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State Coercion and Control Aversion: 
An Internet Study in East and West Germany

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Abstract

Do politico-economic systems influence how control affects motivation? We hypothesize that control aversion, meaning crowding-out of intrinsic motivation due to enforcement, has evolved less under the coercive regime of East Germany than under the liberal regime of West Germany. We test this hypothesis in a large-scale internet study with subjects of different generations. The core of our study is a repeated principal-agent game where the principal can control the agent by implementing a minimal effort requirement before the agent chooses an effort costly to her but beneficial to the principal. We find that control aversion is largely stronger among West than among East Germans. The differences are significant and systematic for older Germans of the working population, never for younger Germans of the working population, and only in specific cases for students. Our findings suggest that for East Germans who have been socialized under a coercive regime, the experience of a liberal regime does not make them abandon completely the control-related preferences they have acquired earlier. Differences in reactions to control are vanishing in younger generations who essentially grew up in reunified Germany. More control aversion in the West is driven by more frequent control averse choices, while the strength of reactions to control is similar in both parts of Germany. Surprisingly, intrinsic motivation in the absence of control is very similar among East and West Germans. Our data suggest that control preferences are affected by the nature of the politico-economic system. However, this effect is only short-lived.

Keywords: culture, institutions, intrinsic motivation, online experiment, control aversion, hidden costs of control, hidden benefits of abstaining from control

JEL Classification: C81 C90 C91 C93 D02 M52

1 Introduction

Does the nature of the politico-economic system influence how control or its absence affect motivation? If so, do control-related preferences persist or change when institutions change? To

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answer these questions, we study reactions to control among East and West Germans of younger and older cohorts. We hypothesize that control aversion, meaning crowding-out of intrinsic motivation, has evolved less under the coercive regime of East Germany than under the liberal regime of West Germany, and we test this hypothesis in a large-scale online study.

So far, systematic evidence on whether institutions affect control-related preferences is missing. Falk and Kosfeld (2006) find that the majority of their student subjects in Zurich (Switzerland) is control averse and motivation crowding-out effects are substantial enough to significantly undermine the effectiveness of control in anonymous laboratory interactions. Thus, principals suffer hidden costs of control because these agents reduce their work motivation when facing enforcement. In an earlier study, we repeated the main treatments of this experiment with students in Jena, East Germany and Trento, Italy (Ziegelmeyer et al., 2012). In both locations, control aversion is also observed but rare and benefits of control dominate hidden costs. Recently, Burdin et al. (2018) replicated the main treatment of Falk and Kosfeld’s study in the U.S. Consistent with our earlier findings, hidden costs of control do not outweigh the benefits in their sample. Moreover, with the help of a new treatment, they identify that their agents do not punish control but reward abstaining from control. Thus, they observe hidden benefits of abstaining from control. These inconsistent findings suggest that institutions might affect reactions to control and its absence. Our study provides a more systematic approach to better understand the relationship between institutions and control-related preferences.

Reunified Germany offers a valuable opportunity to study the impact of politico-economic systems on control-related preferences as both parts of Germany are similar with respect to their basic culture but they have experienced different degrees of political control in the past. Making use of Germany’s ‘naturalistic’ quasi-experiment allows us to claim a causal link and to isolate the impact of a politico-economic system from other variables. Before 1945, East and West Germany experienced the same history and politico-economic systems. From 1945 to 1990, East Germany was ruled by a coercive and West Germany by a liberal regime. Since 1990, the liberal regime of West Germany has been ruling both parts. Our East German participants born before 1980 were quasi ‘randomly assigned’ to the ‘treatment group’ of a coercive regime, while younger East Germans born in the ‘80s or later were assigned to the ‘treatment group’ of a liberal regime but raised by a generation who experienced a coercive regime. All West Germans were ‘randomly assigned’ to the ‘control group’ living under a liberal regime. Comparing younger and older generations in East and West Germany allows us to separate the direct impact of politico-economic systems and vertical or oblique transmission of this impact from mere generation effects.

Our study adds empirical support to the literature on endogenous preference formation (e.g., Bowles, 1998; Fehr and Hoff, 2011). Giavazzi et al. (forthc.) analyze the evolution of a wide range of cultural attitudes of European immigrants to the US. They observe both slow- and fast-changing values, though control-related preferences are not in the scope of their study. However, understanding how institutions affect the interaction between control and motivation is not only interesting for fundamental research but it is also of applied value. Firms who operate across countries and impose the same management strategy everywhere might face different reactions to employees’ empowerment or managerial control (Chua and Iyengar, 2006). Anticipating how their citizens respond to enforcement is also crucial for governments when designing incentives for desirable citizens’ behavior like paying taxes, protecting the environment or engaging in social activities. Reviewing the literature on incentives and social preferences, Bowles and Polania-Reyes (2012) conclude that the separability assumption common to many economic models cannot be sustained. Instead, incentives and social preferences may be either substitutes or complements, which has important implications for institutions to well design incentives like fines or subsidies such that they complement with social preferences and minimize crowding out.

Guiso et al. (2006) show that culture directly shapes beliefs and preferences, which in turn affect economic outcomes. Accordingly, different reactions to (the absence of) control in East
and West might partly explain the still different economic outcomes in the two parts of Germany. For example, East Germany’s unemployment rate is still about one third higher than the unemployment rate of West Germany whereas the GDP per capita in the East is only about two thirds of the GDP per capita in the West (The Economist, 2015). Fuchs-Schündeln and Masella (2016) show that socialist education affects longer-term labor market outcomes for men. They identify that an educational system discouraging individual initiative leads to lower participation in the labor market and lower effort in the workplace. Burda and Severgnini (2018) investigate why labor productivity in East Germany continues to lag behind West Germany by about 20 percent. This is particularly interesting as some Eastern regions were among the most productive in Germany before the Second World War. The authors find a combination of little startup activity, large firm size and low concentration of managers in the East to explain the puzzle. Making use of variations in Stasi informer density within East Germany, Lichter et al. (2019) study long-run effects of government surveillance on civic capital and economic performance. A higher spying density had detrimental effects on interpersonal and institutional trust which persist in post-reunification Germany. With respect to economic performance, they find substantial and long-lasting negative effects of Stasi surveillance on income, employment rates, and self-employment. In a very related study, Jacob and Tyrell (2010) show that higher Stasi informer density is associated with lower electoral turnout, less organizational involvement, and less organ donations within East Germany. Such economic outcomes might potentially originate from control-related preferences, including components like intrinsic motivation in the absence of control or reactions to perceived distrust.

This study is organized in two experiments. Our workhorse is a principal-agent game where the principal can control the agent by imposing either a low or a medium effort level before the agent chooses an effort costly to her but beneficial to the principal. Our principal-agent game is a straightforward extension of the laboratory game used by Falk and Kosfeld (2006) in their main treatments as detailed in Schmelz and Ziegelmeyer (2019). In our main experiment, we investigate the influence of state coercion on control-related preferences with the help of a large sample of 721 East and West Germans from the working population. Moreover, we conduct a second experiment which serves two purposes. First, it is a robustness check on the (in)stability of the impact of state coercion on control aversion, conducted with 386 students from two East German and two West German locations which are matched based on a series of socio-economic attributes. Second, it follows methodological aims and tests whether reactions to control are sensitive to two key procedural aspects of our main experiment, namely the incentive scheme (paying few instead of all participants) and the scale of interactions (national instead of local).

Our main results provide evidence on the endogenous formation of control-related preferences. Overall, control aversion is stronger among West Germans than among East Germans. Analyzing younger and older cohorts separately reveals that East-West differences in control aversion converge over generations as the difference in control aversion between East and West is significant only for older Germans (born before 1980) but not for the younger ones.

Looking at the mechanism, to our surprise, we do not find differences in intrinsic motivation between East and West as effort in the absence of control is very similar in both parts of Germany. However, reciprocal reactions to control differ in East and West. Concerning the nature of the reciprocal mechanism, our data suggest that West Germans punish control more than East Germans. Overall, we mainly find support for control aversion (instead of rewarding the absence of control). Accordingly, the effectiveness of control is undermined by the presence of hidden costs of control (instead of hidden benefits of abstaining from control) which are stronger in the West than in the East. The difference between (older) East and West Germans is driven by more frequent control averse reactions in the West, while the strength of control averse reactions does not differ in the two parts of Germany. Finally, we study the impact of numerous additional explanatory factors (experimental variables, demographics other than regime experience, control-related attitudes, job characteristics) on control aversion. Our main
results are robust to the inclusion of these alternative explanatory factors. In particular, none of the demographics or work-related variables affects control aversion significantly.

Our finding that the influence of state coercion on control aversion is short-lived is robust to the subject pool, as shown by our second experiment. Moreover, comparing our methodological treatments reveals that neither the scale of interactions nor the payment scheme affect agents’ or principals’ choices or beliefs in a meaningful way.

The remainder of the paper proceeds as follows. Section 2 summarizes the related literature on institutions and preferences. Section 3 discusses state coercion in East and West Germany and derives our hypotheses. Empirical tests on these hypotheses are provided in Section 4, which presents the main experiment of this study relying on non-student East and West Germans with varying regime experience. Section 5 provides an additional experiment on student samples in East and West Germany, addressing the robustness of our findings and some methodological aspects. Finally, Section 6 concludes.

2 Related literature on institutions and preferences

There is by now encompassing evidence that institutions affect cultural beliefs and values, and that institutional differences play a decisive role in the prevalence of various norms (e.g., Guiso et al., 2006; Henrich et al., 2005; Gächter et al., 2010; Nunn and Wantchekon, 2011; Gächter and Schulz, 2016; Lowes et al., 2017). Instead of deeply rooted culture, we focus on the short-term impact of politico-economic systems. There is evidence that preferences can change over a rather short time period (e.g., Guiso et al., 2008; Fernandez, 2013). Acemoglu and Jackson (2015) show theoretically that social norms of cooperation or trust may change quickly following salient events which affect agents’ expectations.

Giavazzi et al. (forthc.) investigate the speed of evolution of a wide range of cultural attitudes for different generations of European immigrants to the US. They review studies where values and beliefs change slowly, e.g. Alesina et al. (2013); Guiso et al. (2006, 2008); or Tabellini (2008). They also review studies where cultural attitudes can change rather quickly in response to changes in institutions, like Alesina and Fuchs-Schündeln (2007); Bowles (1998); Fernandez (2011); or Giuliano and Spilimbergo (2014). On the side of persistence, Giavazzi et al. identify family and moral values, general political views, and deep religious values. Faster convergence is observed for attitudes towards cooperation and trustworthiness as well as children’s independence. The distinction between slow- and fast-changing values is explained theoretically by transaction gains. Economic benefits are large for fast-changing values and small for slow-changing values.

