustness Section 7.3.

<sup>22</sup>While these results are conditional on earnings in the previous job, they are very similar to the estimates in our robustness analysis for initial earnings in the first job. Table A.9 shows a 10% premium for industry jobs, while white-collar employees in their first job earn on average 7% less.

<sup>23</sup>While the likelihood of transiting from a white to a blue collar job is also higher for jobs with discrimination and displacement, the probabilities are about half the size of those following a job loss due to political persecution (12.3% and 13.1%, respectively).

	All jobs	Treatment on the previous job ( $j - 1$ )			
		Job loss due to persecution	Persecution-related discrimination	Job loss due to layoff	Job loss due to displacement
Blue-Blue	0.384 (0.020)	0.105 (0.010)	0.169 (0.013)	0.511 (0.025)	0.484 (0.029)
Blue-White	0.140 (0.016)	0.091 (0.025)	0.109 (0.030)	0.033 (0.006)	0.180 (0.032)
White-Blue	0.065 (0.011)	0.254 (0.070)	0.123 (0.038)	0.048 (0.010)	0.131 (0.030)
White-White	0.411 (0.020)	0.550 (0.071)	0.598 (0.049)	0.408 (0.023)	0.206 (0.026)

Notes: Number of jobs: 4,230. Number of transitions: 2,629. Robust standard errors clustered at the individual level. Conditional transition probabilities simulated on the basis of multinomial logit estimates. For sample selection criteria, see Table 2. Additional control variables: birth year (squared), birth cohort by decades, education, birth place (owner, village, city), born in country of residence, gender, children, interviewed in wave 7; job starting year; ever persecuted, ever dispossessed; macro variables in year of job start: growth rates (GDP per capita, labor force participation, population, employment). Source: Authors' calculations using SHARE data.

Table 7: Treatments and Transition Probabilities Between Jobs

To compare these effects of job transitions to those in market economies, it is important to keep in mind several key features of the state-controlled labor market. First, communist governments and the entire power apparatus of the state had complete control over the hiring and firing process. Non-employment was a criminal offense (called ‘parasitism’, see the Appendix for legislative details), and after a job termination, the individual was required to find a new job immediately; otherwise, he or she was assigned a job by the government. Second, job transitions were not very frequent: large state companies were often local monopsonies whose wages were set by the central planning committee for each sector and industry within the five-year economic plan. There were no mass layoffs that might have generated wage differentials as in Couch and Placzek (2010). The 1970s and 1980s were a period of economic stability the regime relied on to pacify the population after the turbulent years before.<sup>24</sup>

Compared to market economies, therefore, joblessness does not play the key role in earnings losses as in Fallick et al. (2025), Davis and von Wachter (2011), or Schmieder et al. (2023). Because almost all jobs were full-time, the earnings losses do not contain the cost of moving to part-time employment as in the Displaced Workers Survey in Farber (2017). Since it was the state that, on the one hand, required people to work, but on the other hand, took responsibility for ensuring adequate labor demand, people would generally not experience movements down the job ladder (see models by Haltiwanger et al. (2018) and Krolikowski (2017)). Thus the downward drop in the job ladder following a persecution-related job loss in Table 7 reflects an intentional, severe penalty imposed by the state.

<sup>24</sup>Inflation and fluctuation of wages were minimal from the 1960s to the end of the regime in 1989. We find no cyclical effects when controlling for macroeconomic and employment state of the economy.



### 6.3 Long-Run Effects on First Retirement Pensions

The earnings penalties from a job loss due to persecution, which we document above, were several times higher and more persistent than those found in the displacement literature in market economies. We now investigate the extent to which these penalties accumulated in retirement benefits when calculated according to the rules of the communist regime. These rules were a combination of the usual function of translating the lifetime earnings into a wage replacement ratio as well as various preferences of the communist regime. For example, in the 1950s, the regime denied the ‘former people’ associated with the pre-war democratic republic any retirement benefits whatsoever. This harsh treatment was soon alleviated, but still in the 1980s, the regime maintained favorable pension categories for its nomenclature, or certain occupations (see the Appendix for details and legislation).

Following equation (3), the treatment indicators are now specified as *ever* losing a job due to persecution or *ever* being discriminated against on the job. Similarly, other labor market treatments are defined as *ever* experiencing a layoff or displacement. Changing the analysis level from jobs to individuals also necessitates a change in matching the instrumental variables. Since we cannot link the IVs to individual job spells, we present results for a match based on the year and region of the first job.<sup>25</sup> Labor market controls now relate to the overall labor market experience before retiring.

Similarly to earnings, the top panel of Table 8 shows strong, negative, statistically significant effects of a persecution-related job loss on first pensions (Model 1). Our IV estimates suggest that first pensions received by those who had ever experienced such a loss were on average 41.4% lower. Once again, we find the OLS estimates to be biased upward due to a positive correlation between the treatment (job loss) and unobservable characteristics. The magnitude of these long-term consequences is huge given the low income inequality and the declared egalitarian principles of the regime.

We find no effects related to on-the-job discrimination (Model 2) and layoffs. The lack of a statistically significant relationship between on-the-job discrimination and the level of first pensions is again worth noting: those who could withstand on-the-job discrimination but did not cross the line that would have led to their firing for political reasons suffered no measurable long-term financial consequences. However, we see consistent estimates of negative implications of the experience of displacement in the range of 12-13%.

### 6.4 Compensation in Current Pensions

After 1989, the Czech democratic governments implemented a series of rehabilitation and compensation schemes for not only direct victims of persecution but also for

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<sup>25</sup>An alternative timing of IVs, linked for example to the last job, turns out to make very little difference to the results.

	Model 1		Model 2		Model 3
	OLS	IV	OLS	IV	OLS
First pension					
Treatment <i>ever</i> experienced:					
Persecution: job loss	−0.335*** (0.076)	−0.414** (0.183)			−0.328*** (0.077)
Persecution: discrimination			−0.076 (0.060)	−0.161 (0.135)	−0.040 (0.061)
Layoff	−0.030 (0.049)	−0.031 (0.054)	−0.025 (0.049)	−0.026 (0.053)	−0.030 (0.049)
Displacement	−0.128*** (0.035)	−0.130*** (0.046)	−0.118*** (0.035)	−0.116** (0.047)	−0.127*** (0.035)
Female	−0.232*** (0.031)	−0.232*** (0.041)	−0.235*** (0.031)	−0.240*** (0.041)	−0.234*** (0.031)
Adj. R <sup>2</sup>	0.161	0.161	0.149	0.151	0.161
Current pension					
Treatment <i>ever</i> experienced:					
Persecution: job loss	−0.075 (0.063)	−0.058 (0.055)			−0.077 (0.061)
Persecution: discrimination			0.001 (0.042)	0.016 (0.052)	0.010 (0.040)
Layoff	−0.047 (0.039)	−0.047 (0.039)	−0.046 (0.039)	−0.045 (0.039)	−0.047 (0.039)
Displacement	−0.063** (0.027)	−0.063** (0.027)	−0.061** (0.027)	−0.062** (0.027)	−0.063** (0.027)
Female	−0.156*** (0.024)	−0.156*** (0.024)	−0.156*** (0.025)	−0.155*** (0.024)	−0.156*** (0.025)
Adj. R <sup>2</sup>	0.298	0.296	0.296	0.296	0.297
IV: Kleibergen-Paap rk Wald F stat. (p-value)		58.852 (0.000)		38.653 (0.000)	

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ . Robust standard errors. Dependent variable: log nominal first (top panel) and current (bottom panel) pension (net monthly values in 1980 CZK). The first-stage regression is the same for both dependent variables. For sample selection criteria see Table 3, for extended results and the full list of control variables see Tables A.3-A.4 in the Appendix. Source: Authors' calculations using SHARE data.

Table 8: Treatments and Retirement Benefits: First and Current Pensions

those who lost their property, assets, land, and occupations during the communist regime. The most important legislative acts related to judicial rehabilitation, property restitution, and financial compensation for victims are described in the Appendix. In particular, the Act on Extrajudicial Rehabilitation provided for the alleviation of grievances such as denied access to education or job losses due to persecution through lump-sum payments, pension supplements, and the reclassification of disadvantageous pension categories (implemented by government decrees in the early 2000s). Therefore, the values of current retirement benefits reported in regular SHARE interviews collected in the Czech Republic from 2006 onward reflect all adjustments, corrections, and compensation schemes.

Indeed, the bottom panel of Table 8 shows no significant difference between those who suffered persecution and those who did not. Although the legislation did not

deliver any persecution ‘premia’ among those who experienced persecution during communism, their retirement pension payments became aligned with those who went through the communist times without such experiences. For those who suffered job loss due to political persecution, the point estimates in our preferred IV estimation (Model 1) remain negative (-5.8%), but they are no longer statistically significant. The reduced, but still significantly negative relationship between current pensions and past displacement further supports the interpretation that the legislative adjustment of pension benefits effectively focused on those who suffered from political persecution.<sup>26</sup> It is also interesting to note that the pension mechanisms for reducing gender inequalities and consequences of labor market shocks seem more effective under the current market economy than in the communist egalitarian society.

## 7 Robustness Analysis

We conduct several robustness tests to address important data concerns and to verify our main results using alternative approaches. All results are in the Appendix.

### 7.1 Recall Regressions

One of the primary data concerns in Section 5 is the potential recall bias in the SHARELIFE job history interview, particularly in relation to earnings and pension information. In Table 2, missing information on earnings reduces the sample from 3,744 to 2,629 observations. Similarly, the lack of information on the first or current pension reduces the estimation sample from 1,597 to 1,270 individuals in Table 3.

To ensure that the earnings recall pattern is not related to our treatments, we run regressions on two separate binary dependent variables: 1) reporting initial earnings for the first job, and 2) reporting initial earnings for a particular job  $j$  after the first job. In each case, the dependent variable equals one if the relevant earnings value is reported and zero otherwise. The first three columns in Table A.5 show that none of the treatments (expressed as ever having such an experience) nor any other explanatory variable correlates with the probability of recalling earnings on the first job. The next three columns show the same results for the 2nd and subsequent jobs. Only respondents who have ever experienced a layoff (for reasons other than persecution) and were interviewed in the more recent SHARELIFE interview (wave 7) are less likely to provide their earnings figures. Both of these results seem reasonable: we could expect some unobservable characteristics to be correlated with the experience of layoff, such as cognitive skills to be correlated with remembering and reporting past

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<sup>26</sup>Surprisingly, the displacement losses are smaller than for the first pensions despite sectoral reallocation after the fall of the communist regime. A small improvement also accrued to female pensions, from 23% to 16% for first and current pensions, respectively.

earnings; similarly, respondents reporting on their labor market histories in wave 7 (eight years later after wave 3) could be expected to have more problems in recalling some of the details. In the last three columns of Table A.5, we condition the probability of recall only on labor market experiences in the previous job. In this case, the only statistically significant variable is the indicator for the SHARELIFE interview in wave 7. We obtain similar results for first and current pensions, where we run three separate regressions to report the value of first and current pensions, conditional on having ever experienced the examined treatments. The only statistically significant variable in Table A.6 is participation in the latter of the two SHARELIFE surveys, and only in the case of the first pensions. Overall, none of the persecution treatments significantly correlate with the ability to recall earnings or pensions, suggesting that recall bias is unlikely to influence our results.<sup>27</sup>

## 7.2 Matching Models

We confirm the robustness of our main earnings and pension results using the standard generalized full matching models (see Hansen (2004) and Stuart and Green (2008)) for estimating the average treatment on the treated (ATT) for our two instrumented variables. Table A.7 shows that a job loss due to persecution leads to 55% and 32% reduction in earnings on the next and subsequent jobs, respectively. Discrimination on the job has a small, positive effect on subsequent jobs. These values are close to our preferred IV specifications in Table 6. Similarly, for the pensions in Table A.8, a job loss due to persecution leads to a 43% reduction in the first pension, which is almost identical to the IV results presented in Table 8. Again, persecution does not affect current pensions.