To explain the numerous examples on both sides of cultural persistence and change, Giuliano and Nunn (2017) identify the (in)stability of a society’s environment across generations as a powerful predictor for the willingness to adopt new customs and beliefs rather than holding on to traditions. The more similar the environment across generations, the more likely it is that the traditions of the previous generation are useful for the current generation. Ancestors who experienced stable environments place greater importance in maintaining tradition. In a very unstable environment where the setting of each generation changes, the customs and beliefs of the previous generation are unlikely to be relevant for the current generation. These societies are more willing to adopt new practices and beliefs.

In their review on the relationship between culture and institutions, Alesina and Giuliano (2015) cite conclusive evidence that people internalize behavior that emerges from specific circumstances like institutional shocks. They discuss the impact of exogenous institutional changes on individual attitudes and report mixed evidence: while earlier surveys found that attitudes, values and beliefs hardly changed as a result of communism (Roland, 2004; Shiller et al., 1992), Alesina and Fuchs-Schündeln (2007) show that experiencing an intrusive government strongly affects beliefs and preferences. Concretely, East Germans state stronger preferences for govern-
ment intervention in private domains than West Germans, and these preferences are predicted to require one or two generations to converge. Rainer and Siedler (2009) investigate how attitudes towards social and institutional trust are shaped by the political regime. East Germans still state higher levels of social distrust than West Germans, while institutional trust converges. Sack (2017) documents differences in democratic value orientations between East and West Germans. While East Germans favor a socialist democratic model characterized by the fundamental principle of equality, West Germans favor a liberal model where individual freedom has primacy over distributive justice. Differences in democratic value orientations are converging for the younger generation. Finally, Jacob and Tyrell (2010) as well as Lichter et al. (2019) show that social and economic costs of surveillance in East Germany are large and persistent.

Controlled experimental studies comparing behavior of East and West Germans are rare. Weimann and colleagues find that East-West differences in solidarity persist among students. Ockenfels and Weimann (1999) document that 5 years after reunification, East German students were less cooperative in anonymous interactions than their peers in the West, and this difference still persists 20 years after reunification (Brosig-Koch et al., 2011). Ariely et al. (2015) investigate the impact of socio-political background on honesty. They conducted an experiment with the general population, namely people who were queuing at Berlin citizen centers. Cheating was observed in both samples, and East Germans cheated more than West Germans. The longer people were exposed to socialism, the more likely they cheated. On the other hand, they did not observe differences between East and West Germans in prosocial behavior. Kim et al. (2017) make use of divided Korea to study the effect of institutions on social preferences. While North Koreans have experienced a socialist economy and Communist dictatorship, South Koreans have been living in a market economy and democracy. The study compares behavior in dictator and trust games between refugees from North Korea (students and non-students) with South Korean students. North Koreans are less self-interested than South Koreans and differences in distributional preferences do not change considerably within two years, while trust and trustworthiness does not differ in their samples. Thus, experimental evidence on how liberal versus coercive institutions affect behavior is mixed.

Our paper provides the first evidence on the (in)stability of control-related preferences and therefore makes a novel contribution to the literature on cultural persistence and change. Control aversion has entered the economic literature only recently, though it is of high relevance for economists as it challenges a core assumption of economics, namely that people respond positively to incentives. Prior to our study, different shares of control averse people have been documented in a few studies conducted in laboratories of different countries. In an online experiment with East and West Germans of different generations, we investigate whether state coercion affects the interplay between control and motivation, as well as the stability of this potential effect when institutions change.

3 State coercion and reactions to control

In line with the literature presented in the previous section, we conjecture that between 1945 and 1990 less individuals acquired control-averse preferences under the coercive regime of East Germany than under the liberal regime of West Germany. This conjecture partly derives from the postulate that major effects of the economic and political organization on preferences operate through cultural transmission. Accordingly, preferences will be treated as cultural traits or learned reasons for behavior. In line with Boyd and Richerson (1985)’s definition, we think of culture as a pool of “information”, mainly stored in the brains of the members of a society. This along with beliefs, the set of feasible actions and the associated outcomes, preferences therefore provide an account of individual action. This broad interpretation contrasts with the revealed-preference approach which views a preference ordering as nothing more than a complete description of consistent behavior. "Culture is information capable of affecting individuals\' behavior that they acquire from other members of their species by teaching, imitation, and other forms of social transmission" (Boyd and Richerson, 1985, p. 6).
information gets transmitted from one individual to another by various social learning processes. Accordingly, reasons for behavior that are acquired or modified by social learning, like beliefs and values, are elements of the pool of information (i.e. cultural traits).

First, we give evidence that East and West Germany developed into rather different forms of society due to differences in economic and political structures. East Germany was a coercive regime whereas West Germany was a liberal regime. Next, we derive two research hypotheses from the outlined evidence.

3.1 State coercion in East and West Germany from 1945 to 1989

Germany was separated in 1945 at the end of World War II. The borders between East and West Germany were the result of bargaining between the Allies and the position of the occupying forces at the end of the hostilities. In 1949, the Federal Republic of Germany (FRG) and the German Democratic Republic (GDR) were officially founded. We illustrate below differences in political and economic organization between the two Germanies, and we conjecture how they might have affected reactions to control. Unless otherwise referenced, the summary of the two systems is based on Fulbrook (2008).

The coercive regime of East Germany

In East Germany, coercion was ubiquitous. The East German regime created a vast apparatus of surveillance and repression unprecedented in scale and depth. The dreaded State Security Police Stasi was by far the most extensive state security service in history with more spies than any other totalitarian regime. When the regime collapsed, the Stasi employed more than 90,000 full-time officers plus a network of more than 170,000 civilian unofficial informers and part-time snoopers on a total population of less than 17 million people, not to mention the network outside East Germany. Restrictions on travel, publications, or assembly and denial of higher education and positions were just a normal part of everyday life. More intrusive techniques included shadowing suspects with bugs or cameras and through telephone, radio and postal surveillance. Torture and intimidation were used to mute dissent, and even death sentences were imposed until 1987. The failure to denounce a fellow citizen was a crime punishable by up to five years imprisonment. Accordingly, people who did not accept control suffered tremendous costs (for more details see Jacob and Tyrell, 2010, and references therein).

Apart from altruistic values within the community of solidarity, conformity and obedience were instilled. East Germany was grounded in a political theory committed to the eradication of class differences, private ownership of the means of production was to a major extent abolished, and relatively few people had high incomes. The East German educational ethos was operating to produce obedient subjects rather than participatory citizens. Educating children to conform with their teachers’ opinion was part of the political program. Pupils’ performance was not only publicly evaluated in front of the whole class, but also outside the class context, including meetings of state-organized youth organizations and even their parents’ workplace, making them responsible for their childrens’ potential failure or disobedience. Teaching materials and curricula were highly standardized and teachers were required to strictly adhere to them and not to acknowledge any specific needs of individual students (see Oettingen et al., 1994, and the references therein). Political conformity was a prerequisite for career advancement and upward social mobility. Even in areas where technical expertise mattered, such as engineering, medicine, or science, citizens had to conform passively. Those who in any way stepped out of line found it exceedingly difficult to gain entrance to the university course or training of their choice, however brilliant their performance at school might have been. Consequently, East German youth gained little experience of genuine debate. Employees in East Germany experienced little control over their work and low complexity in their jobs. Supervision was tight and management responses to initiative were typically negative (Frese et al., 1996). Though East German workers did not
need to fear unemployment, they also had no right to strike. Workers in East German factories appeared to feel dissatisfied with, and powerless in relation to, their work. In a similar vein, basic foodstuffs were extremely cheap, being subsidized, but there was little choice. Many citizens grumbled about some aspects of the system, while agreeing with others, and learned over time to ‘play by the rule’. Instances where citizens were risking to suffer heavy punishment in order to express their dislike of control and fight for freedom were concealed to a great extent.

**The liberal regime of West Germany**

West Germany created a pluralist democracy, where citizens were free to influence the democratic process not only by voting independently, but also by forming pressure groups. In this pluralistic political system, various ideologies and belief-systems could coexist peacefully. Moreover, the material success of West German capitalism created very comfortable living conditions for the large majority. These circumstances offered considerably less reason for dissatisfaction than the political and economic conditions in East Germany, and dissent was largely captured by the political pluralism.

At the same time, values of freedom, autonomy and individualism have been promoted in West Germany. Pupils were encouraged to develop independent points of view, intellectual curiosity and the skill of debating. The educational philosophy avoided influencing children to adopt an absolute truth or directing their personalities into any state-defined value system. Notions of privacy and data protection emerged, performance feedback in front of the class was less relevant, and students' performance records were kept in the schools. Teaching strategies were much less standardized and teachers were allowed to respect the individual needs of their students (Oettingen et al., 1994). In the work context, there have been attempts to increase job discretion and to enhance employees' control and responsibility for their jobs (Frese et al., 1996). The society was based explicitly on the principle of individual achievement, and educational qualifications served as credentials legitimizing inequality in social status. It has been possible for citizens to debate and argue in the interests of improving the state and society in which they lived. Thus, protest movements like the German student movement of 1968 as well as industrial strikes organized by labor unions were quite common in West Germany.

After nearly half a century of division, Germans in East and West had developed very different lifestyles, expectations and patterns of behavior. In particular, the politico-economic systems of the two Germanies were obviously very different in the degrees to which they tolerated the expression of dissenting views. We conjecture that the coercive regime in East Germany had undermined individuals' sense of autonomy and eventually limited the acquisition of control-averse preferences among East Germans as compared to West Germans.

### 3.2 Research hypotheses

The two Germanies celebrated their reunification on October 3, 1990. Germany has been a unified country for 30 years with common administrative, education, legal and regulatory systems (more than 20 years at the time of data collection in 2011). Though some economic indicators show that there are still differences between the two formerly separated parts of Germany, there is no doubt that East and West Germans currently experience a politico-economic environment by far more similar than the ones they respectively experienced between 1945 and 1990. The German reunification therefore offers a unique opportunity to study the effects of the economic and institutional environment on reactions towards control and to investigate how strongly control aversion has been shaped by cultural transmission.

Below we present our two hypotheses which are closely linked in the sense that Hypothesis 2 is a refinement of Hypothesis 1. We first discuss reciprocal reactions to control (abstinence) among East and West Germans in general (Hypothesis 1), before we conjecture how younger
and older generations of East and West Germans might differ in their reactions to (abstaining from) control (Hypothesis 2).