## 7.3 Earnings in the First Job

The final robustness test relates to the respondents' position in the labor market at the start of their working careers. In Figure 4(a), we saw that—on average—the initial first job earnings among those who later suffered from persecution were higher than the average first job earnings of other respondents. By looking more systematically at the correlates of earnings in the first job, we try to evaluate if this difference can be explained by their usual determinants like age, gender, education, and occupation, or if already at the start of their careers there was something particular in this sample, thus potentially biasing the estimation results on earnings in the second and subsequent jobs. Table A.9 shows that none of the treatments (which individuals experienced later

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<sup>27</sup>With regard to the reliability of retrospective data, Oyer (2004) shows that respondents are very accurate in identifying the reason for a job loss. Smith (2009) documents that the quality of recall of events during childhood is better than for other periods of life, especially if they are very salient.

on in their career) has a significant relationship with earnings in the first job.<sup>28</sup> There is no spurious correlation between the experience of persecution during respondents' employment history and the value of initial earnings in their first jobs.

## 8 Conclusions

We document the consequences of an authoritarian regime's ability to punish its opponents through its complete control of the labor market and the pension system. One should never forget that our evidence does not do justice to the victims of the communist regime between 1948 and 1989. Not only jobs but lives were lost, and dissenting people were imprisoned or sent to labor camps. Those who suffered most under the totalitarian regime have long died, and many of those who survived the worst periods of persecution belonged to cohorts which could not have been expected to live through to the 2000s when the SHARE data were collected. One should, therefore, think of our results as the lower bound on human suffering within the narrow domain of socio-economic conditions and the labor market.

With this limitation in mind, our results generalize the evidence from case studies and literary works and show how far the labor market oppression of *ordinary* citizens went during the communist regime and how long-lasting the punishments were. Using a variety of mechanisms built since the end of World War II, the communist regime determined all wages, individual employment, and eventually, retirement benefits. The scale of these punishments was very large and persistent: Losing a job due to persecution implied an immediate earnings loss of about 60%. The forced career degradation led to a reduction in pension benefits of more than 40%.

Understanding the scale of these consequences and their sources is the first step in designing effective reparation policies.<sup>29</sup> Designing a fair compensation scheme for lost employment, education, and career opportunities can be a formidable task, often involving counterfactual considerations of alternative individual histories.<sup>30</sup> The precedent of the largest and most complex reparations program for the Holocaust and forced labor victims of the Nazi regime established a practice of compensating only a limited scope of victims of the most violent crimes in a narrowly specified time period.<sup>31</sup> Reconciliation programs often consist of only truth commissions, occasionally

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<sup>28</sup>These results cannot be treated in the same way as a typical "placebo test" to support the claim that our linear regressions would not suffer from a bias due to unobservable characteristics. Political attitudes and activity change over time and should not be treated as a simple fixed effect. However, the results demonstrate that the extensive set of controls accounts for most of the differences between the persecuted sample and the rest of the respondent sample, and that all relevant information is included in the regressions. IVs address the endogeneity of persecution treatments.

<sup>29</sup>Acemoglu et al. (2011) show long-term economic consequences for regions and cities that experienced extreme levels of violence and persecution. Dell (2010) documents the case of the Peruvian forced mita mining labor system.

<sup>30</sup>Posner and Vermeule (2003) present the legal, constitutional, and practical hurdles of this process.

<sup>31</sup>In Poland, for example, the 1991 Act on war veterans and victims of war and oppression concerns

accompanied by lump-sum compensations and the return of confiscated property.

At the same time, there are examples of compensation programs that specifically target individuals who have experienced oppression in the labor market. In Chile, the National Commission for Truth and Reconciliation concluded that the rights to social security and monthly allowances should be paid retroactively to victims as well as to their survivors, relatives, and even cohabitants: “[The victims] may be regarded as the source of rights to an array of pension benefits that their relatives have never received or have collected only in part.”<sup>32</sup> In our analysis, we find that well-designed compensation policies and programs can redress historical scars and legitimize the transition process with more equitable outcomes. Empirical research in this domain is needed: The V-Dem Institute (Nord et al. (2025)) reports that in the last 20 years, the number of autocracies has risen and surpassed the number of democracies, with 72 percent of the global population currently living under an autocratic form of government. While the control over the labor market in these countries may not be as tight as in the communist Czechoslovakia, the effects of political persecution and limitations on economic freedoms are likely to be substantial and long lasting.

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only persons who suffered the most acute political, ethnic, and racial persecutions on the part of the totalitarian regimes: the Nazi regime of 1939-1945, the Soviet occupation, and the Polish communist regime only in 1944-1956.

<sup>32</sup>See the Appendix for details and an overview of the transitional justice theory.

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# For Online Publication: Appendix

## A Extended Results

	Model 1		Model 2		Model 3
	OLS	IV	OLS	IV	OLS
Treatment on job $j - 1$ :					
Persecution: job loss	-0.433** (0.183)	-0.624*** (0.196)			-0.529*** (0.204)
Persecution: discrimination			0.020 (0.094)	-0.076 (0.235)	0.212* (0.118)
Layoff	0.057 (0.138)	0.076 (0.136)	0.066 (0.138)	0.066 (0.138)	0.052 (0.140)
Displacement	0.019 (0.097)	0.047 (0.084)	0.029 (0.095)	0.031 (0.091)	0.020 (0.096)
Female	-0.062** (0.029)	-0.060** (0.030)	-0.060** (0.030)	-0.060** (0.030)	-0.061** (0.029)
Education: secondary	-0.021 (0.050)	-0.020 (0.050)	-0.022 (0.050)	-0.023 (0.050)	-0.020 (0.050)
Education: tertiary	-0.024 (0.057)	-0.013 (0.058)	-0.028 (0.057)	-0.027 (0.057)	-0.023 (0.057)
Experienced persecution	-0.002 (0.039)	0.029 (0.045)	-0.030 (0.041)	-0.019 (0.052)	-0.013 (0.040)
Experienced dispossession	-0.024 (0.037)	-0.030 (0.039)	-0.026 (0.039)	-0.028 (0.040)	-0.020 (0.036)
Interviewed in wave 7	0.076*** (0.028)	0.079*** (0.028)	0.075*** (0.027)	0.076*** (0.028)	0.075*** (0.027)
Job $j$ characteristics:					
Full time job	0.323*** (0.064)	0.329*** (0.064)	0.322*** (0.065)	0.323*** (0.064)	0.322*** (0.064)
Sector: industry	0.052 (0.059)	0.060 (0.060)	0.044 (0.059)	0.046 (0.060)	0.050 (0.059)
Sector: services	-0.001 (0.056)	0.002 (0.056)	-0.005 (0.056)	-0.005 (0.056)	-0.001 (0.056)
Occupation: white collar	0.082** (0.036)	0.076** (0.035)	0.084** (0.037)	0.084** (0.036)	0.082** (0.036)
Labor market prior to job $j$ :					
Total experience	0.021*** (0.007)	0.023*** (0.008)	0.020*** (0.007)	0.020*** (0.007)	0.021*** (0.007)
Total experience squared	-0.183 (0.244)	-0.222 (0.240)	-0.159 (0.242)	-0.163 (0.240)	-0.181 (0.243)
Adj. R <sup>2</sup>	0.110	0.113	0.104	0.104	0.111
Num. obs.	2629	2629	2629	2629	2629
IV: first stage, marginal effects:					
Rehabilitation cases (regional)		0.301*** (0.111)		-0.018 (0.026)	
New StB investigations (regional)		0.004 (0.055)		0.100** (0.041)	
New StB investigations (federal)		0.062 (0.082)		0.058 (0.059)	
StB agents recruitment (regional)		0.062 (0.089)		0.141* (0.081)	
StB agents recruitment (federal)		0.549*** (0.153)		-0.058 (0.129)	
IV: Kleibergen-Paap rk Wald F statistic		32.905		13.220	
(p-value)		(0.000)		(0.021)	

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ . Robust standard errors clustered at the individual level. Dependent variable: difference in log nominal monthly earnings (net values in 1980 CZK). For sample selection criteria see Table 2. Additional controls include: birth year (squared), birth cohort by decades, birth place (if owner, urban status), born in country of residence, children; geographic location at NUTS2 level: place of birth and job location; childhood conditions at age 10: few books at home, mother and father present; job characteristics: starting year (squared); macro variables related to year of job start: growth rates (GDP per capita, labor force participation, population, employment). Instruments: Rehabilitation cases, new Secret Service (StB) investigations and recruited agents calculated per 1,000 population at the regional (NUTS2) or federal level. Instrumental variables matched to the start year of job  $j$ . Source: Authors' calculations using SHARE data.

Table A.1: Treatments and Earnings Dynamics: OLS and IV Estimates in Differences

	Model 1		Model 2		Model 3
	OLS	IV	OLS	IV	OLS
Treatment on any prior job:					
Persecution: job loss	−0.298*** (0.091)	−0.327** (0.142)			−0.440*** (0.098)
Persecution: discrimination			0.093 (0.096)	0.096 (0.176)	0.277*** (0.080)
Layoff	−0.032 (0.072)	−0.044 (0.071)	−0.051 (0.073)	−0.050 (0.072)	−0.029 (0.074)
Displacement	−0.081 (0.075)	−0.086 (0.075)	−0.089 (0.077)	−0.088 (0.077)	−0.084 (0.075)
Female	−0.270*** (0.035)	−0.270*** (0.035)	−0.272*** (0.035)	−0.272*** (0.035)	−0.271*** (0.034)
Education: secondary	0.013 (0.055)	0.012 (0.055)	0.012 (0.056)	0.012 (0.056)	0.016 (0.055)
Education: tertiary	0.044 (0.067)	0.046 (0.068)	0.038 (0.068)	0.038 (0.068)	0.045 (0.067)
Experienced persecution	0.005 (0.042)	0.008 (0.044)	−0.033 (0.041)	−0.034 (0.047)	−0.016 (0.041)
Experienced dispossession	−0.036 (0.037)	−0.036 (0.037)	−0.033 (0.037)	−0.033 (0.037)	−0.031 (0.035)
Interviewed in wave 7	0.094*** (0.026)	0.093*** (0.026)	0.090*** (0.026)	0.090*** (0.026)	0.092*** (0.026)
Job $j$ characteristics:					
Full time job	0.362*** (0.064)	0.361*** (0.064)	0.357*** (0.065)	0.357*** (0.065)	0.359*** (0.064)
Sector: industry	0.073 (0.055)	0.074 (0.055)	0.064 (0.055)	0.064 (0.055)	0.072 (0.055)
Sector: services	0.017 (0.053)	0.017 (0.053)	0.014 (0.053)	0.014 (0.053)	0.019 (0.052)
Occupation: white collar	0.057 (0.037)	0.056 (0.037)	0.061 (0.038)	0.061 (0.038)	0.057 (0.037)
Labor market prior to job $j$ :					
Total experience	0.034*** (0.008)	0.034*** (0.008)	0.033*** (0.008)	0.033*** (0.008)	0.034*** (0.008)
Total experience squared	−0.529** (0.244)	−0.532** (0.243)	−0.501** (0.244)	−0.501** (0.244)	−0.534** (0.244)
Initial earnings in job ( $j - 1$ ), log	0.438*** (0.033)	0.438*** (0.033)	0.431*** (0.034)	0.431*** (0.034)	0.438*** (0.033)
Adj. R <sup>2</sup>	0.420	0.418	0.416	0.416	0.422
Num. obs.	2629	2629	2629	2629	2629
IV: first stage, marginal effects:					
Rehabilitation court cases (regional)		0.301*** (0.111)		−0.018 (0.026)	
New StB investigations (regional)		0.004 (0.055)		0.100** (0.041)	
New StB investigations (federal)		0.062 (0.082)		0.058 (0.059)	
StB agents recruitment (regional)		0.062 (0.089)		0.141* (0.081)	
StB agents recruitment (federal)		0.549*** (0.153)		−0.058 (0.129)	
IV: Kleibergen-Paap rk Wald F statistic (p-value)		32.905 (0.000)		13.220 (0.021)	

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ . Robust standard errors clustered at the individual level. Dependent variable: log nominal monthly earnings (net values in 1980 CZK). For sample selection criteria see Table 2.

Additional controls include: birth year (squared), birth cohort by decades, birth place (if owner, urban status), born in country of residence, children; geographic location at NUTS2 level: place of birth and job location; childhood conditions at age 10: few books at home, mother and father present; job characteristics: starting year (squared); macro variables related to year of job start: growth rates (GDP per capita, labor force participation, population, employment).

Instruments: Rehabilitation cases, new Secret Service (StB) investigations and recruited agents calculated per 1,000 population at the regional (NUTS2) or federal level. Instrumental variables matched to the start year of job  $j$ .