3.2.1 Hypothesis 1: Reactions to control (abstinence) among East and West Germans

Assuming that social learning is essential for the formation of preferences towards control, it is conceivable that negative reactions to control have been less prevalent in East than in West Germany at the beginning of the 1990s. Moreover, learned preferences are expected to have explanatory power in situations distinct from the economic and institutional environment which accounts for their adoption (for example, Alesina and Fuchs-Schündeln, 2007; Yamagishi et al., 2008). Our first conjecture is therefore that control aversion is less prevalent among East than West Germans.

We base our first hypothesis on the recent empirical literature. Control aversion is characterized by two components, *sufficient intrinsic motivation* and *reduced motivation under enforcement (crowding-out)*. Most control averse subjects report a negative reaction to perceived distrust or to a restriction of their freedom of choice (Falk and Kosfeld, 2006). This interpretation is corroborated by Rudorf et al. (2018b) who employ a design based on the current study. Control averse subjects perceive the restriction of their freedom of choice as a signal of distrust in their intrinsic motivation to choose a generous and fair allocation, and reduced effort under enforcement is accompanied by the motivation to restore one’s freedom of choice. Let us discuss the former situation in East and West Germany along those lines. East Germans were used to limited freedom of choice as they faced much more control and restrictions in their daily life than West Germans (Fulbrook, 2008; Jacob and Tyrell, 2010; Lichter et al., 2019). Moreover, the vast network of unofficial collaborators nurtured ubiquitous uncertainty about being spied on and created a latent atmosphere of distrust outside the family (Gieseke, 2014). At the same time, following from the enduring shortage of goods, people were mutually dependent since economic exchange took place in closed networks based on reciprocity.

First, what could be the implications for *intrinsic motivation* when interacting with strangers in our experimental environment? According to Tabellini (2008), the scope of cooperation depends on the quality of institutions. In low-quality institutions where economic interactions in local networks are important, morality is limited to close relatives and friends and people do not cooperate with strangers. People in high-quality institutions with well-functioning legal systems acquire generalized morality, which applies generally towards everyone. Consistent with these considerations, Ockenfels and Weimann (1999) find less solidarity among East Germans in anonymous experimental interactions compared to West Germans. In the context of work, Frese et al. (1996) document lower initiative among East compared to West Germans. More generally, workers in historically communist countries value intrinsic aspects of a job (i.e., the opportunity to achieve something or to use initiative) less than workers in other countries (Warr, 2008). Taken this evidence together, we expect intrinsic motivation in our anonymous experimental setup to be lower among East compared to West Germans.

Second, how do the different institutions affect *crowding-out*, driven by negative reactions to distrust or restricted autonomy? Heineck and Süssmuth (2013) show, based on survey questions, that East Germans state less trust than West Germans. Lichter et al. (2019) study the long-term costs of surveillance within East Germany, taking variations of the spy density into account. Higher levels of former surveillance resulted in lower levels of social capital (interpersonal and institutional trust) in the Eastern part of post-reunification Germany. East Germans who have been used to a culture of distrust might also react less negatively to experiencing distrust. Related to autonomy, Lichter et al. (2019) show that a higher spy density caused lower self-employment rates after reunification (between 1990 and 2010), and their data suggest that adverse effects of the regime still persist. Similarly, Bauernschuster et al. (2012) derive from survey data that East Germans are less self-reliant than West Germans. Accordingly, East Ger-
mans seem to value autonomy less and in turn, they might react less negatively to experiencing
restricted freedom of choice compared to West Germans.

As mentioned in the introduction, Burdin et al. (2018) provide experimental evidence con-
tradicting Falk and Kosfeld (2006)’s interpretation that agents react to control with negative
reciprocity, which generates hidden costs of control. Their data suggest that intrinsically mo-
tivated agents reward the principals who decide not to control with greater effort, rather than
punishing those who control with lower effort. Thus, they argue that agents’ behavior should
be interpreted in terms of positive reciprocity, resulting in hidden benefits of abstaining from
control. Following this interpretation, we would expect more positive reciprocity towards ab-
staining from control among West Germans than among East Germans, based on the same
empirical evidence as discussed above in the context of negative reciprocity. Following Tabellini
(2008) and Ockenfels and Weimann (1999), positive reciprocity towards strangers is likely to be
more common among West Germans than among East Germans. Moreover, as East Germans
apparently have not developed such a high need for autonomy (Bauernschuster et al., 2012;
Lichter et al., 2019), they might be less inclined than West Germans to reward the absence of
control with higher motivation. Overall, we believe that whether agents’ behavior is mainly
driven by positive or negative reciprocity might be heterogeneous and vary in different samples.

In sum, we expect hidden effects of control (abstinence) to be weaker among East Germans
than among West Germans. We conjecture that this difference is driven by less intrinsic moti-
vation as well as less negative reciprocity to control or less positive reciprocity to the absence
of control in East Germany.

**Hypothesis 1**: Negative reciprocity to control (or positive reciprocity to control abstinence) is
weaker among East Germans than among West Germans.

### 3.2.2 Hypothesis 2: Reactions to control (abstinence) among younger and older
generations of East and West Germans

Given the process of cultural transmission outlined above, it seems however sensible to refine
our first hypothesis. On the one hand, the impact of reunification on the motivations of East
Germans who grew up under the oppressive regime is likely to be rather modest. Those el-
der generations of East Germans have been socialized under a coercive regime as children and
adolescents, and the experience of a liberal regime in their adulthood is unlikely to make them
abandon completely the preferences they acquired in early life. On the other hand, East Ger-
mans who essentially grew up in the unified Germany have been socialized under a liberal regime
with purposeful socialization actions likely to ingrain in them a sense of autonomy. Still, due
to social imitation, even younger generations of non-migrant East Germans might exhibit less
control aversion than non-migrant West Germans of the same age. All in all, our second conjec-
ture is that differences in reciprocity to control (abstinence) between East and West Germans
are stronger for the older than for the younger generations.

Again, we corroborate our second hypothesis based on the literature. Giavazzi et al. (forthc.)
investigate the speed of evolution of a wide range of cultural attitudes for different generations of
European immigrants to the US. On the side of persistence, Giavazzi et al. identify family and
moral values, general political views, and deep religious values. Faster convergence is observed
for attitudes towards cooperation and trustworthiness as well as children’s independence. The
distinction between slow- and fast-changing values is explained theoretically by transaction gains.

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3Rudorf et al. (2018a) provide neuropsychological evidence that the heterogeneity in control-averse behavior
is reflected in systematic differences of the stable functional brain organization, assessed by the intrinsic neural
connectivity at rest. They identify a neural trait underlying control-averse behavior, that is, an objective, task-
independent neural measurement that is stable across time and capable of differentiating between individuals,
similar to a neural fingerprint. According to this finding, it is unlikely that older East Germans completely
change their control preferences under the new environment.
If economic benefits are high, values change rather quickly while they change slowly if economic benefits are small. Applied to our setting, autonomy and independence are important qualities to succeed in liberal Germany. Moreover, economic interactions are largely anonymous and based on trust and trustworthiness. Thus, there are strong incentives to adopt these attitudes. In addition, Giavazzi et al. observe that the persistence of immigrants’ values depends on the country of origin. They identify three crucial moderators: the strength of family ties, language proximity, and residential segregation. Germany belongs to the countries of fast convergence. One reason is that the family is a rather weak institution, favoring more oblique and less vertical socialization. Switching costs in terms of language are relatively low for immigrants to the US and absent for East and West Germans within reunited Germany. On the other hand, residential segregation is rather strong in East and West Germany, which might slow down the convergence of behavior in our setting.\footnote{After Germany’s reunification, between 1991 and 2017, about 3.7 million people moved from East to West Germany (nearly a quarter of East Germany’s original population), while about 2.5 millions moved from West to East Germany (about 4 percent of West Germany’s original population). Note that those numbers also comprise return migrations (Bangel et al., 2019). Thus, even though East Germany has lost a substantial share of its population, residential segregation is rather strong in the sense that East (West) Germans represent the clear majority in the Eastern (Western) part of Germany.}

Giavazzi and Nunn (2017) argue that following the customs and beliefs of the previous generation is more beneficial in stable environments, while in unstable environments, the behavior of one’s ancestors is less informative of the best actions for the current generation. Therefore, behavior in stable societies is more persistent and unstable societies are more willing to change. Applied to the German context, we argue that the political and economic environment has been highly unstable in the last century. The ancestors of people experiencing German reunification have experienced World War I; followed by Germany’s first democracy in the Weimar Republic, comprising heavy inflation, economic boom in the Golden Twenties and the Great Depression; totalitarian power of the Nazis; World War II; and finally, the division of Germany with the experience of either a liberal democracy or a communist dictatorship. Thus, we expect them to put rather little emphasis on transmitting their values to their offspring and consequentially, reactions to control are likely to change across generations of East Germans.

Yamagishi et al. (2008) show that cultural differences are not differences in preferences but differences in default strategies adopted to the incentive structure of the environment. Accordingly, people who have experienced a coercive regime should have developed an adaptive default strategy characterized by caution and distrust, little autonomy and acceptance of control. Potentially, they might even not have developed a default strategy for situations without control. On the contrary, people who have been socialized in reunified Germany are more likely to have acquired a default strategy characterized by values of autonomy and trust which yields high returns under the incentives of a liberal environment.

Empirical evidence on the persistence or convergence of different values in reunified Germany is mixed. Weimann and colleagues find that East-West differences in solidarity persist among students. Ockenfels and Weimann (1999) document that 5 years after reunification, East German students were less cooperative in anonymous interactions than their peers in the West, and this difference still persists 20 years after reunification (Brosig-Koch et al., 2011). Based on the German General Social Survey, Rainer and Siedler (2009) investigate how trust is shaped by the political regime. East Germans still show higher levels of social distrust than West Germans, while institutional trust converges. Within East Germany, older cohorts are not significantly more distrusting than younger cohorts. According to Sack (2017), East Germans favor equality, while West Germans rank individual freedom higher than distributive justice. Differences in those value orientations are converging for the younger generation. Ariely et al. (2015) investigate the impact of socio-political background on honesty. East Germans cheat more than West Germans, and East-West differences are greater in older than in younger cohorts. The authors also elicited prosocial behavior (donations) and did not observe differences between East
and West Germans, contradicting the findings by Weimann and colleagues mentioned earlier.