Source: Authors' calculations using SHARE data.

Table A.2: Treatments and Earnings Dynamics: OLS and IV Estimates in Levels

	Model 1		Model 2		Model 3
	OLS	IV	OLS	IV	OLS
Treatment ever experienced:					
Persecution: job loss	-0.335*** (0.076)	-0.414** (0.183)			-0.328*** (0.077)
Persecution: discrimination			-0.076 (0.060)	-0.161 (0.135)	-0.040 (0.061)
Layoff	-0.030 (0.049)	-0.031 (0.054)	-0.025 (0.049)	-0.026 (0.053)	-0.030 (0.049)
Displacement	-0.128*** (0.035)	-0.130*** (0.046)	-0.118*** (0.035)	-0.116** (0.047)	-0.127*** (0.035)
Female	-0.232*** (0.031)	-0.232*** (0.041)	-0.235*** (0.031)	-0.240*** (0.041)	-0.234*** (0.031)
Education: secondary	0.046 (0.036)	0.048 (0.046)	0.036 (0.037)	0.035 (0.045)	0.046 (0.036)
Education: tertiary	0.115** (0.048)	0.120** (0.056)	0.096** (0.048)	0.098* (0.056)	0.115** (0.048)
Experienced persecution	0.044 (0.037)	0.057 (0.051)	0.018 (0.043)	0.054 (0.072)	0.059 (0.044)
Experienced dispossession	0.027 (0.036)	0.024 (0.045)	0.043 (0.036)	0.043 (0.046)	0.027 (0.036)
Interviewed in wave 7	0.074 (0.048)	0.075 (0.060)	0.069 (0.049)	0.072 (0.059)	0.075 (0.049)
Labor market history:					
Total experience	-0.011 (0.007)	-0.011 (0.009)	-0.011 (0.007)	-0.010 (0.009)	-0.011 (0.007)
Total experience squared	0.156 (0.131)	0.153 (0.162)	0.170 (0.131)	0.167 (0.161)	0.155 (0.131)
Ever worked part time	-0.143*** (0.045)	-0.140** (0.061)	-0.158*** (0.046)	-0.162*** (0.061)	-0.145*** (0.046)
Ever worked in industry	0.041 (0.027)	0.044 (0.035)	0.028 (0.027)	0.028 (0.035)	0.041 (0.027)
Ever worked in services	0.081*** (0.027)	0.083** (0.037)	0.074*** (0.027)	0.073** (0.037)	0.081*** (0.027)
Ever worked in white collar occupation	0.086*** (0.027)	0.087*** (0.032)	0.082*** (0.027)	0.081** (0.032)	0.086*** (0.027)
Adj. R <sup>2</sup>	0.161	0.161	0.149	0.151	0.161
Num. obs.	1270	1270	1270	1270	1270
IV: first stage, marginal effects:					
Rehabilitation court cases (regional)		-0.006 (0.010)		-0.015 (0.016)	
New StB investigations (regional)		0.074*** (0.012)		0.025 (0.021)	
New StB investigations (federal)		0.231*** (0.038)		0.040* (0.021)	
StB agents recruitment (regional)		0.041* (0.023)		0.102*** (0.036)	
StB agents recruitment (federal)		0.023 (0.020)		-0.006 (0.036)	
IV: Kleibergen-Paap rk Wald F statistic (p-value)		58.852 (0.000)		38.653 (0.000)	

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ . Robust standard errors. Dependent variable: log nominal first retirement pension (net monthly values in 1980 CZK). For sample selection criteria see Table 3.

Additional controls include: birth year (squared), birth cohort by decades, birth place (if owner, urban status), born in country of residence, children; geographic location at the NUTS2 level: place of birth and last job location; childhood conditions at age 10: few books at home, mother and father present, poor housing conditions, low room-to-person ratio; year and decade when received first pension, receipt of other pensions (disability, survivor, early retirement); career characteristics: career gaps of more than 3 years, macro variables related to year of job pension: growth rates (GDP per capita, labor force participation, population, employment).

Instruments: Rehabilitation cases, new Secret Service (StB) investigations and recruited agents calculated per 1,000 population at regional (NUTS2) or federal level. Instrumental variables matched to the start year of job  $j$ .

Source: Authors' calculations using SHARE data.

Table A.3: Treatments and Retirement Benefits: First Pensions

	Model 1		Model 2		Model 3
	OLS	IV	OLS	IV	OLS
Treatment ever experienced:					
Persecution: job loss	-0.075 (0.063)	-0.058 (0.055)			-0.077 (0.061)
Persecution: discrimination			0.001 (0.042)	0.016 (0.052)	0.010 (0.040)
Layoff	-0.047 (0.039)	-0.047 (0.039)	-0.046 (0.039)	-0.045 (0.039)	-0.047 (0.039)
Displacement	-0.063** (0.027)	-0.063** (0.027)	-0.061** (0.027)	-0.062** (0.027)	-0.063** (0.027)
Female	-0.156*** (0.024)	-0.156*** (0.024)	-0.156*** (0.025)	-0.155*** (0.024)	-0.156*** (0.025)
Education: secondary	0.044** (0.022)	0.043** (0.022)	0.041* (0.022)	0.041* (0.022)	0.044** (0.022)
Education: tertiary	0.095*** (0.030)	0.093*** (0.030)	0.090*** (0.030)	0.089*** (0.031)	0.094*** (0.030)
Experienced persecution	-0.005 (0.023)	-0.008 (0.025)	-0.019 (0.026)	-0.025 (0.034)	-0.009 (0.027)
Experienced dispossession	0.023 (0.025)	0.024 (0.026)	0.027 (0.026)	0.027 (0.026)	0.023 (0.026)
Interviewed in wave 7	-0.070*** (0.027)	-0.071*** (0.027)	-0.072*** (0.027)	-0.072*** (0.027)	-0.071*** (0.027)
Labor market history:					
Total experience	0.005 (0.005)	0.005 (0.005)	0.005 (0.005)	0.005 (0.005)	0.005 (0.005)
Total experience squared	-0.035 (0.094)	-0.034 (0.094)	-0.031 (0.094)	-0.031 (0.094)	-0.035 (0.093)
Ever worked part time	-0.096** (0.037)	-0.096** (0.037)	-0.098*** (0.037)	-0.098*** (0.037)	-0.095** (0.037)
Ever worked in industry	0.010 (0.020)	0.009 (0.020)	0.007 (0.021)	0.007 (0.020)	0.010 (0.020)
Ever worked in services	0.027 (0.023)	0.027 (0.023)	0.026 (0.023)	0.026 (0.023)	0.027 (0.023)
Ever worked in white collar occupation	0.010 (0.016)	0.010 (0.016)	0.009 (0.016)	0.009 (0.016)	0.010 (0.016)
Adj. R <sup>2</sup>	0.298	0.296	0.296	0.296	0.297
Num. obs.	1270	1270	1270	1270	1270
IV: first stage, marginal effects:					
Rehabilitation court cases (regional)		-0.006 (0.010)		-0.015 (0.016)	
New StB investigations (regional)		0.074*** (0.012)		0.025 (0.021)	
New StB investigations (federal)		0.231*** (0.038)		0.040* (0.021)	
StB agents recruitment (regional)		0.041* (0.023)		0.102*** (0.036)	
StB agents recruitment (federal)		0.023 (0.020)		-0.006 (0.036)	
IV: Kleibergen-Paap rk Wald F statistic (p-value)		58.852 (0.000)		38.653 (0.000)	

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ . Robust standard errors. Dependent variable: log nominal current retirement pension (net monthly values in 1980 CZK). For sample selection criteria see Table 3.

Additional controls include: birth year (squared), birth cohort by decades, birth place (if owner, urban status), born in country of residence, children; geographic location at the NUTS2 level: place of birth and last job location; childhood conditions at age 10: few books at home, mother and father present, poor housing conditions, low room-to-person ratio; year when received current pension, decade when received first pension, receipt of other pensions (disability, survivor, early retirement); career characteristics: career gaps of more than 3 years, macro variables related to year of job pension: growth rates (GDP per capita, labor force participation, population, employment).

Instruments: Rehabilitation cases, new Secret Service (StB) investigations and recruited agents calculated per 1,000 population at regional (NUTS2) or federal level. Instrumental variables matched to the start year of job  $j$ .

Source: Authors' calculations using SHARE data.

Table A.4: Treatments and Retirement Benefits: Current Pensions

## A.1 Robustness Analysis: Recall Regressions

	First Job			2nd+ Jobs			2nd+ Jobs		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Treatment ever experienced:									
Persecution: job loss	0.044 (0.152)		0.038 (0.138)	0.052 (0.100)		0.061 (0.104)			
Persecution: discrimination		0.027 (0.131)	0.014 (0.118)		-0.010 (0.090)	-0.025 (0.096)			
Layoff	-0.062 (0.090)	-0.062 (0.091)	-0.062 (0.090)	-0.085* (0.046)	-0.085* (0.046)	-0.085* (0.046)			
Displacement	0.023 (0.070)	0.024 (0.071)	0.023 (0.070)	0.040 (0.035)	0.041 (0.036)	0.040 (0.036)			
Treatment on job $j - 1$ :									
Persecution: job loss							0.029 (0.048)		0.037 (0.039)
Persecution: discrimination								-0.004 (0.042)	-0.018 (0.038)
Layoff							-0.046 (0.041)	-0.046 (0.041)	-0.047 (0.041)
Displacement							-0.032 (0.070)	-0.032 (0.070)	-0.032 (0.070)
Female	-0.000 (0.109)	-0.001 (0.107)	-0.000 (0.109)	-0.004 (0.034)	-0.004 (0.033)	-0.004 (0.033)	-0.006 (0.035)	-0.007 (0.035)	-0.007 (0.035)
Education: secondary	0.046 (0.054)	0.046 (0.055)	0.046 (0.054)	-0.007 (0.021)	-0.006 (0.021)	-0.007 (0.021)	-0.011 (0.021)	-0.011 (0.021)	-0.011 (0.021)
Education: tertiary	0.098 (0.126)	0.098 (0.125)	0.098 (0.125)	-0.004 (0.044)	-0.002 (0.041)	-0.003 (0.043)	-0.008 (0.046)	-0.008 (0.046)	-0.009 (0.046)
Experienced persecution	0.034 (0.082)	0.032 (0.110)	0.029 (0.109)	-0.002 (0.035)	0.011 (0.034)	0.005 (0.032)	0.003 (0.034)	0.007 (0.038)	0.005 (0.037)
Experienced dispossession	-0.005 (0.069)	-0.005 (0.070)	-0.005 (0.071)	0.005 (0.037)	0.003 (0.041)	0.004 (0.040)	0.006 (0.035)	0.006 (0.035)	0.006 (0.035)
Interviewed in wave 7	-0.109 (0.084)	-0.109 (0.083)	-0.109 (0.084)	-0.099** (0.041)	-0.099** (0.042)	-0.099** (0.042)	-0.096** (0.041)	-0.096** (0.041)	-0.096** (0.041)
Childhood conditions:									
Homeownership at birth	-0.036 (0.051)	-0.036 (0.050)	-0.036 (0.051)	-0.010 (0.029)	-0.009 (0.029)	-0.010 (0.029)	-0.013 (0.030)	-0.013 (0.030)	-0.013 (0.030)
Born in: village	0.008 (0.102)	0.009 (0.100)	0.008 (0.101)	-0.015 (0.043)	-0.014 (0.043)	-0.014 (0.043)	-0.014 (0.043)	-0.014 (0.043)	-0.014 (0.043)
Born in: city	-0.028 (0.063)	-0.027 (0.062)	-0.028 (0.063)	0.001 (0.040)	0.002 (0.041)	0.001 (0.041)	0.001 (0.043)	0.002 (0.043)	0.001 (0.043)
Age 10: few books home	-0.030 (0.079)	-0.030 (0.080)	-0.030 (0.079)	-0.009 (0.025)	-0.008 (0.026)	-0.008 (0.025)	-0.011 (0.028)	-0.011 (0.028)	-0.011 (0.028)
Age 10: live w. both par.	-0.048 (0.039)	-0.048 (0.038)	-0.048 (0.039)	-0.018 (0.023)	-0.018 (0.023)	-0.018 (0.023)	-0.017 (0.026)	-0.017 (0.026)	-0.017 (0.026)
Job $j$ characteristics:									
Full time job	0.000 (0.092)	-0.001 (0.093)	-0.001 (0.093)	-0.005 (0.040)	-0.008 (0.042)	-0.003 (0.040)	-0.010 (0.040)	-0.010 (0.041)	-0.009 (0.040)
Sector: industry	-0.055 (0.138)	-0.055 (0.138)	-0.055 (0.138)	-0.004 (0.044)	-0.004 (0.045)	-0.004 (0.044)	0.003 (0.044)	0.003 (0.044)	0.003 (0.044)
Sector: services	-0.015 (0.066)	-0.015 (0.066)	-0.015 (0.066)	-0.007 (0.033)	-0.006 (0.033)	-0.007 (0.033)	0.001 (0.034)	0.001 (0.034)	0.001 (0.034)
Occupation: white collar	0.040 (0.090)	0.041 (0.092)	0.040 (0.090)	-0.013 (0.024)	-0.012 (0.024)	-0.013 (0.024)	-0.012 (0.024)	-0.012 (0.024)	-0.012 (0.024)
Pseudo-R <sup>2</sup>	0.315	0.315	0.315	0.150	0.150	0.150	0.140	0.140	0.140
Number of observations	2254	2254	2254	3744	3744	3744	3744	3744	3744

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ . Robust standard errors clustered at the individual level. Dependent variable: monthly earnings reported (= 1) or not reported (= 0) in the SHARELIFE history interview. For sample selection criteria see Table 2.

Additional controls include: birth year (squared), birth cohort by decades, born in country of residence, children; geographic location at the NUTS2 level: place of birth and job location; job characteristics: starting year (squared), total experience prior to job; macro variables related to year of job start: growth rates (GDP per capita, labor force participation, population, employment).

Source: Authors' calculations using SHARE data.

Table A.5: Recall Regressions: Earnings

	First Pensions			Current Pensions		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Treatment ever experienced:						
Persecution: job loss	0.087 (0.082)		0.081 (0.091)	0.045 (0.076)		0.011 (0.071)
Persecution: discrimination		0.037 (0.122)	0.025 (0.122)		0.146 (0.093)	0.144 (0.093)
Layoff	0.049 (0.068)	0.050 (0.066)	0.049 (0.068)	0.002 (0.094)	0.001 (0.095)	0.001 (0.094)
Displacement	-0.005 (0.060)	-0.005 (0.064)	-0.005 (0.063)	0.007 (0.036)	-0.002 (0.026)	-0.001 (0.026)
Female	0.032 (0.044)	0.033 (0.044)	0.033 (0.044)	0.062 (0.074)	0.065 (0.079)	0.065 (0.078)
Education secondary	0.023 (0.068)	0.025 (0.071)	0.023 (0.069)	0.036 (0.117)	0.036 (0.129)	0.036 (0.129)
Education tertiary	0.044 (0.075)	0.044 (0.081)	0.044 (0.079)	0.029 (0.086)	0.029 (0.092)	0.029 (0.092)
Experienced persecution	-0.020 (0.077)	-0.022 (0.067)	-0.031 (0.064)	0.017 (0.050)	-0.019 (0.045)	-0.022 (0.042)
Experienced dispossession	0.002 (0.050)	-0.002 (0.052)	0.002 (0.052)	-0.024 (0.034)	-0.016 (0.028)	-0.016 (0.028)
Interviewed in wave 7	-0.232*** (0.046)	-0.233*** (0.047)	-0.233*** (0.045)	0.057 (0.095)	0.060 (0.102)	0.059 (0.102)
Childhood conditions:						
Homeownership at birth (parents)	-0.031 (0.042)	-0.029 (0.045)	-0.031 (0.043)	-0.013 (0.031)	-0.017 (0.031)	-0.017 (0.030)
Born in: village	0.028 (0.060)	0.030 (0.062)	0.029 (0.062)	0.011 (0.042)	0.016 (0.040)	0.016 (0.039)
Born in: city	-0.006 (0.046)	-0.004 (0.046)	-0.005 (0.046)	0.011 (0.040)	0.016 (0.037)	0.017 (0.038)
Age 10: few books at home	-0.007 (0.033)	-0.007 (0.034)	-0.007 (0.033)	-0.029 (0.069)	-0.029 (0.076)	-0.029 (0.075)
Age 10: living with both parents	-0.011 (0.037)	-0.010 (0.038)	-0.011 (0.038)	-0.044 (0.042)	-0.045 (0.041)	-0.045 (0.041)
Age 10: poor housing conditions	-0.019 (0.050)	-0.017 (0.051)	-0.019 (0.050)	0.045 (0.069)	0.049 (0.070)	0.048 (0.070)
Age 10: low room-to-person ratio	0.021 (0.029)	0.022 (0.029)	0.022 (0.028)	0.001 (0.073)	0.004 (0.083)	0.004 (0.082)
Labor market history:						
Ever worked part time	0.017 (0.070)	0.025 (0.073)	0.018 (0.068)	-0.054 (0.173)	-0.050 (0.195)	-0.051 (0.192)
Ever worked in white collar occupation	0.004 (0.040)	0.006 (0.041)	0.004 (0.040)	-0.001 (0.057)	0.002 (0.061)	0.001 (0.061)
Ever worked in industry	0.020 (0.029)	0.021 (0.029)	0.020 (0.029)	0.018 (0.084)	0.022 (0.098)	0.022 (0.097)
Ever worked in services	0.029 (0.028)	0.031 (0.031)	0.030 (0.030)	-0.015 (0.061)	-0.011 (0.066)	-0.011 (0.066)
Total experience (years)	-0.001 (0.003)	-0.001 (0.004)	-0.001 (0.004)	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)
Pseudo-R <sup>2</sup>	0.156	0.154	0.156	0.297	0.308	0.308
Number of observations	1597	1597	1597	1597	1597	1597

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ . Robust standard errors. Dependent variable: first pension (columns 1-3) or current pension (columns 4-6) reported (= 1) or not reported (= 0) in SHARE data. For sample selection criteria see Table 3.

Additional controls include: birth year (squared), birth cohort by decades, born in country of residence, children; geographic location at the NUTS2 level: place of birth and last job location; year when received first or current pension, receipt of other pensions (disability, survivor, early retirement); career characteristics: career gaps of more than 3 years, macro variables related to year of pension receipt: growth rates (GDP per capita, labor force participation, population, employment).

Source: Authors' calculations using SHARE data.

Table A.6: Recall Regressions: First and Current Pensions



## A.2 Robustness Analysis: Matching Models

	ATT: Earnings Differences		ATT: Earnings Levels	
	Job loss	Discrimination	Job loss	Discrimination
Treatment related to persecution	−0.553*** (0.134)	0.124 (0.144)	−0.323*** (0.096)	0.155* (0.085)
Treatment not related to persecution:				
Layoff	0.031 (0.145)	0.107 (0.190)	−0.081 (0.101)	−0.041 (0.092)
Displacement	−0.043 (0.129)	−0.027 (0.115)	−0.050 (0.088)	−0.137* (0.077)
Female	−0.174*** (0.046)	−0.122*** (0.043)	−0.403*** (0.047)	−0.365*** (0.042)
Education: secondary	−0.040 (0.053)	−0.018 (0.050)	0.013 (0.048)	−0.018 (0.046)
Education: tertiary	−0.048 (0.075)	−0.048 (0.073)	0.039 (0.077)	0.030 (0.067)
Experienced persecution	0.072 (0.062)	−0.099* (0.060)	0.049 (0.057)	−0.063 (0.049)
Experienced dispossession	−0.086 (0.065)	−0.057 (0.060)	−0.129*** (0.046)	−0.090** (0.037)
Interviewed in wave 7	0.086** (0.043)	0.105*** (0.040)	0.062* (0.037)	0.083*** (0.032)
Job $j$ characteristics:				
Full time job	0.192* (0.112)	0.271*** (0.083)	0.274*** (0.078)	0.309*** (0.066)
Sector: industry	0.293*** (0.089)	0.152* (0.090)	0.156*** (0.058)	0.039 (0.064)
Sector: services	0.266*** (0.087)	0.131 (0.086)	0.145** (0.057)	0.025 (0.065)
Occupation: white collar	0.110** (0.052)	0.058 (0.054)	0.073 (0.048)	0.051 (0.050)
Labor market prior to job $j$ :				
Total experience	0.019 (0.013)	0.001 (0.013)	0.029*** (0.009)	0.021** (0.008)
Total experience squared	−0.432 (0.345)	0.224 (0.384)	−0.629** (0.284)	−0.256 (0.299)
(log) Initial earnings in job $(j - 1)$			0.400*** (0.040)	0.365*** (0.040)
Adj. R <sup>2</sup>	0.197	0.136	0.521	0.468
Num. obs.	2629	2629	2629	2629

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ . Robust standard errors clustered at the individual level. Dependent variable: first difference in log nominal monthly earnings (net values in 1980 CZK, columns 1-2) or log nominal monthly earnings (net values in 1980 CZK, columns 3-4). For sample selection criteria see Table 2.

Additional controls include: birth year (squared), birth cohort by decades, birth place (if owner, urban status), born in country of residence, children; geographic location at the NUTS2 level: place of birth and job location; childhood conditions at age 10: few books at home, mother and father present; job characteristics: starting year (squared); macro variables related to year of job start: growth rates (GDP per capita, labor force participation, population, employment).

Distance: Robust Mahalanobis. Method: generalized full clustered matching.

Source: Authors' calculations using SHARE data.

Table A.7: Treatment and Earnings Dynamics: Matching Estimates

	ATT: First Pensions		ATT: Current Pensions	
	Job Loss	Discrimination	Job Loss	Discrimination
Treatment ever related to persecution	-0.426*** (0.148)	0.032 (0.095)	-0.058 (0.065)	0.035 (0.041)
Treatment ever not related to persecution:				
Layoff	0.017 (0.066)	-0.067 (0.068)	-0.012 (0.029)	-0.024 (0.031)
Displacement	-0.164*** (0.049)	-0.110* (0.064)	-0.047** (0.020)	-0.024 (0.022)
Female	-0.335*** (0.049)	-0.217*** (0.062)	-0.161*** (0.023)	-0.123*** (0.028)
Education: secondary	-0.033 (0.057)	0.067 (0.062)	0.027 (0.023)	0.019 (0.023)
Education: tertiary	0.096 (0.070)	0.103 (0.077)	0.071** (0.030)	0.046 (0.031)
Experienced persecution	0.026 (0.060)	-0.068 (0.071)	-0.063* (0.035)	-0.038 (0.028)
Experienced dispossession	0.026 (0.055)	0.042 (0.068)	0.014 (0.029)	0.009 (0.032)
Interviewed in wave 7	0.088 (0.066)	0.097 (0.085)	-0.014 (0.027)	-0.054* (0.032)
Labor market history:				
Ever worked part time	-0.098 (0.067)	-0.003 (0.102)	-0.108** (0.044)	-0.039 (0.031)
Ever worked in white collar occupation	0.133*** (0.037)	0.075 (0.047)	0.030* (0.018)	0.025 (0.019)
Ever worked in industry	0.044 (0.040)	0.071 (0.062)	-0.005 (0.024)	-0.031 (0.021)
Ever worked in services	0.096** (0.041)	0.134** (0.060)	0.021 (0.026)	-0.018 (0.025)
Total experience (years)	-0.023* (0.013)	-0.010 (0.013)	0.009 (0.006)	0.007 (0.006)
Total experience squared (years)	0.434** (0.215)	0.165 (0.219)	-0.094 (0.102)	-0.063 (0.103)
Adj. R <sup>2</sup>	0.254	0.196	0.339	0.369
Num. obs.	1270	1270	1270	1270

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ . Standard errors clustered at the NUTS2 regional level. Dependent variable: log nominal first pension (net monthly values in 1980 CZK, columns 1-2) or log nominal current pension (net monthly values in 1980 CZK, columns 3-4). For sample selection criteria see Table 3.

Additional controls include: birth year (squared), birth cohort by decades, birth place (if owner, urban status), born in country of residence, children; geographic location at the NUTS2 level: place of birth and last job location; childhood conditions at age 10: few books at home, mother and father present, poor housing conditions, low room-to-person ratio; year when received current or first pension, decade when received first pension, receipt of other pensions (disability, survivor, early retirement); career characteristics: career gaps of more than 3 years, macro variables related to year of pension receipt: growth rates (GDP per capita, labor force participation, population, employment).