Relying on the incentive argument discussed from different perspectives above (Yamagishi et al., 2008; Giavazzi et al., forthc.; Giuliano and Nunn, 2017), we conjecture that East-West differences in reciprocity to control (abstinence) are stronger for older than for younger Germans.

**Hypothesis 2:** The difference in reciprocal reactions to control (abstinence) between East and West Germans is larger for the older than for the younger generations. In particular, older East Germans react less to (the absence of) control than younger East Germans and older West Germans.

4 Main experiment with graduate professionals (ex-students)

This section presents the main experiment of this study, an online experiment designed to test our two research hypotheses. To do so effectively, we test our hypotheses on a demographically varied sample of the German population with a particular focus on university graduates. Indeed, university graduates most likely perform (or have performed) managerial or administrative tasks at their workplace and are therefore better attuned to the crowding out of intrinsic motivation that control strategies might generate.

By conducting our experiment online, we gain access to a large sample of the German population with substantial heterogeneity in terms of age, regime experience, and place of living. From this sample, we create rather homogeneous subsamples of East and West Germans that are matched on a series of background variables (Rubin, 2006). We favor matched sampling over popular representative sampling because our aim is to isolate the effect of regime experience on behavior rather than to make inferences about the distribution of preferences in the general population, and also because differences in demographic structures might be confounded with the East-West dimension. Additionally, we do our best to carefully isolate the causal effect of control in a regime on control-related preferences from other explanatory variables. We also elicit individual characteristics that could potentially be related to control-related preferences. Participants complete a survey in which they are asked about their socio-economic characteristics as well as their subjective attitudes to trust and control. Moreover, we elicit information about subjects’ job and their perceptions of control and freedom at their workplace.

4.1 Design and procedures

West Germans experienced their right to freedom enshrined in the Basic Law to be taken very seriously. Instead, control in East Germany implied not only surveillance, but, in the first place, restrictions on freedom in various domains (e.g., restrictions on travel, access to information or freedom of expression). To study how East and West Germans react to restrictions of their freedom of choice, we capture control in our design by the possibility to rule out options as detailed below.

Participants repeatedly take part in a principal-agent interaction. In a given session, each participant is assigned either the role of agent or the role of principal. Participants gain experience with the context and the behavior of other participants during 10 rounds of the interaction. Roles are kept constant over all rounds. The matching follows a “no-contagion” protocol which suppresses repeated-game effects.

Concretely, assume that 12 agents and 12 principals take part in the session. In the first repetition, agent 1 interacts with principal 1, agent 2 interacts with principal 2, ..., and agent 12 interacts with principal 12. In the second repetition, agent 1 interacts with principal 2, agent 2 interacts with principal 3, ..., and agent 12 interacts with principal 1. And in the last repetition, agent 1 interacts with principal 10, agent 2 interacts with principal 11, ..., and agent 12 interacts with principal 9.
4.1.1 The principal-agent interaction

Consider an agent who chooses a productive activity which is costly to her but beneficial to the principal. Before the agent exerts effort, the principal can either decide to leave the agent’s effort set unrestricted by choosing “no control” ($e = 1$) or he can decide to restrict the agent’s effort set by choosing one of two control levels: “low control” ($e = 2$) or “medium control” ($e = 3$). The agent then chooses an effort level $e \in \{e, e+1, \ldots, 10\}$. We employ the strategy method, meaning that the agent makes her choice for each of the three control levels before knowing the principal’s actual decision. Concretely, each agent is asked to choose a triplet of effort levels $(e(1), e(2), e(3))$ where $e(1) \in \{1, 2, \ldots, 10\}$ is payoff-relevant in case the principal does not enforce a minimal effort, $e(2) \in \{2, 3, \ldots, 10\}$ is payoff-relevant in case the principal enforces a low effort and $e(3) \in \{3, 4, \ldots, 10\}$ is payoff-relevant in case the principal enforces a medium effort. Table 1 shows the monetary payoffs (in experimental currency units) where the fair and most efficient effort level locates slightly above the middle ($e = 7$).

<table>
<thead>
<tr>
<th>Effort level</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agent’s monetary payoffs</td>
<td>99</td>
<td>98</td>
<td>96</td>
<td>93</td>
<td>89</td>
<td>83</td>
<td>75</td>
<td>65</td>
<td>51</td>
<td>35</td>
</tr>
<tr>
<td>Principal’s monetary payoffs</td>
<td>1</td>
<td>16</td>
<td>29</td>
<td>41</td>
<td>53</td>
<td>64</td>
<td>75</td>
<td>82</td>
<td>87</td>
<td>90</td>
</tr>
</tbody>
</table>

Table 1: Monetary payoffs by effort level.

Several considerations led to the players’ monetary payoffs shown in Table 1. First, exerting more effort than the minimal one is cheap for the agent and extremely beneficial for the principal. This feature of the monetary payoffs ensures that even agents with little intrinsic motivation can express their willingness to perform in the interest of the principal when control is absent ($e = 1$). Consequently, hidden costs of control are likely to prevail in our experiment (i.e., the crowding out of intrinsic motivation when $e > 1$). Second, effort costs are assumed to be convex since exerting low effort at work is usually not very costly but once the agent is working to capacity marginal effort costs become tremendous. Third, benefits from the agent’s effort are assumed to be concave which reflects productivity losses due to physical restrictions.

Belief elicitation

Before they interact in the employment relationship, participants are asked to guess the average behavior of their counterpart. In each round, participants make three guesses. Principals are asked to guess, for each control level, the average effort that will be chosen by agents (since we employ the strategy method, for each control level all agents choose an effort). Each principal reports his guesses by keying in a vector $(b_P(1), b_P(2), b_P(3))$ with $0 \leq b_P(e) \leq 10$. Agents are asked to guess, for each control level, the natural frequency of principals that will choose the respective control level. Each agent reports her guesses by keying in a vector $(b_A(1), b_A(2), b_A(3))$ with $0 \leq b_A(e) \leq 100$ and $b_A(1) + b_A(2) + b_A(3) = 100$.

We limit the possibility to learn about the choices of other subjects. Once all guesses and choices have been made in a given round, subjects are only informed about the behavior of their counterpart. Subjects do not learn about the correctness of their guesses during the experimental session.

Payment scheme

To limit the costs of our large-scale experiment, we relied on a hybrid random incentive scheme (HRIS; Baltussen et al., 2012) where a randomly selected choice or belief is paid to only a randomly selected subset of participants. Paying out only a few randomly chosen participants
has been shown to be an effective alternative to traditional payment schemes (e.g. Cubitt et al., 2011; Harrison et al., 2002). To account for the status of our participants, we chose a high conversion rate of 1 experimental currency unit to €5.

4.1.2 Practical procedures

The experiment was conducted in February 2011 with the help of an internet platform developed by the authors and detailed in Schmelz and Ziegelmeyer (2019).

The recruitment of our participants turned out to be challenging. Common difficulties to convince the general public of the integrity of an internet study with cash prizes at stake aside, our target group is probably the subpopulation with least leisure time and little need of extra money. Our recruitment strategy included: (i) Issuing a press release and contacting journalists of numerous newspapers directly to report about a novel internet platform for interactive online experiments. We succeeded with a few local newspapers whereas we were not able to convince namable newspapers since we denied to reveal the topic of the study to potential participants beforehand; (ii) Announcing the study in mailing lists of former students (in particular alumni lists of the Max Planck Society, of the German Up with People Alumni Association, and of a few universities who consented); (iii) Posting in social networks (facebook, twitter, maxNet); (iv) Advertising in a job newsletter for academic professionals (academics.de); (v) And finally, recruiting former students from the four subject pools of our students treatments and from subject pools of other German experimental laboratories via ORSEE.6

The domain “www.1fallvon3.de” (1caseof3) was publicly announced which directed to an information page preceding the registration pages.7 On this page participants were informed about conditions of participation. Before registering, participants were informed that 4 winners would be paid a minimum of 155 euros and a maximum of 645 euros and that all the other participants would not be paid. The number of participants was unrestricted and we never announced estimates about this number.

The participation process was largely identical to the one explained in Schmelz and Ziegelmeyer (2019). For registration, participants had to enter some information. Each email address could register only once. All participants completed the survey and the experiment at their place of choice. Registered participants received a survey token via email. Answering the survey questions took on average 10 minutes and participants had a time frame of a few days to do so. Participants who completed the survey could register for an experimental session and received a personalized token to the experiment via email. To limit a potential impact of the survey on choices in the interactive part, experimental sessions were conducted on a later day. There was a prearranged start time for each experimental session, and participants had to log on not later than that time. As we were concerned that some participants might forward their token to another person, tokens were sent only one or two hours before the experiment started.

Each session took approximately one hour. Participants who completed an experimental session as well as participants who dropped for external reasons were eligible for payment.8 A participant whose partner dropped (referred to as an orphan) was assigned an artificial partner with whom she interacted in all remaining rounds. The orphan was informed of the procedure whereas the session proceeded according to the regular protocol for all the other participants. The choice or belief that was selected for payment was determined at random according to the German official lottery numbers at a preannounced date in the future. When they were informed of final payoffs, participants also learned about average choices of the other role for each round.

6We are grateful to the researchers in charge of the experimental laboratories in Bonn, Cologne, Duisburg-Essen, Erfurt, Heidelberg, Karlsruhe, Konstanz, Magdeburg, Mannheim, Munich and Oldenburg for allowing us to access their subject pools and sending invitations.

7We aimed at a neutral title which is still related to the study and sufficiently catchy (there is a German television series “Ein Fall für Zwei”, translated “A case for two”).

8The overall dropout rate was about 8 percent. See Appendix B.2 for details.
of their session and the correctness of their guesses.

The payment procedures were as follows: Once the choice or belief relevant for payment was determined, participants received another email with a link. This link directed participants to a page showing their potential payoff followed by a page with lucky numbers between 000 and 999. Participants could select one lucky number, and each lucky number could only be selected once. In each lottery, two winners were those whose lucky numbers matched the last three digits (including the two decimal places) of the German stock market index DAX at the close of trading on two preannounced dates in the future, and a link to an official trading page where participants could track the DAX was provided. In case the realized numbers of the DAX at the preannounced dates were not assigned to a subject, we informed subjects that the DAX of the next day would be relevant to determine the winners. The two participants who interacted with the winners in the selected round also became winners. The earnings were transferred to the bank accounts of the winners after their eligibility was checked. The four winners earned on average 376.25 euros. Experimental screens including the instructions and decision screens are provided in Appendix A.

4.2 Results

In this section, we first describe our sample. We then define reciprocity to (the absence of) control. Next we present statistics on the agents' efforts. The core of this section are formal tests of our two research hypotheses. Finally, we discuss additional results to complete the picture.