Distance: Robust Mahalanobis. Method: Full.

Source: Authors' calculations using SHARE data.

Table A.8: Treatments and Retirement Benefits: Matching Estimates

### A.3 Robustness Analysis: Earnings in the first job

	Model 1	Model 2	Model 3
Treatment ever experienced:			
Persecution: job loss	−0.052 (0.247)		−0.040 (0.230)
Persecution: discrimination		−0.034 (0.126)	−0.024 (0.096)
Layoff	−0.007 (0.046)	−0.007 (0.046)	−0.007 (0.046)
Displacement	0.011 (0.039)	0.011 (0.039)	0.011 (0.039)
Female	−0.307*** (0.039)	−0.308*** (0.039)	−0.308*** (0.039)
Education: secondary	0.070 (0.051)	0.070 (0.051)	0.070 (0.051)
Education: tertiary	0.101 (0.070)	0.102 (0.071)	0.102 (0.071)
Experienced persecution	−0.001 (0.055)	0.004 (0.064)	0.006 (0.066)
Experienced dispossession	−0.021 (0.050)	−0.024 (0.052)	−0.023 (0.051)
Interviewed in wave 7	0.035 (0.031)	0.035 (0.032)	0.035 (0.032)
First job characteristics:			
Full time job	−1.170*** (0.056)	0.169*** (0.056)	0.169*** (0.056)
Occupation: white collar	−0.070** (0.030)	−0.070** (0.030)	−0.070** (0.030)
Sector: industry	0.099** (0.041)	0.099** (0.041)	0.099** (0.041)
Sector: services	0.069 (0.042)	0.068 (0.042)	0.068 (0.042)
Adj. R <sup>2</sup>	0.269	0.268	0.268
Num. obs.	1601	1601	1601

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ . Robust standard errors. Dependent variable: log nominal monthly earnings in first job (net values in 1980 CZK). For sample selection criteria see Table 2.

Additional controls include: birth year (squared), birth cohort by decades, birth place (if owner, urban status), born in country of residence, children; geographic location at the NUTS2 level: place of birth and job location; childhood conditions at age 10: few books at home, mother and father present; job characteristics: starting year (squared); macro variables related to year of job start: growth rates (GDP per capita, labor force participation, population, employment).

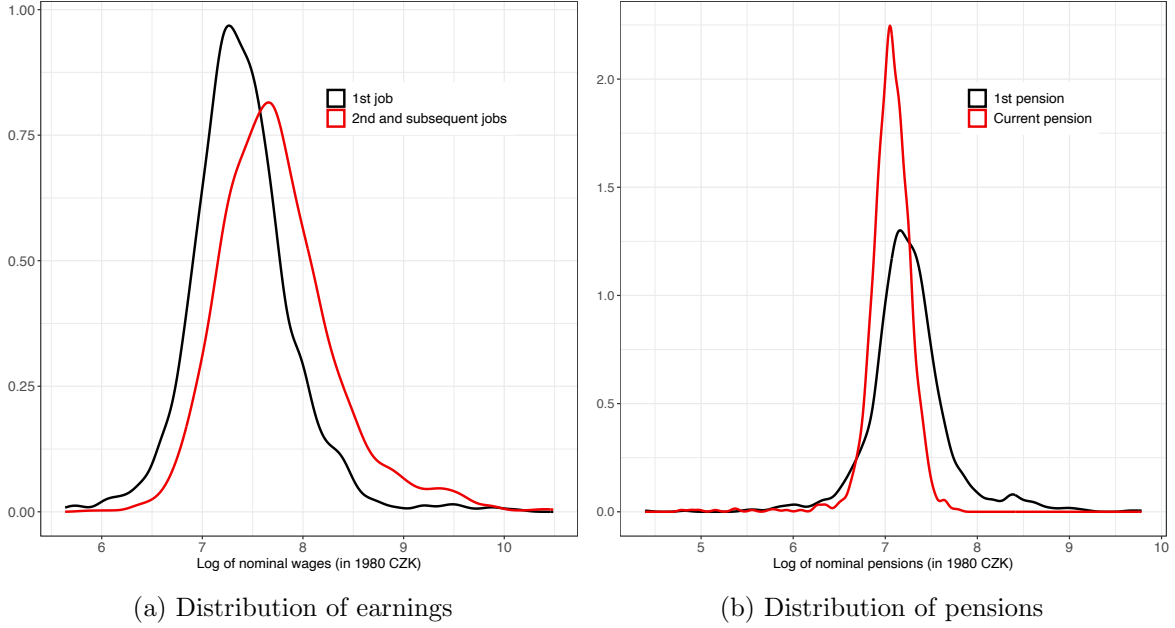
Source: Authors' calculations using SHARE data.

Table A.9: Earnings in the First Job

## A.4 Earnings and Pensions Distributions in SHARE Data

The SHARELIFE data are released by the data provider, the Survey of Health, Ageing, and Retirement in Europe (SHARE-ERIC) at the SHARE Berlin Institute ([www.share-berlin.eu](http://www.share-berlin.eu)). Besides checking and correcting for errors due to language and currency issues, we do not clean the data further except for eliminating outliers in the 0.5-centile (half a percentile) at the top and the bottom of the distribution of earnings and pensions.

The left panel of Figure A.1 shows the distribution of earnings in the first job (black) and in the second and subsequent jobs (red). The right panel shows the distribution of first (black) and current (red) pensions.



Source: SHARELIFE data (wave 3 and 7) for retrospective wages and first pensions; SHARE (wave 2-7) for current pension; Czech Statistical Office for administrative data.

Figure A.1: Earnings and pensions distribution in SHARE

Unlike many other countries of the Soviet bloc, Czechoslovakia was a relatively stable country that did not experience any episodes of hyperinflation and maintained a relatively stable price level after the monetary reform of 1953. The 1953 reform linked the Czechoslovak Koruna to the Soviet Ruble, cut the value of currency in circulation and earnings by the ratio of 5 (up to 300 CZK per person) and by the ratio of 50 for legal entities and savings (with lower ratios applied to individual savings accounts). As a consequence, the International Monetary Fund expelled Czechoslovakia in 1954. New administrative prices were set to replace the post-war rationing system. The monetary reform and the fact that the Czechoslovak Statistical Office does not provide any information on earnings and pensions for the years 1948-1953, and then only incomplete information for the years 1954-1959, are the main reasons our analysis is limited to earnings and pensions beyond 1960. This relative price stability should alleviate the potentially important source of measurement error, given the retrospective nature of the survey.

## B SHARELIFE Data and Questionnaire

In this Section provide details of the persecution module in the SHARELIFE Questionnaire.

### B.1 SHARELIFE Questionnaire

#### Data on persecution:

In the SHARELIFE 2007/08 and 2017 surveys, the module on General Life Experiences was placed at the end of the questionnaire. Questions related to persecution opened with the following general description:

#### GL022 (DISCRIMINATED AGAINST)

There are times, in which people are persecuted or discriminated against, for example, because of their political beliefs, religion, nationality, ethnicity, sexual orientation or their background. People may also be persecuted or discriminated against because of the political beliefs or the religion of their close relatives. Have you ever been the victim of such persecution or discrimination?

If the answer is affirmative, Question GL023 identified the main reason for persecution:

#### GL023 (MAIN REASON OF PERSECUTION)

What was the main reason you were persecuted or discriminated against? 1. Your political beliefs; 2. Your religion; 3. Your ethnicity or nationality; 4. Your sexual orientation; 5. Your background; 6. Political beliefs or religion of your close relatives; 97. Other reasons.

This was followed by an additional question of whether respondents or their families were ever dispossessed of any property as a result of persecution:

#### GL031 (DISPOSSESSED BECAUSE OF REASON FOR PERSECUTION)

There may be cases when individuals and their families are dispossessed of their property as a result of war or persecution. Were you or your family ever dispossessed of any property as a result of war or persecution?

The following two questions (GL032 and GL033) determined the type of property and the year of dispossession.

Respondents were then asked about their labor market experiences related to persecution; first, if persecution ever forced them to stop working:

#### GL024 (FORCED TO STOP WORKING)

Did persecution or discrimination because of [main reason of persecution] ever force you to stop working in a job?

And then, if they suffered any other consequences in their jobs as a result of persecution:

#### GL026 (EXPERIENCES IN JOB)

As a consequence of persecution or discrimination because of [main reason of persecution], did you ever experience any of the following during your working life? 1. Denied promotions; 2. Assignment to a task with fewer responsibilities; 3. Working on tasks below your qualifications; 4. Harassment by your boss or colleagues; 5. Pay cuts; 96. None of these.

Following each of the two questions, the respondent was asked to identify the jobs, out of a list of all jobs recorded earlier in the interview, in which they experienced either a job loss or discrimination as a result of persecution (Questions GL025 and GL027, respectively).

#### Data on jobs:

Details of job characteristics - for all listed jobs - are provided earlier in the questionnaire in the Labor Market History module. Questions RE004-026 provide further details on jobs (that lasted at least 6 months), namely starting and ending years, title, industry, and occupation, if the job was full-time as well as the starting salary of each job:

#### RE021 (FIRST MONTHLY WAGE IN JOB)

Can you tell me, approximately, how much you were paid monthly after taxes when you started doing this job as [occupation]? If you worked part-time, please tell me the actual amount that you were paid, not the full-time equivalent.

**Data on pensions:**

Questions RE031-37 of the SHARELIFE questionnaire determine the currency, the year and the pathway to retirement:

In the SHARELIFE interview, question RE036 specifically asked about the value of the first monthly retirement pension received by the respondents:

**RE036 (PENSION BENEFIT WHEN RETIRED)**

Approximately, how much was your first total monthly benefit after taxes from social security or pensions?

The values of current pensions, on the other hand, are collected in the standard waves of the SHARE survey. Specifically, the survey asks about the typical payment of (public) old age pension:

**EP078 (TYPICAL PAYMENT OF PENSION IN LAST YEAR)**

After taxes, about how large was a typical payment of your public old age pension in [previous year]?

## C Legislation 1948-2006

In the following text, ‘Decree’ represents a Decree of the Government of the former Czechoslovak Socialist Republic (1948-1989), Czechoslovakia (1990-1992), and the Czech Republic (after 1993), and ‘Act’ represents an Act of the Federal Assembly (1948-1992) or of the Parliament of the Czech Republic (after 1993). The number refers to the particular Decree or Act and the year it was enacted. All legal documents in Czech and English can be found at legal database <https://www.zakonyprolidi.cz/> and at <http://www.ustrcr.cz/en/relevant-legislation>.

### C.1 Pension System

Social policy in Czechoslovakia (1948-1989) was characterized by full (compulsory) employment controlled by the government. Social benefits were advantageous for workers in lower manual occupations and collectivized agriculture and dependent on individual characteristics and loyalty towards the regime. Additionally, the army, police and special forces were entitled to pensions set by different legislation (not covered in this paper). The pension system was remarkably stable from 1956 till the early 1990s. Table C.1 describes the evolution of its main parameters during the communist regime (columns 1-4), the main reform changes institutionalized by Act 155/1995 (column 5) and Act 109/2006 (column 6) before respondents provided pension data in the SHARE survey.

A universal and compulsory national insurance system (pensions, health insurance, maternity and invalidity benefits) provided solely by the government was enacted by Act 99/1948. All insurance companies and institutions were nationalized. Implemented gradually, the system was codified by Act 55/1956 which became the foundation for all following Acts and Decrees.<sup>33</sup> From 1956 to 1992, pensions were differentiated according to three categories of occupations: I (miners, pilots, heavy and chemical industries), II (jobs with hard working conditions), and III (other occupations). A pension base was calculated from average annual earnings during the base years (the last ten years before retirement age, or five if advantageous to a retiree). From 1956 to 1964 (column 1), the pension base was the sum of average monthly earnings up to CZK 2,000 accounted for at 100%, above that amount at 1/3, and above CZK 5,000 at zero. A pension equalled 60% of the pension base in Category I, 55% in Category II, and 50% in Category III, plus an amount of 2%, 1.5%, or 1% of the pension base in each Category, respectively, for each additional year of employment after 20 required years of employment (25 years in Category III after 1964). There was a universal minimal pension and a widow/er pension. The required years of employment for a pension entitlement was 20 years, and the retirement age was set at 60 years for males (55 years for Category I) and 55 years for females. In all Acts, military, police and other special pensions were determined by separate provisions. Decrees also determined additional benefits for years worked in certain occupations. Since the first reevaluation of the system in Act 101/1964 on Social Insurance, each Category had a specified maximum pension, and females’ retirement age was lowered by one year for each child up to 53 years. Act 103/1964 also unified retirement benefits of workers in agriculture (at collective farms) with the social insurance system.<sup>34</sup> The new calculation of pension benefits in Act 155/1995 and Act 109/2006 guaranteed each pensioner the pension paid according to the previous rules if it was higher than the new pension calculated according to the new pension Acts.

From 1956 to 1991, individuals supporting the regime received personal pensions provided by Act 55/1956 for “especially merited workers in the economy, science, culture, administration and other public service and for their survivors”. Personal pensions were received by members of the Communist Party, administration, People’s Militia and those who “contributed to the building of socialism”. Implemented by decrees, these pensions were allocated by the Party administration at the county level and approved by the Central Committee of the Communist Party. In 1968, its

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<sup>33</sup>For an overview of the national insurance system see Tomková, M. (2009), “Socialní zabezpečení” in *Komunistické právo v Československu: Kapitoly z dějin bezpráví*. Mezinárodní politologický ústav, Masarykova univerzita, Brno.

<sup>34</sup>Other relevant legislation include: From 1953, contributions to national insurance were included in tax on earnings (Act 76/1952), and the employer’s contribution was set at 10 (later 15) percent (Decree 84/1953). Retirement benefits were taxed from 1965 to 1975 (by Act 101/1964, progressive tax at 1-12,5%). Acts on Social Insurance were implemented, namely their nominal provisions for minimal and maximal pensions and other details, by Decrees 49/1952, 89/1953, 18/1954, 54/1954, 53/1956, 17/1959, 116/1968, 71/1970, 106/1971, 128/1975, 130/1975, 136/1975, 74/1982, 142/1983, 117/1988, and 149/1988. Since the Act 100/1988 on Social Insurance, annual Decrees regularly increase retirement benefits according to growth in earnings (§160).

	Year of Legislation					
	1956	1964	1975	1988	1995	2006
Brackets for calculation of the pension base (at which average earnings evaluated)						
at 100%	≤2,000	≤2,000	≤2,000	≤2,500	≤5,000*	≤9,100*
at 33%	≤5,000	>2,000	>2,000	≤6,000	≤10,000*	≤21,800*
(up to amount)		(1,000)	(1,000)			
at 10%	—	—	—	≤10,000	>10,000*	>21,800*
at 0%	>5,000	—	—	>10,000	—	—
Pension	Categories				Categories abolished	
Category I	60% of Base + 2%/year after 20 years of empl.				1.5% of pension base for	
Category II	55% of Base + 1.5%/year after 25 years of empl.				each year of empl.	
Category III	50% of Base + 1%/year after 25 years of empl.				+ 1%/year after ret. age	
Maximum pension						
Category I	—	2,200	3,000	3,800	—	—
Category II	—	1,800	2,500	2,900	—	—
Category III	—	1,600	2,150	2,800	—	—
Minimal pension	400	400	400	550	1,450*	2,240*
Widow pension	70%	60%	60%	60%	50%	50%
Base years	10 (5)	10 (5)	10 (5)	10 (5)	30	30
Required years	20 (20)	25 (20)	25 (20)	25 (20)	25	25
Retirement age	60/55	60/57	60/57	60/57	60/57	62/61
Proportional pension	Yes	Yes	Yes	Yes	No	No
Average pension	605	743	1,077	1,639	4,626	8,747
First average pension		780	1,252	1,994	4,842	9,958
Personal pension	Yes	Yes	Yes	Yes	No	No
Persecution	Yes	Yes	Yes	Yes	No	No

Sources: See the text. Notes: Nominal amounts in CZK for years related to legislation. First average pension is the newly assigned first pension based on the legislation. Calculations of pension in Act 30/1983 equals those in Act 121/1975, and similarly for Act 140/1994 with respect to Act 100/1988. Base years are years before retirement in which the average earnings are calculated. Required years are years of employment after which a person qualifies for retirement benefits (20 years for Category I and II). Retirement age for males/females (5 years lower in Category I and II). From 1964, females' retirement age reduced by one year for each child up to five children. Proportional pension: for those above 65 years who were employed for fewer than the required years at 2% of 1/2 of the pension base for each year of employment. Personal pension: see text. Persecution: legislation related to persecution in the text. Categories of pensions were canceled by Act 235/1992.

\*Set every year by a Decree reflecting changes in average earnings. Pension benefits are calculated with coefficients relating individual base to the average base provided by the Czech Statistical Office (<https://csu.gov.cz/home>).

Table C.1: Pension System from 1948 to 2006

maximum amount was 3,500 CZK. From 1971, these pensions were also given to people employed in the administration after 15 years of service in the supplementary amount of 300-500 CZK per month.

## C.2 Legislation Related to Persecution

This subsection describes official legislation enacted by the legislative bodies of the Czechoslovak communist regime. With respect to social benefits, legalized persecution consisted of a) direct punishment by the government in the form of reduced benefits for former entrepreneurs, employers, and people antagonistic to the regime; b) time in detention or prison was not included in the calculation of average earnings if the person was not working; c) wages in prison were set at the minimal level, further reduced by the prison administration; d) assignment of prisoners as well as released prisoners to the lowest retirement category; e) withdrawal or reduction of benefits to prisoners, released prisoners, their dependents or survivors; f) assignment to occupations with lower wages that were often set at minimal levels; and g) confiscation of individual pension plans.

In addition to these categories described in detail below, it is important to remember that persecution was not only implemented by police and the secret service through a broad interpretation of this legislation but also by acts that were, as a matter of fact, against the existing legislation and even against the written constitution.

**Dispossession** Confiscation of property of the expelled German population was based on presiden-



tial decrees 12/1945 and 108/1945. After 1948, the communist regime confiscated property without compensation based on Acts 46/1948 and 114-126/1948.

**Protection of the Peoples' Democratic Republic** The coverage of Act 231/1948 from October 1948 on the Protection of the Peoples' Democratic Republic was so wide that the majority of political persecution was implemented through this Act. It defines treason, association and incitement against the regime, defamation, espionage, sabotage, abuse of clerical office, illegal possession of arms, spreading of alarming news, approval of criminal activity, jeopardizing of economic plan, illegal leaving of the country, and many other crimes against the people's democratic system. Punishments included the most severe penalties (death, life imprisonment), confiscation of property, loss of civic rights, and assignment of a person to penal labor institutions after serving a sentence in prison (up to five years), and many others. In a brief period of liberalization in 1967-68, the first organizations defending the rights of political prisoners was named "K-231".

**Forced Labor Camps** The purpose of the Act 247/1948 (Act on Forced Labor Camps, also Act 86/1950 and 88/1950) was to "educate people about their working duty and to use people for the benefit of the whole" (§1). The Ministry of Interior established 104 labor camps to which were assigned "men of age 18 to 60 who are physically and mentally able but who intentionally avoid work or threaten the construction of the people-democratic order or the economic system, and also persons who facilitate such activity" (§2) and also those who committed a crime or offence which displayed "antagonistic attitude against people's democracy order or against the building of socialism" (Act 231/1948). The decision on the assignment of a person to a labor camp and the length of forced labor (up to 2 years) is made by a three-member committee chosen by a local administration (§3). Around 220,000 individuals passed through the labor camps between 1948 and 1960. Many of those camps were uranium mines in Jáchymov and Příbram regions.<sup>35</sup>

**Duty to Work and Parasitism** The general duty to work was established by Act 175/1948. Act 88/1950 punishes a person who is "intentionally avoiding work or who in any other way impairs the right to work, [...] will be fined up to 100,000 CZK or imprisoned up to 3 months". Act 63/1956 introduces parasitism: "A person who earns his or her living unfairly or avoids a dutiful work, will be imprisoned from three months up to two years."

**Wage Determination and Job Assignment** The system of centrally determined wages was institutionalized by Act 244/1948, allowing the government to determine wages not only in state firms but also in private firms (which were abolished shortly afterwards). Act 27/1951 set up the Central Wage Commission. The government directly assigned people to individual jobs (Act 20/1952, already in 87/1947 Act on National Mobilization of Labor, also Decree 156/1947, 20/1952, 43/1952 and 109/1954). Individuals who finished their education, who lost or were changing jobs, or were released from prison, had a duty to report within three days to a local administration or deliver proof of new employment (acts above, also Acts 60/1961 and 121/1970). A failure to do so was a punishable offense. The Employment Act 65/1965 gave the state and employers the right to transfer any worker to a new job or assignment according to economic needs and the state's interest (§37). As a consequence of the above acts, there was no unemployment in Czechoslovakia between 1948 and 1989.

**Confiscation of Private Pensions** Private pensions and other individual old-age insurance were confiscated by Act 101/1952.

**Social Benefits for Entrepreneurs and Representative of the Former Regime** By the Act 55/1956, "Social Benefit Committees at the county level are entitled to reduce retirement benefits of individuals who:

Article III: ... were former entrepreneurs or employers of other people [...] who participated in the national insurance for fewer than 20 years. Their retirement benefits can be reduced so that it constitutes only 50% of the average contributions to the social insurance [...].<sup>36</sup>

Article IV: ... were representatives of the former political and economic order and their survivors by an amount corresponding to the time period for which they were such representatives [...]."

**Social Benefits of Antagonistic Individuals** "Decree 22/1953 on Adjustment of Pensions and Social Benefits to Individuals Antagonistic to the System of People's Democracy:

§1: Individuals who were sentenced for losing civic rights because they committed a crime that

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<sup>35</sup>See the International Committee against Concentration Camp Regimes (CICRC), and Radosta, P. (1993). *Protikomunistický odboj. Historický nástin*. Prague: EGEM.

<sup>36</sup>This provision put retirement benefits of virtually all self-employed and private employers to the minimum because their contributions to the national insurance started only in 1948 when the system was created. They could not fulfill the required 20 years of social contributions. Wording from amendments by Acts 40/1958 and 41/1958.

revealed their antagonism against the people's democratic order, are not entitled to pension benefits [...] for the period they are deprived of civic rights [...]; during this period, their dependents are entitled to benefits in the amount of one half of the pension of the sentenced individual [...].

§2: Based on a decision of the county administration, retirement pensions, invalidity benefits, and widow pensions will be reduced according to each individual case in consideration up to the minimum social benefit [...] for: a) representatives of the former political and economic order and/or their survivors, b) those who eagerly served the former capitalist order and/or their survivors if these are expressing antagonistic behavior against the people's democratic order.

§3: In individual cases, the regional administration is entitled to completely withdraw retirement benefits if these individuals and their family relatives are deemed to have resources of their own."

This Decree was implemented by Decree 119/1953 of the State Committee for Old-Age Security, which declared that "[...] due to their previous power, these elements receive unjustly high retirement benefits compared to those who had been mercilessly exploited and who now contribute by their work to the building of socialism. This is why the Party and the Government will implement all measures to end these residues of capitalism [...]. We will put an end to hidden and open enemies' parasitism on our old-age security by completely taking away or substantially reducing their pensions". Decisions of a county administration (consisting of three people) could not be appealed against. All people sentenced for crimes against the new system (Act 231/1948) were deprived of civic rights that lasted even after their release from prison until it was revoked by a people's court. The Supreme Court itself ruled that "according to the principles of our people's democratic regime and its social interests, people sentenced for so heavy crimes should also be affected in their social rights and entitlements to which they are otherwise entitled" (SC 56/1953).

**Withdrawal of Benefits** Act 40/1958 was a tool for lowering and withdrawing retirement benefits from those who were sentenced for more than two years "for intentional crimes against the Republic [...], against the economic system [...], against the property in socialist ownership [...], against the socialist property [...], or against the Act for Protection of Peace [...]" (§1.1). A Social Insurance Committee at the county administration can "reduce and in some cases completely withdraw benefits from the social insurance system" (retirement benefits, health insurance, social benefits etc.) to a sentenced individual as well as to survivors and dependents (§1.2).