4.2.1 Sample

The data analysis reported in the main text is based on the sample of subjects who spent their childhood and adult lifetime either only in East Germany or only in West Germany. We refer to those subjects as non-migrants. We also exclude the decisions which result from interactions with an artificial partner. In the parts of our analysis relating to Hypothesis 2, we distinguish between Germans born in the 1980s, referred to as younger Germans, and those born before 1980, referred to as older Germans (see the beginning of subsection 4.2.5 for details).

To test our hypotheses, we aimed at recruiting East Germans older than students who acquired their control-related preferences under a different regime than the one they experienced at the time of the study. Older West Germans who always experienced the same regime serve as a control group. Since our experimental setting relates to control and motivation at the workplace, we targeted university graduates of the German working population. Relying on this subpopulation also allows us to presume the cognitive abilities to grasp the instructions and the experimental setting. Participants were aware that other participants also belonged to the German working population, but the distinction between East and West Germans was never mentioned.

Table 2 shows basic characteristics of the subsamples we consider (agents and principals pooled). Despite a few exceptions, gender and educational background categories are well represented in the subsamples, and subjects in the matched East-West subsamples are of similar age. Not surprisingly, education in economics is less popular in the East than in the West, while technical sciences are somewhat more represented among East Germans.

Before registering for the study, we asked potential participants to only proceed if they were working at that time. In addition, participants were asked in the survey whether they have a regular job. Among young professionals, 81% and 90% of our subjects in East and West indicated that they have a regular job, while among older professionals, 92% and 94% in East and West had a regular job. Additional job-related questions were only asked to those subjects.

Table 3 provides details concerning the jobs of our non-migrant subjects who have a regular job, additional explanations are given in Appendix B.1. Apart from a few exceptions which are
Educational background

<table>
<thead>
<tr>
<th></th>
<th>N (Round 1)</th>
<th>Female</th>
<th>Age mean (sd)</th>
<th>Studies_econ</th>
<th>Studies_social</th>
<th>Studies_human</th>
<th>Studies_tech</th>
<th>Studies_missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>191</td>
<td>59%</td>
<td>32.76 (8.50)</td>
<td>13%</td>
<td>34%</td>
<td>16%</td>
<td>37%</td>
<td>1%</td>
</tr>
<tr>
<td>West</td>
<td>341</td>
<td>50%</td>
<td>32.96 (8.20)</td>
<td>30%</td>
<td>25%</td>
<td>16%</td>
<td>28%</td>
<td>1%</td>
</tr>
<tr>
<td>Younger East Germans</td>
<td>116</td>
<td>60%</td>
<td>27.61 (1.93)</td>
<td>13%</td>
<td>41%</td>
<td>14%</td>
<td>31%</td>
<td>2%</td>
</tr>
<tr>
<td>Younger West Germans</td>
<td>202</td>
<td>59%</td>
<td>27.90 (1.74)</td>
<td>35%</td>
<td>26%</td>
<td>16%</td>
<td>22%</td>
<td>1%</td>
</tr>
<tr>
<td>Older East Germans</td>
<td>75</td>
<td>56%</td>
<td>40.72 (8.59)</td>
<td>12%</td>
<td>24%</td>
<td>19%</td>
<td>45%</td>
<td>0%</td>
</tr>
<tr>
<td>Older West Germans</td>
<td>139</td>
<td>37%</td>
<td>40.31 (8.33)</td>
<td>23%</td>
<td>24%</td>
<td>15%</td>
<td>37%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Table 2: Characteristics of non-migrants.

Note: These sample characteristics are based on all non-migrants who participated in at least round 1. The categories of educational background are as follows: Studies_econ refers to “business administration & economics”; Studies_social refers to “behavioral & social sciences except economics”; Studies_human refers to “humanities”; and Studies_tech refers to “engineering, life & natural sciences”.

not surprising given the German labour statistics, our matched subsamples in East and West are similar with respect to their job characteristics. The large majority of our subjects works as employees. In line with the literature discussed in the introduction, we have more subjects who are self-employed or who have personnel responsibility among our elder professionals in the West than in the East. Young professionals are rarely self-employed and less often in charge of other employees than elder professionals in East and West (see the columns Self-employed and Leader of Table 3). Most of our subjects have full-time jobs (column Weekly hours) and older West Germans tend to work more than older East Germans. Again, this difference is in line with previous observations. Older East Germans have spent somewhat more time in their current job than older West Germans, which is not surprising as job mobility was traditionally low in East Germany (column Years in current job). The representation of Job sectors is very similar for our matched subsamples with the exception that we have more older East Germans working in the health & social sector and more older West Germans working in private business. Finally, our subsamples are very comparable with respect to their ISCO-08 Skill level. Not surprisingly, the large majority of our subjects are highly skilled professionals.9

To test Hypothesis 1, we pool younger and older non-migrants within East Germany and within West Germany. To test Hypothesis 2, we split the sample into younger and older subjects, and we compare these subsamples between East and West. Table 4 summarizes the number of subjects we rely on to test our hypotheses. Reasons for subjects’ dropouts, as well as details about migrants are provided in Appendix B.2 and B.3.

4.2.2 Defining reciprocity to (the absence of) control

An agent who reacts negatively to control (or positively to the absence of control) chooses a higher effort in the absence of control than if controlled. Concretely, reciprocity to low control

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9To extract the ISCO-08 Skill level, we first coded subjects’ open answers with respect to their job title and job description according to the International Standard Classification of Occupations (ISCO-08), a hierarchically structured classification that captures all jobs in the world in more than 400 unit groups (International Labour Organization, 2012). This classification yields a four-digit code identifying a subject’s occupation. From this code, we derived the ISCO-08 Skill level where skill is defined as the ability to carry out the tasks and duties of a given job.
Table 3: Characteristics of non-migrants with regular jobs.

<table>
<thead>
<tr>
<th></th>
<th>East</th>
<th>West</th>
<th>Younger East Germans</th>
<th>Younger West Germans</th>
<th>Older East Germans</th>
<th>Older West Germans</th>
</tr>
</thead>
<tbody>
<tr>
<td>N (Round 1)</td>
<td>163</td>
<td>313</td>
<td>94</td>
<td>182</td>
<td>69</td>
<td>131</td>
</tr>
<tr>
<td>Self-employed</td>
<td>7%</td>
<td>9%</td>
<td>4%</td>
<td>3%</td>
<td>12%</td>
<td>17%</td>
</tr>
<tr>
<td>Leader</td>
<td>12%</td>
<td>19%</td>
<td>7%</td>
<td>13%</td>
<td>19%</td>
<td>26%</td>
</tr>
<tr>
<td>Weekly hours</td>
<td>37.44 (10.25)</td>
<td>38.55 (10.99)</td>
<td>37.33 (10.35)</td>
<td>37.31 (11.69)</td>
<td>37.58 (10.19)</td>
<td>40.26 (9.74)</td>
</tr>
<tr>
<td>Years in current job</td>
<td>1.54 (0.56 ; 4.64)</td>
<td>1.78 (0.80 ; 4.38)</td>
<td>1.02 (0.36 ; 1.87)</td>
<td>1.12 (0.46 ; 1.88)</td>
<td>5.40 (1.53 ; &gt;11.40)</td>
<td>4.46 (2.26 ; 10.85)</td>
</tr>
<tr>
<td>University</td>
<td>30%</td>
<td>28%</td>
<td>40%</td>
<td>35%</td>
<td>16%</td>
<td>18%</td>
</tr>
<tr>
<td>Health &amp; Social</td>
<td>9%</td>
<td>5%</td>
<td>4%</td>
<td>6%</td>
<td>14%</td>
<td>3%</td>
</tr>
<tr>
<td>Public</td>
<td>18%</td>
<td>18%</td>
<td>13%</td>
<td>15%</td>
<td>25%</td>
<td>22%</td>
</tr>
<tr>
<td>Business</td>
<td>42%</td>
<td>46%</td>
<td>41%</td>
<td>41%</td>
<td>45%</td>
<td>54%</td>
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<tr>
<td>Missing</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>ISCO-08 Skill level 1</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>ISCO-08 Skill level 2</td>
<td>12%</td>
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<td>13%</td>
<td>11%</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>ISCO-08 Skill level 3</td>
<td>10%</td>
<td>8%</td>
<td>7%</td>
<td>7%</td>
<td>10%</td>
<td>11%</td>
</tr>
<tr>
<td>ISCO-08 Skill level 4</td>
<td>76%</td>
<td>79%</td>
<td>73%</td>
<td>78%</td>
<td>78%</td>
<td>81%</td>
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<td>ISCO-08 Skill level Missing</td>
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<td>1%</td>
<td>2%</td>
<td>3%</td>
<td>0%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Notes: These sample characteristics are based on all non-migrants with a regular job who participated in at least round 1. Leader indicates whether a subject has personnel responsibility. The column Weekly hours shows means (sd). Years in current job refers to the subject’s experience in the current job and the corresponding column shows medians (1st quartile ; 3rd quartile). We cannot compute means for the latter variable as the answer format included a border category “Job started before 2000” without higher resolution and thus, the variable is not continuous. Job sector indicates the industry where a person is employed. Note that the category Public refers to public institutions other than universities or health facilities, like schools, government departments, or libraries. Business refers to the private sector. The ISCO-08 Skill level captures the ability to carry out the tasks and duties of a given job, ranging from 1 (lowest) to 4 (highest).
### Table 4: Number of agents and principals in each subsample in the first and final round.