**Reduction of Benefits** Decree 120/1964 confirmed the power of county authorities to implement Article IV of Acts 55/1956, 40/1958 and 41/1958:

"§1: County Administrations are entitled to reduce retirement benefits it considers excessive for those individuals a) who held important public or economic positions under the former political and economic order [...] and who used their position to uphold the capitalist order [...] and actively contributed to the exploitation and persecution of the working class; b) who, as former entrepreneurs, exploited workers; c) who held important positions in the administration under the former political and economic order [...] and who were active against the working class, enhancing its exploitation and persecution; d) who are survivors of individuals listed above.

§2: The retirement pensions are reduced according to the political and economic importance of these individuals, the length of their activity in such positions, and the harmfulness of their acts against the working class."

These acts and decrees were widely used in practice and were revoked only by the Act 51/1994.

**Emigrants** Emigration was considered a crime whose consequences were a dispossession of property and persecution of close relatives. Returning emigrants faced criminal charges, imprisonment, and other persecution. Pensions of all emigrants who left Czechoslovakia after 1968 were reduced by Decree 161/1969, which declared that time spent working abroad counts towards retirement benefits only if the stay abroad is authorized by the Czechoslovak government.

**Time Spent in Prison** Remuneration for prison work was determined by Decrees. This remuneration was reduced by prisoners' expenses and costs of living in prison, and further reduced by a prison administration (§29 Act 59/1965). Time spent in detention and time in prison when a prisoner was not working were not counted towards the calculation of retirement benefits. Implementation by Decree 30/1971 specifies that time spent in prison is classified in category III (from 1953).

### C.3 Rehabilitation, Compensation, and Property Restitution for Persecuted Individuals and Their Families After 1989

As innocent people were sentenced for criminal acts against the people's republic, the purpose of the amnesty and judicial and extrajudicial rehabilitation acts was to alleviate grievances to such individ-

uals, provide for moral satisfaction and financial compensation for inflicted losses.

**Act On Lawlessness of the Communist Regime and Resistance Against It** This Act 198/1993 declares that “the communist system denied expression of free political will, systematically and permanently violated basic human rights, violated the rule of law in a democratic political system, and used persecution against the population to maintain its power. Among the main persecution activities, the regime a) murdered and imprisoned people in jails and forced labor camps, b) deprived them of property, c) denied them access to jobs, occupations, careers, and education, d) did not allow them to travel, e) assigned them to penitentiary military units for unlimited period of time, [...]. To achieve its goals, the regime used criminal deeds, provided benefits to those who committed these crimes, and collaborated with foreign powers to achieve its goals.”

According to the Act 198/1993 anyone persecuted by the communist regime between 1948 and 1989 has a right to be compensated and legally rehabilitated according to the following acts:

**Judicial Rehabilitation** The Act 119/1990 On Judicial Rehabilitation (implemented by Decree 47/1991 and Act 633/1992) lists all legal provisions the communist regime used to persecute and incriminate people and abolished such sentences *ex lege* and provided financial compensation. §23 compensates each month of detention or imprisonment by 2,500 CZK plus other compensation for health damage, fines, property losses and other costs. §25.1 states that earnings as a contribution to the pension system are calculated as if the individual continued to be employed at the same job and occupation before detention or imprisonment. §25.2 assigns proper categories to work during imprisonment. §25.3 applies provisions of §25.1 and §25.2 also to the time period after a person was released from prison if he or she was denied access to the former occupation or deprived of civic rights. All time spent in detention and prison is to be counted as employment time for the calculation of retirement benefits. §25.7 specifies a monthly payment per each month of detention or imprisonment in the amount a) 20 CZK for work in prison category I and II, b) 15 CZK for other work. This supplement is paid retroactively from 1990. §25.7 and §25.8 assign these annuities also to survivors of persecuted individuals (60% for widows).

The Act on Judicial Rehabilitation 119/1990 provided for *ex lege* judicial rehabilitation for individuals sentenced according to enumerated sections of Acts misused by the Communist regime for political persecution: Act 50/1923 (total of 3,889 cases mostly in 1948-1949), Act 231/1948 (20,961 cases), Act 86/1950 (78,247 cases), Act 140/1961 (89,553 cases), and Act 150/1969 (441 cases).

The time period for filing for rehabilitation was two years. In total, there were 195,672 rehabilitated cases, including 95,247 sentences for emigration from the former Czechoslovakia (two massive waves in the 1950s and 1968-1969). Subtracting the emigration cases, there remain 100,425 sentences rehabilitated for individuals who continued to reside in the former Czechoslovakia.<sup>37</sup>

**Property Restitution** Property restitution to individuals was implemented *ex lege* by Acts 298/1990, 403/1990, 172/1991, 229/1991, 126/1992, and 212/2000, for property and land nationalized between 1948 and 1989. Restitution of property for institutions was implemented by Acts 173/1990 (sport institutions), 298/1990 (religious institutions, church property, religious orders), 172/1992 (municipalities), or 126/1992 (health institutions). Several acts returned the property used by the institutions of the communist regime, namely Act 496/1990 On Restitution of Property of the Communist Party of Czechoslovakia, and Act 497/1990 On Restitution of Property of the Communist Youth Movement of Czechoslovakia.

**Additional Financial Compensation** In addition to Acts on Judicial and Extrajudicial Rehabilitation, several acts compensated groups of individuals that were not included in the main rehabilitation acts by lump-sum payments Act 217/1994 On Financial Compensation to Victims of Nazi Persecution; Act 39/2000 and 357/2005 On Financial Compensation to Members of Czechoslovak Foreign and Allied Armies between 1939 and 1945; Act 261/2001 On Financial Compensation to Members of National Fight for Liberation, Political Prisoners, and Individuals Imprisoned in Military Labor Camps; or Act 172/2002 On Financial Compensation to Individuals Imprisoned in Soviet Gulag Labor Camps or to Camps Established by USSR in Other Countries.

**Prosecution** In 1991, the Czechoslovak government established a Bureau for Investigation and Documentation of the Crimes of Communism (BIDCC) by Act 283/1991. The Bureau has been re-

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<sup>37</sup>Further details can be found in a statistical publication by the Institute of Contemporary History of the Czech Academy of Sciences by Gebauer, F., K. Kaplan, F. Koudelka, and R. Vyhnaček (1993). *Judicial Persecution of a Political Nature in Czechoslovakia 1948-1989: A Statistical Survey*. Prague: Institute for Contemporary History of the Czech Academy of Sciences.

sponsible for collecting evidence and administering prosecution of representatives of the communist regime that violated human rights and/or committed crimes during the politically motivated persecution of individuals between 1948 and 1989. The perpetrators consist of party leaders, secret police agents, policemen, prisoner guards, border guards, and other officials. Overall, there have been 189 prosecutions for crimes committed between 1948 and 1989. In 89 cases the wrongdoers were agents of the secret service (StB). Abuse of authority represents 119 of these cases, while the rest covers a wide range of crimes, including 13 cases of murder and 33 cases of assault and battery. Besides the prosecuted perpetrators of criminal acts, many others, including collaborators of the secret service, were disqualified from public sector employment and political activity by the Lustration Act 451/1991. Personal pensions to individuals supporting the regime were abolished by Act 110/1991. Pension categories were abolished by Act 235/1992.

**Extrajudicial Rehabilitation** Act 87/1991 On Extrajudicial Rehabilitation provided for the alleviation of grievances not related to criminal convictions but for other harms like denied access to education or job losses due to persecution. Individuals who lost their jobs for reasons listed in Act 119/1990 and for reasons listed in Acts 65/1965, 99/1969, 153/1969 (On Public Order), are entitled to return to their former employment positions, and if retired, to pension benefits that correspond to wages and categories of pensions in their lost employment. Those imprisoned (Act 119/1990, 47/1991) are further entitled to pension benefits that correspond to pensions of members of the national resistance (Act 100/1988). All benefits, indexed for inflation and wage differentials, also belong to widow/ers and descendants of persecuted individuals. Compensation of pension benefits was implemented by Decrees 622/2004 and 405/2005 below.

**Pension Supplements to Persecuted Individuals and Their Families** Based on Act 87/1991 On Extrajudicial Rehabilitation provided for alleviation of grievances, the Decree 622/2004 and Decree 405/2005 (Pension Supplement to Partially Compensate Social Injustices Caused by the Communist Regime) compensates individuals who were imprisoned, detained or persecuted between 1948 and 1989 and were rehabilitated according to Act 119/1990, Act 633/1992, or Act 198/1993. Such individuals are entitled to a supplement to their pension in the amount of 50 CZK for each month they were imprisoned or detained. Widows are entitled to 25 CZK for each month, children younger than 18 years at the time of a parent's imprisonment or death are entitled to 20 CZK for each month. These supplements to the regular monthly pension were received after 2005. Finally, Act 357/2005 specifies the compensation for individuals rehabilitated according to Act 119/1990 for monthly compensation at 2,500 CZK (1,250 CZK for survivors and widows).

**Pension Adjustments for Participants in Resistance to Communism** Act 262/2011 On Participants in Resistance and Resistance to Communism defines the concept of resistance to communism and regulates the conditions for adjusting retirement benefits of qualified persons and their survivors. In practice, lowest pensions were increased *ex officio* to a full retirement pension benefits accrued on the date of reaching retirement age, regardless of the fulfillment of the condition of the required number of working years (applies namely to persons in emigration, labor camps, detention, etc., who previously received only partial and minimal pensions).

## D Transitional Justice and Compensation Policies

Transitional justice refers to “formal and informal procedures implemented by a group or institution of accepted legitimacy around the time of a transition out of an oppressive or violent social order, for rendering justice to perpetrators and their collaborators as well as to their victims” (see Elster (2006) for an excellent survey).<sup>38</sup>

While the last century provided many cases of transitional justice, from Western Europe and Japan after World War II, Southern Europe around 1975, Latin America in the 1980s, Eastern Europe after 1989, and Africa from 1979 to 1994, there has been no systematic study of the long-term consequences on victims or wrongdoers themselves or on their children.

### D.1 Theory of Transitional Justice

Compared to the research on remedial affirmative action programs and racial inequality, the existing work on transitional justice remains largely conceptual and theoretical. For the affirmative action studies, see Coate and Loury (1993), Carneiro *et al.* (2005), Heckman (1995), or Fryer (2010).<sup>39</sup> For transitional justice, see Teitel (2006), Lavinia (2009), DeGreiff (2006), or Elster (2006).<sup>40</sup>

From the two main theories, the Development Through Justice theory and the Stability theory, in the former, the economic actors value the punitive and restorative transitional justice mechanisms that demonstrate government stability and respect for the rule of law, including measures for social integration of former victims, see DeGreiff (2006). In this process, transitional justice has to compete for resources with other imminent and important tasks as economic reconstruction and transformation. The alternative Stability theory describes transformation processes where actors are averse to trials and retributions: this approach is characterized by amnesties, truth commissions, or the forgive-and-forget principle in Spain and Latin American countries.<sup>41</sup>

The transition process in the Czech Republic mostly emphasized the Development Through Justice theory, even at the cost of delaying privatization and other market reforms (Elster (2006)). The relative success of the economic transformation in the Czech Republic is an example conforming to findings of that transitional democracies experiencing economic growth are more likely to utilize the relatively expensive Development Through Justice theory.<sup>42</sup> Overall, Acemoglu *et al.* (2019) show that democratizations increase GDP per capita by about 20 percent in the long run.<sup>43</sup> In their literature review, Maqueda and Chen (2025) find that justice institutions play a significant role in economic development, particularly through their impact on economic growth and credit markets, the protection of vulnerable populations, their capacity to deter violence and their influence over people’s trust in institutions.<sup>44</sup> Deseau *et al.* (2025) and Aberra and Chemin (2021) find that better access to justice has a sizeable positive effect on growth, especially in the transition economies.<sup>45</sup>

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<sup>38</sup>Elster, J. (2006). *Retribution and Reparation in the Transition to Democracy*. Cambridge University Press, Cambridge, MA.

<sup>39</sup>Coate, S., and Loury, G. C. (1993). Will Affirmative-Action Policies Eliminate Negative Stereotypes? *American Economic Review* 83(5), 1220-1240. Carneiro, P., Heckman, J., and Masterov, D. (2005). Labor Market Discrimination And Racial Differences In Premarket Factors. *Journal Of Law And Economics* 48, 1-39. Heckman, J. (1995). Lessons From the Bell Curve. *Journal of Political Economy* 103(5), 1091-1120. Fryer, Roland G. (2010). *Racial inequality in the 21st century: The declining significance of discrimination in Handbook of Labor Economics (4)*, 773-823. ed. Ashenfelter, O., and Card, D. Elsevier Science Publishers, Amsterdam.

<sup>40</sup>De Greiff, P. (2006). *The Handbook of Reparations*. Oxford University Press, Oxford, UK. Teitel, R. (2006). *Transitional Justice*. Oxford University Press, Oxford. Lavinia, S. (2009). *Transitional Justice in Eastern Europe and the Former Soviet Union: Reckoning with the Communist Past*. Routledge, London.

<sup>41</sup>Kritz, N. J. (1995). *Transitional Justice*. United States Institute of Peace, Washington, D.C.

<sup>42</sup>Olsen, T., Reiter, A., and Wiebelhaus-Brahm, E. (2011). Taking Stock: Transitional Justice and Market Effects in Latin America. *Journal of Human Rights* 10, 521-543.

<sup>43</sup>Acemoglu, D., Naidu, S., Restrepo, P., and Robinson, J. (2019). Democracy Does Cause Growth. *Journal of Political Economy* 127(1), 47-100.

<sup>44</sup>Ramos-Maqueda, M., and Chen, D. (2025). The Data Revolution in Justice. *World Development* 186.

<sup>45</sup>Deseau, A., Levai, A., and Schmiegelow, M. (2025). Access to Justice and Economic Development: Evidence from an International Panel Dataset. *European Economic Review* 172, 104947. Aberra, A.,

## D.2 Reparations

Posner and Vermeule (2003) define reparations as large-scale governmental transfers to individuals, groups, or institutions, applying backwards-looking justice through rectification of past wrongs committed under a previous legal regime. Reparations as legislative acts appeal to the moral norms held in society at large or as settlements of class action lawsuits.<sup>46</sup> Legislative reparation programs generally provide some combination of restitution, rehabilitation, compensation, access to education, social and health care services, and other steps that also ensure that society as a whole will not allow its citizens to be again victimized and unprotected. Reparations may be directed at individuals or collectives, such as communities, groups, or regions. All reparations have an important symbolic role in building public trust and integrating victims into society. Many countries, such as the former East Germany, implemented the court-based retribution system, where each reparation case had to be adjudicated.

For the rights to these remedies, see The United Nations Basic Principles and Guidelines on the Rights to a Remedy and Reparation for Gross Violations of International Human Rights Law and Serious Violations of International Humanitarian Law, Article 8 of the Universal Declaration of Human Rights, or Article 10 of the American Convention on Human Rights. To redress past injustice, governments have used either ad-hoc schemes of lump-sum payments or a counterfactual method of compensation comparing what would have happened had the injustice not taken place.<sup>47</sup> Government-induced reparations often lead to annuity payments (pension supplements in the Czech Republic, Poland, Hungary, or Chile) and trust funds providing opportunities for self-development and advancement as well as access to health care or education. In Chile, the reparation laws were designed by the National Commission on Truth and Reconciliation and the National Corporation for Reparation and Reconciliation. Similarly to Czech legislation, all crimes were defined in the book, *ex lege*.<sup>48</sup> In other South American countries, the reparation programs were mainly symbolic.<sup>49</sup>

The template for the modern international reparations has been the post-war German and European reparations for Jewish victims of Nazi persecution, unprecedented in their direct support to harmed individuals.<sup>50</sup> In the United States and Canada, class action lawsuits are usually settled in lump-sum cash compensation. The U.S. government also disbursed more than \$1.6 billion in reparations to 82,219 interned Japanese Americans and their heirs as well as settled claims with Native American tribes (1946), victims of radiation exposure (1990), and in the case of Tuskegee study (1997).<sup>51</sup> Other major international compensation programs include the victims of military dictatorships in

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and Chemin, M. (2021). Does Legal Representation Increase Investment? Evidence from a Field Experiment in Kenya. *Journal of Development Economics* 150, 102612.

<sup>46</sup>Posner, E., and Vermeule, A. (2003). Reparations for Slavery and Other Historical Injustices. *Columbia Law Review*, 689-748.

<sup>47</sup>Darity, W., and Frank, D. (2003). The Economics of Reparations. *American Economic Review* 93(2), 326-329.

<sup>48</sup>Compensation programs for persecution victims and their family members were established by the main Reparation Law 19 123 (1992) and defined by the National Commission on Truth and Reconciliation (CNVR, 1990-1991) and the National Corporation for Reparation and Reconciliation (CNRR, 1992-1997). Amended by Law 19 582 (1998), Law 19 881 (2003), Law 19 992 (2004), Law 20 405 (2009). On social benefits, see <https://ips.gob.cl/fichas/beneficios-exonerados-politicos>, and on legislation, <https://vlex.cl/vid/beneficios-exonerados-motivos-politicos-470683998>.

<sup>49</sup>See Beristain, C., Moreno, C. and Herrera, A. (2011). *Contribution of Truth, Justice and Reparation Policies to Latin American Democracies*, The Inter-American Institute for Human Rights. For other programs see the International Center for Transitional Justice, and the European Court of Human Rights.

<sup>50</sup>These compensation payments amounted to more than DM 100 billion up to the year 2000, payable to Holocaust survivors and their heirs, both individually and through the state of Israel, for loss of life or health, forced and slave labor, deportation, imprisonment, maltreatment and degradation, or property losses (including income, pensions, savings, or art). For a summary, see <http://www.yadvashem.org>. These reparation schemes far outstrip anything that has been done for the more numerous victims of communism in the Soviet Union, China, and Eastern Europe.

<sup>51</sup>See the Civil Liberties Act of 1988, [www.bia.gov](http://www.bia.gov) of the Bureau of Indian Affairs at the U.S. Department of Interior. While the compensation of slavery in the United States is considered unfeasible on many grounds, discrimination based on the Jim Crow practices of restrictions on schooling, housing, medical services, or labor market discrimination seems more plausible to redress, see Darity and Frank (2003) above.

Latin America (Chile 1992, Argentina 1983), Korean comfort women by the Japanese government in the 1990s, and the forced assimilation of Native Canadians.

In the 21st century, many past illegal practices and human rights violations have been recognized and compensated. The U.S. government has negotiated a series of new settlements with Native American tribes.<sup>52</sup> After the Canadian Constitution was amended to confirm Aboriginal rights, more than 350 class action suits have been settled by the government.<sup>53</sup>

There are still several policies practiced in most countries during the 20th century that are currently open for wide-ranging settlements. The first is forced sterilization, recognized now as a crime against humanity within the jurisdiction of the International Criminal Court. By the end of World War II, over 400,000 individuals were sterilized under the Nazi regime.<sup>54</sup> Through the 1970s, more than 60,000 Americans were forcibly sterilized.<sup>55</sup> In many countries, victims of eugenic legislation have already been compensated, while in others, including the United States, the process has recently started.<sup>56</sup> In Peru, the Minister of Health revealed that just between 1995 and 2000, around 330,000 women were sterilized.<sup>57</sup> The official sterilization programs in India and China concern millions of individuals. The second case is the policy of forced adoptions of children of single or young mothers. The Australian government is facing compensation claims from the Stolen Generations victims of forced removal of 25,000 Aboriginal and 250,000 non-Indigenous children from their young unmarried mothers (from the 1930s to 1982). Similarly, during the Baby Scoop Era that lasted from the 1940s till the early 1970s, it is estimated that up to 4 million mothers in the United States had newborns taken from them in the hospital for adoption purposes. Approximately 80 percent of infants born to single mothers were taken for adoption in the late 1960s. Similar practices took place in many countries around the world, namely the United Kingdom, New Zealand, Ireland, Sweden, and Canada.<sup>58</sup>

Many countries are in the process of opening historical black boxes. In Spain, the Historical Memory Law of 2007 recognized the victims of political, religious, and ideological violence on both sides of the Spanish Civil War and of the Franco regime. For the first time, compensation schemes are now available to victims of colonial powers. In 2012, Kenyans were given the right to sue the British government for abuses by colonial officials.<sup>59</sup> Since the end of the Apartheid Regime, only 1 percent of restitution claims in the Land Redistribution Program have been resolved.<sup>60</sup> The Baltic countries and Poland are currently demanding compensation from Russia for around 1.5 million

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<sup>52</sup>In addition to the \$554 million settlement with the Navajo Nation in 2014, the U.S. administration has negotiated similar deals amounting to \$2.61 billion with 80 Native American tribes for exploitation of tribal trust resources. In 2010, the Department of the Interior settled for \$3.4 billion with a class action lawsuit representing 500,000 American Indians for mismanagement of Individual Indian Money accounts, and a \$760 million settlement was reached with Native American farmers for discrimination in federal farm loan processing by the U.S. Department of Agriculture. Further, in 2012, the United States announced settlements with 41 tribes for about \$1 billion. See [www.bia.gov](http://www.bia.gov) of the Bureau of Indian Affairs at the U.S. Department of the Interior.

<sup>53</sup>Out of more than 750 claims, the biggest case was the Indian Residential Schools Settlement Agreement of 2007 for \$C1.9 billion to 80,000 Native Canadians from the government-financed forced school system. See Department of Aboriginal Affairs and Northern Development (AAND) at [www.aadnc-aandc.gc.ca](http://www.aadnc-aandc.gc.ca).

<sup>54</sup>Bashford, A., and Levine, P. (2010). *The Oxford Handbook of the History of Eugenics*, Oxford University Press, Oxford.

<sup>55</sup>Stern, A. (2005). Sterilized in the Name of Public Health: Race, Immigration, and Reproductive Control in Modern California. *American Journal of Public Health* 95(7), 1128-1145.

<sup>56</sup>The first U.S. state that will compensate these wrongs is North Carolina in 2014. In Alberta, Canada, the first victims of the Sexual Sterilization Act were already awarded C\$142 million in damages.

<sup>57</sup>Population Research Institute (2002). Final Report Concerning Voluntary Surgical Contraception During the Years 1990-2000. *Population Research Institute Review* 12(4).

<sup>58</sup>Cuthbert, D., and Quartly, M. (2013). Forced child removal and the politics of national apologies in Australia. *The American Indian Quarterly* 37(1), pp. 178-202, and Donohue, J., and Levitt, S. (2001). The impact of legalized abortion on crime. *Quarterly Journal of Economics* 116(2), pp. 379-420. Also see [www.nsd.org.au](http://www.nsd.org.au).

<sup>59</sup>The survivors of more than 70,000 Mau Mau interned without trial in concentration camps during the independence struggle in the 1950s sued the British government and, in 2013, Great Britain agreed to pay compensation. Similar abuses occurred during the national liberation struggles in Malaya, Aden, Cyprus, and Northern Ireland. For Kenya, see <http://www.khrc.or.ke>.

<sup>60</sup>Atuahene, B. (2011). South Africa's Land Reform Crisis: Eliminating the Legacy of Apartheid.

people deported to Soviet Gulags. Unfortunately, the current Russian invasion of Ukraine and war crimes committed there will lead to future trials and, hopefully, compensation settlements. Both sides in the Israeli-Palestinian conflict have agreed in principle on a compensation program for refugees, but its implementation is stalled on the issue of the right of return.

On their paths to democracy, other countries will face similar class action lawsuits or demands for reparations. For example, at the 18th Communist Party Congress in 2013, Chinese officials announced a plan to abolish the Re-education Through Labor system of detention for individuals who are not criminals but had committed only minor offences. Laogai (2008) estimates the number of these prisoners at 500,000-2 million individuals in more than 1,000 detention camps. These numbers exclude political prisoners as well as the population of the penal labor camps.<sup>61</sup> If and when transitional justice starts in China, compensation claims of persecuted individuals and their descendants might include millions of people. The total death toll of persecution in China since 1949 is estimated at around 60 million.<sup>62</sup>

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*Foreign Affairs* 90, pp. 121-129.

<sup>61</sup>Laogai (2008). *Laogai Handbook*. The Laogai Research Foundation, Washington, DC.

<sup>62</sup>Courtois, S., Werth, N., Panne, J., Paczkowski, A., Bartosek, K., and Margolin, J. (1999). *The Black Book of Communism: Crimes, Terror, Repression*. Harvard University Press. Cambridge, MA.