<table>
<thead>
<tr>
<th>Hypothesis 1</th>
<th>Agents</th>
<th></th>
<th></th>
<th>Principals</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Round 1</td>
<td>Round 10</td>
<td></td>
<td>Round 1</td>
<td>Round 10</td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>99</td>
<td>55</td>
<td></td>
<td>92</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>West</td>
<td>172</td>
<td>121</td>
<td></td>
<td>169</td>
<td>125</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hypothesis 2</th>
<th>Younger Germans (born in '80s)</th>
<th>Agents</th>
<th></th>
<th></th>
<th>Principals</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>East</td>
<td>52</td>
<td>30</td>
<td></td>
<td>64</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td></td>
<td>West</td>
<td>99</td>
<td>67</td>
<td></td>
<td>103</td>
<td>76</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Older Germans (born before '80)</th>
<th>Agents</th>
<th></th>
<th></th>
<th>Principals</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>East</td>
<td>47</td>
<td>25</td>
<td></td>
<td>28</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>West</td>
<td>73</td>
<td>54</td>
<td></td>
<td>66</td>
<td>49</td>
<td></td>
</tr>
</tbody>
</table>

is expressed by \(e(1) > e(2)\) and reciprocity to medium control is expressed by \(e(1) > e(3)\). To isolate the effects of reciprocity from disciplining effects of control, we have to rule out opportunistic choices in the effort distributions. Following the standard procedure in the literature on control aversion starting with Falk and Kosfeld (2006), any effort smaller than the enforced effort level \(e(1) < e = 2\) and \(e(1) < e = 3\) is shifted to the enforced effort level \(e\). This means that, in order to measure reciprocity to low (respectively medium) control, opportunistic effort choices under no control \((e(1) = 1)\) are set equal to 2 (respectively 3). Reciprocity to low control implies that the difference between efforts under low control and the shifted efforts under no control \((e(2) - \max\{e(1), 2\})\) is negative and reciprocity to medium control implies that the difference between efforts under medium control and the shifted efforts under no control \((e(3) - \max\{e(1), 3\})\) is negative.10

We also shed light on the nature of reciprocal motives among East and West Germans. Arguably, whether reciprocity is negative or positive matters for why the difference between efforts under control and shifted efforts under no control would be larger in the East than in the West. If negative reciprocity (punishing control, or control aversion) is the main driver of agents’ behavior, then a larger difference in the West than in the East follows from similar efforts under no control in the two parts of Germany and higher efforts under control in the East than in the West. On the other hand, if positive reciprocity (rewarding abstaining from control) is the main driver of agents’ behavior, then a larger difference in the West than in the East follows from lower efforts under no control in the East than in the West and similar efforts under control in the two parts of Germany.

### 4.2.3 Agents’ efforts and control benefits

Table 5 shows agents’ efforts as a function of the control level in East and West. In each panel the first row reports the average effort and the second row reports the standard deviation followed by the 1st quartile followed by the median followed by the 3rd quartile for each control level. As shown in the upper part of the table, and to our surprise, the average effort in the absence of control is (almost) identical in both parts of Germany, while East Germans exert more effort than West Germans under low and medium control. Thus, average effort increases more with control in the East than in the West. The lower part of Table 5 shows summary statistics of agents’ effort levels for our different cohorts in East and West. The effects of control on effort are similar among younger East and West Germans. Older Germans react clearly differently to control in both parts of Germany. While control increases effort among older East Germans by about one effort level, control hardly affects average efforts among their peers in the West, suggesting substantial control aversion among older West Germans. Appendix C.1 shows the cumulative distributions of effort.

---

10 Alternatively, one could restrict our sample to agents whose intrinsic motivation is sufficiently high to be potentially crowded out by control. However, this strategy would not help to compare the relevance of hidden costs of control between samples as the share of opportunistic agents would be neglected.
To compare effort levels, we rely on linear mixed models including random intercepts for agents and sessions. First, in the no-control condition, agents’ average effort in both parts of Germany and for each of our subsamples is significantly greater than the minimal effort level of 1 ($\chi^2$ tests: $p$-value < 0.001), which indicates that agents have a non-negligible willingness to perform in the interest of the principal when control is absent. The average intrinsic motivation of East and West Germans (both cohorts pooled) does not differ significantly, which is also true for our two cohorts in East and West Germans ($\chi^2$ tests: $p$-values > 0.47 for all three comparisons). Effort under low control tends to be higher in the East than in the West ($\chi^2$ test: $p$-value = 0.083), though the difference is insignificant for the subsample comparisons of younger and older cohorts ($\chi^2$ tests: $p$-values > 0.24 for both comparisons). However, effort under medium control is significantly higher in the East than in the West ($\chi^2$ test: $p$-value = 0.002). This difference is driven by the older cohort ($\chi^2$ test: $p$-value < 0.001), while average reactions to medium control do not differ significantly between younger East and West Germans ($\chi^2$ test: $p$-value = 0.391).

Overall, the evidence suggests that agents’ behavior differs in the two parts of Germany mainly because negative reciprocity to medium control is stronger in the West than in the East, which applies in particular to the older cohort. Accordingly, the effectiveness of control is undermined by the presence of hidden costs of control (instead of hidden benefits of abstaining from control) which are stronger in the West than in the East. The degree of intrinsic motivation revealed by agents’ efforts in the no-control condition is sufficiently large so that aversion to low and medium control can be potentially observed in the different samples. Moreover, potential differences in control aversion between East and West cannot be attributed to differences in intrinsic motivation. Additional descriptive statistics on agents’ efforts are provided in Appendices C.2 and C.3.

A relevant question for the design of work systems is whether principals benefit from controlling their agents. To address this question, we analyze the differences between efforts under low and no control and between efforts under medium and no control (see subsection C.4 in Appendix C for details). Overall, average effort differences are positive in both East and West. Principals gain significantly more with control when facing older East Germans compared to older West Germans, while we never reject the null hypothesis that effort differences are identical for younger East and West Germans.
4.2.4 Testing Hypothesis 1: Control aversion among East and West Germans

To test whether West Germans are more control averse than East Germans, we consider the pooled samples across cohorts of all non-migrant East Germans and all non-migrant West Germans. Before we formally test our first hypothesis, we give a rough impression on our main findings with respect to Hypothesis 1.

**Hypothesis 1: Main results at a glance**

Figure 1 provides an overview of control aversion among East and West Germans. Pooled across all rounds, average aversion to low control (on the left) and medium control (on the right) is always more negative and thus stronger among West Germans than among East Germans. In both subsamples, aversion to medium control is more pronounced than aversion to low control.

![Figure 1: Average control aversion among East and West Germans.](image)

*Note:* The more negative the values, the more control averse a subsample is on average.

Figure 2 shows the frequency of control averse choices among our subsamples of East and West Germans, pooled across all rounds. Control averse choices are choices where the agent chooses a higher effort under no control than under low control ($e(1) > e(2)$, figure on the left), and choices where the agent chooses a higher effort under no control than under medium control ($e(1) > e(3)$, figure on the right). For both low and medium control, averse choices are less frequent among East Germans than among West Germans.

![Figure 2: Frequency of control averse choices among East and West Germans.](image)
Hypothesis 1: Regressions and details

Result 1. East Germans are significantly less control averse than West Germans, but there is no significant difference in the second half of the experiment.

To formally test whether the magnitude of control aversion is more substantial in the West than in the East, we rely on a series of regression models. The estimation method is linear mixed models where random intercepts at the agent and session levels are included. Random effects are assumed to be independent and to follow a normal distribution with mean zero. Our regression models allow the agent’s behavior to be correlated across rounds as well as the behavior of different agents in the same session to be correlated.\(^{11}\) Models 1 to 3 predict aversion to low control, which corresponds to the difference between the effort under low control and the shifted effort under no control \((e(2) - \max[e(1), 2])\), and models 4 to 6 predict aversion to medium control, which corresponds to the difference between the effort under medium control and the shifted effort under no control \((e(3) - \max[e(1), 3])\). Table 6 reports our estimation results on control aversion.

Averaged over all rounds, control aversion is insignificantly different from zero among East Germans and significantly stronger among West Germans (models 1 and 4). The results of models 2 and 5 show that experienced agents in the East express more control aversion than inexperienced agents and this increase is less pronounced in the West. The effect of belief differences is positive and strongly significant. Thus, the larger the share of principals agents expect to choose low control (model 2) or medium control (model 5) instead of no control, the less negatively they react to control.\(^{12}\) The inclusion of demographic controls and attitudes towards trust and control has little impact on the estimated coefficients of models 2 and 5.\(^{13}\) None of the demographics affects control aversion as shown in models 3 and 6. The more an agent expects trustworthiness from strangers the more control averse she is, and significantly so in the medium control condition, while control over life does not have a systematic or significant effect on control aversion.\(^{14}\)

We also employ job-related variables to predict control aversion like subjects’ employment status (self-employment versus dependent employment), whether they have any personnel responsibility, the sector in which they are working (university, business, health/social, or public), the skill level required for their current job (elementary jobs, workers, technicians, or professionals), the number of weekly working hours, and for how long they have been working in their current job. Moreover, we elicited work-related experiences like the extent of predefined tasks,
the extent of predefined task execution, and the extent of performance control. For those three aspects, we always asked for subjects’ perception of control or freedom and for their desire (details are provided in Appendix C.6). None of these work-related information helps to explain control aversion.

Finally, the lower panel of Table 6 reports χ²-tests of the equality of linear combinations of coefficients to test whether control aversion differs among East and West Germans in the first (rounds 1 to 5) and second (rounds 6 to 10) halves of the experiment. East-West differences are significant only in the first half of rounds (as illustrated by Figure 7 in Appendix C.5).

We conclude that there is weak support for Hypothesis 1 as East Germans are significantly less control averse than West Germans in the first half but not in the second half of the experiment.\(^\text{16}\)

\(^{15}\)Details are available upon request.

\(^{16}\)Since effort levels are not linear with respect to the agent’s effort costs, we performed robustness checks where control aversion is based on effort costs rather than effort levels. Subsection C.7 in Appendix C reports the results
4.2.5 Testing Hypothesis 2: Control aversion among younger and older East and West Germans

To test Hypothesis 2, we distinguish between younger and older Germans (born in the 1980s and born before 1980), and we compare these subsamples between East and West. Indeed, younger East Germans were at most 10 years at German reunification in 1990, and 8 years or younger when the ‘wind of change’ started blowing in East Germany. We do not expect their control-related preferences to be effectively shaped by the coercive regime of former East Germany. On the other hand, most older East Germans have clearly been indoctrinated and spent at least part of their youth under the repressive regime. They completed primary school in the East and experienced at least some political indoctrination as so-called Thälmann pioneers. The choice of our age cut-off is in accordance with Oettingen et al. (1994) who show that some school experience is needed to shape different agency and control beliefs in East and West Berlin school children.\textsuperscript{17}

Hypothesis 2: Main results at a glance

Before we formally test our second hypothesis, we also give a first impression of our main findings with respect to Hypothesis 2. Figure 3 provides an overview of control aversion among younger and older East and West Germans. Pooled across all rounds, average aversion to low control (on the left) and medium control (on the right) is clearly negative for all subsamples except for older East Germans. Thus, on average, we observe aversion to low and medium control among all subsamples except for older East Germans. Moreover, average control aversion is rather similar among the younger cohorts in East and West, while older West Germans are far more control averse than older East Germans.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Figure3.png}
\caption{Average control aversion among younger and older East and West Germans.}
\end{figure}

\textit{Note:} The more negative the values, the more control averse a subsample is on average.

Similarly, Figure 4 shows the frequency of control averse choices among our subsamples of younger and older East and West Germans, pooled across all rounds. For both low and medium control, averse choices are less frequent among older East Germans than among all other subsamples. The frequency of control averse choices among younger agents is rather similar in East and West, while older West Germans show negative reactions to control more often than older East Germans.

\textsuperscript{17}In a comparative study performed shortly after reunification, Oettingen et al. (1994) found that East Berlin schoolchildren scored lower on self-efficacy than their West Berlin counterparts. They were also more likely to conform to expectations and performance evaluations of their teachers. However, highly intelligent children did not differ in their self-efficacy judgments.
Hypothesis 2: Regressions and details

**Result 2.** *Older East Germans are significantly less control averse than older West Germans. There is no significant difference in the reactions to control of younger East and West Germans.*

Table 7 reports the regression results from linear mixed models with random intercepts for agents and sessions. Figure 5 complements our estimation results.

Regression results of models 1 and 4 show that hidden costs of low or medium control are significantly negative both for younger and older West Germans. By contrast, hidden costs of control are insignificantly different from zero in the East except for younger Germans in the medium control condition. For older East Germans, there are even (non-significant) hidden benefits of control. The lower panel of Table 7 reports $\chi^2$-tests on the equality of coefficients to test whether control aversion differs between the two age cohorts from East and West. Older West Germans are significantly more averse to both low and medium control than older East Germans, but we never reject the null hypothesis that control aversion among younger Germans is the same in East and West.

According to the regression results of models 2 and 5, aversion to low and medium control is strongly significant for both age cohorts of West Germans in the first half of rounds, and those agents become even more control averse in the second half of rounds. Among inexperienced agents in the East, control aversion is significant only for the younger Germans in the medium control condition (though in a weak sense). Aversion to low and medium control becomes strongly significant in the second half of rounds for younger East Germans, but it remains insignificant for older East Germans. The effect of belief differences is once more positive and significant. We never reject the null hypothesis that control aversion among young Germans is the same in East and West. In stark contrast, older Germans are always significantly more control averse in the West than in the East.

Regression results of models 3 and 6 show that none of the demographics affects control aversion. Once more, optimistic views on trustworthiness increase control aversion, and significantly so in the medium control condition, while control over life does not have a systematic or significant effect on control aversion.

Moreover, we include our job-related variables in the regression models (self-employment, personnel responsibility, sector, skill level, weekly working hours, years in the current job) as well as work-related experiences (perceptions and desire of the extent of predefined tasks, the extent of predefined task execution, and the extent of performance control, see Appendix C.6).

\[^{18}\text{We consider the same demographic controls as in Table 6. The corresponding details are available upon request.}\]
None of these work-related variables has a significant impact on aversion to low or medium control.19

We also consider alternative divisions of our sample into younger and older subjects by varying the cutoff of the year of birth from 1977 to 1983. Hypothesis testing results are robust to those alternative divisions of our sample (see Appendix C.8 for details).

In a nutshell, we find strong support for our second research hypothesis. Older West Germans are always significantly more control averse than older East Germans, for whom hidden costs of control are basically absent, but we never reject the null hypothesis that control aversion among younger Germans is the same in East and West.20 Note also that the empirical support for Hypothesis 2 is not driven by a generation effect as we never reject the null hypothesis

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19 Details are available upon request.
20 Robustness checks where control aversion is based on effort costs rather than effort levels confirm these findings (see subsection C.7 in Appendix C).
that control aversion is of similar magnitude among younger and older West Germans ($\chi^2$ tests: $p-$value > 0.10 both in the low and medium control condition).

4.2.6 Complementary data analyses

In this subsection, we first report on the types of agents and the strength of their control aversion to shed light on the forces that drive Results 1 and 2. We then discuss the beliefs and choices of the principals. See subsections C.9 to C.15 in Appendix C for more details.

Agents’ types

To complement the discussion on average behavior, we report on the heterogeneity of agents’ reactions to control. We derive the type of an agent by counting the number of rounds in which the agent makes selfish, control averse, control neutral and control prone choices. About a quarter of the agents in East and West exert minimal effort at each control level in all 10 rounds, and about 35% (40%) in the East (West) do so in the majority of rounds (i.e. in at least 6 rounds). Control averse agents, i.e. agents who reduce their effort when controlled, are the next most frequent. Approximately 12% (16%) of agents in the East (West) express control aversion in all 10 rounds, and about 18% (28%) of the East (West) agents are control averse in the majority of rounds. Agents who exert the same effort at each control level amount to 11% (7%) in the East (West) and 18% (15%) of agents in the East (West) are largely indifferent to
control. Finally, control prone reactions, i.e. instances where control increases effort beyond the enforcement level, almost disappear over time, and hardly any agent is control prone in all 10 rounds. Yet, 14% (3%) in the East (West) make control prone choices in the majority of rounds.

There is no significant difference in the frequency of types between East and West, except for the control averse type which is significantly more prevalent among older West Germans than older East Germans. About 12% (21%) of older agents in the East (West) are control averse in all 10 rounds, 12% (33%) of older East (West) agents are control averse in the majority of rounds, and 76% (51%) of older agents in the East (West) never show a control averse reaction. Clearly, a higher prevalence of the crowding out type among older Germans in the West than in the East explains, at least partly, why we observe more control aversion among older West Germans than among older East Germans.

**Strength of agents’ control aversion**

Results 1 and 2 might also be driven by stronger negative reactions to control among West Germans compared to East Germans. To test this conjecture, we run regressions similar to those reported in Tables 6 and 7 where we restrict the sample to control averse choices. If at all, we rather find the opposite tendency: pooling both cohorts, control averse East Germans react (weakly significantly) more negatively to the implementation of low control than control averse West Germans, but we never reject the null hypothesis that the strength of aversion to medium control differs between East and West. Differentiating between cohorts reveals that this inconsistency is driven only by control averse younger Germans who react more strongly to the implementation of low control in the East than in the West and mainly in the second half of the experiment, while this East-West difference does not generalize to medium control. Control averse older Germans do not differ in the strength of their reactions, no matter whether we consider all ten rounds or the two halves of the experiment ($\chi^2$-tests: $p$-values $> 0.10$). Thus, Results 1 and 2 are not driven by stronger negative reactions to control in the West compared to the East.

**Older German migrants**

To complement our findings on Hypothesis 2, we compare control aversion among migrants and non-migrants in our older cohort. If institutional experience at a younger age has a permanent effect on control-related preferences, our older migrants’ control aversion should be closer to their peers in the part of their origin than to their peers in the part of their destination (supporting Hypothesis 2). Indeed, we never reject the null hypothesis that control aversion of East and West German migrants differs from their peers in the part of their origin. However, migrants’ control aversion always differs significantly from their peers in the part of their destination, i.e., older East Germans who have migrated to the West are significantly less control averse than older West Germans living in the West and older non-migrant West Germans who have migrated to the East are significantly more control averse than older East Germans living in the East. This is additional evidence in support of our second hypothesis, namely that experiencing a liberal or coercive regime has a long-lasting impact on control-related preferences. Details are provided in Appendix C.11.

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21 We rely on mixed-effects logistic regressions. Unfortunately, the regression models fail for the control prone type as there are too few observations.

22 In our sample, we have 10 older agents who migrated from East to West Germany (7 remaining in round 10) and 9 agents who migrated from West to East Germany (6 remaining in round 10). This sample size is small and the results should be treated with caution, but at least it gives us an impression. We consider as migrants people who spent most of their childhood between 3 and 12 years in one part of Germany and who spent most of their studies and/or time after studies in the other part of Germany.
Agents’ beliefs

In line with the distribution of principals’ control decisions as detailed below, agents expect the medium control level most frequently. Averaged over all agents and rounds, expected frequencies of no control, low and medium control are 12%, 16% and 72% (13%, 16% and 71%) in the East (West). Not surprisingly, we fail to reject the null hypothesis that the distribution of individual beliefs about the frequency of principals who choose the no, low or medium control level is the same in the two parts of Germany. The same finding applies to the subsamples of students, young professionals, and elder professionals in East and West. We conclude that behavioral differences among agents in East and West are not driven by different expectations about the principals’ behavior. Further details about agents’ beliefs are given in Appendix C.12.

Principals’ beliefs and choices

Principals correctly expect agents to be intrinsically motivated and they also correctly expect their efforts to increase with control. Averaged over all principals and rounds, expected efforts under no, low and medium control are 2.96, 3.63 and 4.28 (2.98, 3.54 and 4.17) in the East (West). Expected effort, averaged across rounds for each principal, significantly increases with the level of control in both East and West (Wilcoxon matched-pairs signed-rank tests: \( p - \text{value} < 0.01 \) in all four cases). The same result applies to each of the four subsamples (younger and older Germans in East and West, Wilcoxon matched-pairs signed-rank tests: \( p - \text{values} < 0.01 \)). Hence, monetary payoff-maximizing principals should always enforce medium control and on average principals correctly believe that enforcing medium control is the decision which maximizes their monetary payoffs.

In line with their beliefs, the majority of principals in all subsamples choose the medium control level. Averaged over all principals and rounds, frequencies of no control, low and medium control are 19%, 13% and 68% in the East and 17%, 18% and 65% in the West. However, principals expect agents’ efforts to increase more with control than they actually do. In particular, in none of the subsamples, principals expect control aversion. The fact that principals fail to expect control aversion is hardly surprising since they only observe the agent’s effort level which corresponds to the control level they have chosen. Thus, a principal who chooses a medium control level will never learn that some agents exert more effort in case of no control.

5 Robustness checks with students

This section reports on a second online experiment which relies on the usual sample of undergraduate students from four locations, two in the East and two in the West of Germany. This experiment enables us to conduct three robustness checks. First, we test whether the finding that the influence of state coercion on control aversion is short-lived is robust to the subject pool. Second, we test whether reactions to control are sensitive to two key procedural aspects of our main experiment, namely the incentive scheme and the scale of interactions.

Students repeatedly take part in the principal-agent interaction described in subsection 3.1.1. We focus below on the procedural differences between our main experiment and the robustness experiment.

5.1 Design and procedures

To conduct the robustness checks, we invited student samples from two East German and two West German cities who are acquainted with laboratory experiments. We rely on two cities from each East and West to limit the risk of misattributing unsystematic differences to the East-West dimension. We searched for two sufficiently comparable city pairs where each is equipped with an experimental laboratory. Thanks to the consent of the respective laboratories,
we could favorably pair the cities Magdeburg (East) with Oldenburg (West) and Jena (East) with Heidelberg (West). Within each part of the country, the more southern cities Jena and Heidelberg are somewhat smaller, have much more students and overall a younger population, a lower unemployment rate and a higher GDP relative to East or West Germany than the northern cities Magdeburg and Oldenburg. Arguably, the most important dimension on which the city pairs differ is whether they have been part of former East or West Germany. Table shows attributes of the four cities guiding our selection, and Appendix D.1 visualizes their geographical location.

<table>
<thead>
<tr>
<th>City</th>
<th>Part</th>
<th>Location</th>
<th>Population</th>
<th>Students</th>
<th>Young</th>
<th>Unemployed</th>
<th>GDP ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magdeburg</td>
<td>East</td>
<td>North</td>
<td>230 000</td>
<td>5%</td>
<td>53%</td>
<td>13.5%</td>
<td>1.3</td>
</tr>
<tr>
<td>Oldenburg</td>
<td>West</td>
<td>North</td>
<td>160 000</td>
<td>7%</td>
<td>69%</td>
<td>9.4%</td>
<td>1.2</td>
</tr>
<tr>
<td>Jena</td>
<td>East</td>
<td>South</td>
<td>100 000</td>
<td>26%</td>
<td>66%</td>
<td>8.6%</td>
<td>1.5</td>
</tr>
<tr>
<td>Heidelberg</td>
<td>West</td>
<td>South</td>
<td>145 000</td>
<td>22%</td>
<td>75%</td>
<td>6.3%</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Table 8: Attributes of the four student locations.

Note: Young is the population younger than 25 years divided by the population older than 50 years (N_{<25}/N_{\geq50}). Unemployed refers to the unemployment rate in 2009. GDP ratio is a city’s GDP divided by the GDP of East Germany (for Magdeburg and Jena) or by the GDP of West Germany (for Oldenburg and Heidelberg). (Source: Statistik der Bundesagentur für Arbeit; Zahlen, Daten, Fakten: Strukturdaten und -indikatoren; 2010)

Table 9 gives an overview of our robustness treatments. The students treatments vary in payment scheme, scale of interactions, and knowledge about the scale of interactions. N refers to the number of participants who took part in at least one principal-agent interaction. The same treatment variables were implemented in Magdeburg, Oldenburg, Jena and Heidelberg. In StudentsAllPaid, we rely on a within-subjects random incentive scheme (WRIS) where a randomly selected choice or belief is paid to all subjects. In the two StudentsFewPaid treatments we rely on the same hybrid random incentive scheme (HRIS) as in our main experiment. The different payment schemes are accompanied by changes in conversion rates. In the treatment where all students are paid the conversion rate is such that expected payoffs roughly correspond to standard payoffs in the experimental laboratories of our four cities. In the treatments where few students are paid the conversion rate produces high stakes.

StudentsAllPaid differs from the two StudentsFewPaid treatments in one more variable, namely the scale of interactions. Interactions take place within the local subject pools in StudentsAllPaid and across the four student subject pools in both StudentsFewPaid treatments. As we did not conduct an intermediate treatment, the relevancy of the scale of interactions is inferred at least indirectly by comparing StudentsFewPaid-1 and StudentsFewPaid-2, which only differ in the knowledge about the scale of interactions. In StudentsAllPaid and StudentsFewPaid-1 participants were just informed that they will interact with other students. In StudentsFewPaid-2 participants were aware that the scale of interactions is national. Concretely, participants of StudentsFewPaid-2 were informed explicitly that they will interact with other students from Jena, Heidelberg, Magdeburg and Oldenburg. We never mentioned East and West explicitly.

5.1.1 Practical procedures

Treatments were conducted between November 2010 and February 2011 with the help of the same internet platform as in our main experiment. Participants were students from the universities of Oldenburg, Magdeburg, Heidelberg and Jena who have agreed to participate in economic
experiments and were invited using the ORSEE recruitment system (Greiner, 2015).\textsuperscript{23}

Participants received an invitation email via ORSEE with a link (session token) to the registration pages. On these pages participants were informed about the conditions of participation. Before registering, participants in all treatments knew about the payment conditions. Participants of \textit{StudentsAllPaid} were informed that expected earnings are the usual ones. Participants of \textit{StudentsFewPaid-1} and \textit{StudentsFewPaid-2} were informed that 4 winners would be paid a minimum of 62 euros and a maximum of 258 euros and that all the other participants would not be paid. In all treatments but \textit{StudentsAllPaid}, the number of participants was unrestricted and we never announced estimates about the number of participants.

The participation process in all treatments was largely identical to the one described in subsection 3.1.3. The payment procedures were as follows: Once the choice or belief relevant for payment was determined, participants received another email with a link. In treatment \textit{StudentsAllPaid}, this link directed them to a page showing their final payoff and participants received their earnings at their local experimental laboratory. We informed participants that they would receive 2.50 euros as a compensation fee for collecting their earnings. In the two \textit{StudentsFewPaid} treatments, this link directed participants to a page showing their potential payoff followed by a page with lucky numbers between 000 and 999. Each participant could select five lucky numbers, and each lucky number could only be selected once.\textsuperscript{24} In each lottery, two winners were those whose lucky numbers matched the last three digits (including the two decimal places) of the DAX at the close of trading on two preannounced dates in the future, and a link to an official trading page where participants could track the DAX was provided. The two participants who interacted with the winners in the selected round also became winners. The earnings were transferred to the bank accounts of the winners after their eligibility was checked. Average payment in \textit{StudentsAllPaid} was 14.27 euros. In the two \textit{StudentsFewPaid} treatments

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline
Treatment & N & Sessions & Participants’ status & Payment scheme & 1 ECU equals & Scale of knowledge of scale \\
\hline
\textit{StudentsAllPaid} & 230 & 8 & Students & WRIS & €0.15 & Local & No \\
Magdeburg & 59 & 2 & & & & & \\
Oldenburg & 61 & 2 & & & & & \\
Jena & 58 & 2 & & & & & \\
Heidelberg & 52 & 2 & & & & & \\
\hline
\textit{StudentsFewPaid-1} & 75 & 2 & Students & Hybrid RIS & €2.00 & National & No \\
Magdeburg & 19 & 2 & & & & & \\
Oldenburg & 16 & 2 & & & & & \\
Jena & 28 & 2 & & & & & \\
Heidelberg & 12 & 2 & & & & & \\
\hline
\textit{StudentsFewPaid-2} & 81 & 2 & Students & Hybrid RIS & €2.00 & National & Yes \\
Magdeburg & 22 & 2 & & & & & \\
Oldenburg & 16 & 2 & & & & & \\
Jena & 29 & 2 & & & & & \\
Heidelberg & 14 & 2 & & & & & \\
\hline
\textbf{Total} & 386 & 12 & & & & & \\
\hline
\end{tabular}
\caption{Robustness treatments with students.}
\end{table}

\textsuperscript{23}These data would not have been collected without the great support of Bernhard Kittel and Jan Lorenz from the \textit{Experimental Lab of the Center for Social Science Methodology} at the university of Oldenburg, Joachim Weimann and Harald Wypior from the \textit{MaXLab} at the university of Magdeburg, and Christiane Schwieren and Andrew Isaak from the \textit{AWI lab} at the university of Heidelberg who gave us convenient access to their subject pools.

\textsuperscript{24}The number of lucky numbers a participant could choose was determined by the final number of participants in a lottery.

29
the four winners earned on average 125 euros.

5.2 Comparing students’ behavior in four German cities

In this subsection, we restrict our data analyses to non-migrants meaning students who spent their childhood, their youth and their studies either only in West Germany or only in East Germany. Moreover, for the sake of consistency with our previous analyses, we exclude students who were born before 1980. Only choices directed at a human partner are considered.

We first discuss the agents’ efforts and then analyze control aversion among students in East and West. Appendix E provides additional details.

Agents’ efforts among students in East and West

Table 10 reports summary statistics of agents’ effort levels for our four student locations. In each panel, the first row reports the average effort for each control level, and the second row reports standard deviation followed by the 1st quartile followed by the median followed by the 3rd quartile for each control level.

<table>
<thead>
<tr>
<th>Location</th>
<th>Obs.</th>
<th>Control level</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>Low</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Magdeburg (East)</td>
<td>320</td>
<td>2.65 (2.51;1;1.5)</td>
<td>3.32 (1.93;2;2.4)</td>
<td>3.84 (1.52;3.3)</td>
<td></td>
</tr>
<tr>
<td>Oldenburg (West)</td>
<td>420</td>
<td>2.89 (2.50;1;1.5)</td>
<td>3.26 (1.83;2;2.4)</td>
<td>3.71 (1.45;3;3)</td>
<td></td>
</tr>
<tr>
<td>Jena (East)</td>
<td>327</td>
<td>2.94 (2.29;1;2.5)</td>
<td>3.31 (1.63;2;2.4)</td>
<td>3.73 (1.40;3;3.4)</td>
<td></td>
</tr>
<tr>
<td>Heidelberg (West)</td>
<td>286</td>
<td>3.28 (2.66;1;1.6)</td>
<td>3.43 (1.65;2;2.5)</td>
<td>3.64 (1.24;3;3.4)</td>
<td></td>
</tr>
</tbody>
</table>

Table 10: Agents’ efforts as a function of the principal’s control level for students.

For each of our matched city pairs Magdeburg/Oldenburg and Jena/Heidelberg, average efforts in the no-control condition are slightly lower in the East than in the West and comparable in the low-control condition, while average efforts in the medium-control condition tend to be slightly higher in the East than in the West. Accordingly, average effort increases somewhat more with control in the East than in the West, as illustrated graphically in Appendix E.1.1. The overall impression is that control is most effective in Magdeburg and least effective in Heidelberg. The pattern of average efforts in Oldenburg and Jena appears to be very similar.

Control aversion among students in East and West

Table 11 reports regression models to test whether control aversion differs between our matched student locations in East and West. We rely on linear mixed models where random intercepts for the agent are included.

According to models 1 and 4, aversion to low and medium control is stronger in the two Western cities than in the two Eastern cities. However, hypothesis testing reveals that this tendency is never significant at the 5 percent level for the matched city pairs Magdeburg/Oldenburg and Jena/Heidelberg (lower part of Table 11). The same conclusion holds for experienced agents (models 2 and 5 and the corresponding hypotheses tests) and is robust with respect to demographic controls (models 3 and 6). Appendix E.1.2 complements our estimation results graphically.

For the sake of completeness, we also perform cross-comparisons of the two non-matched city pairs Magdeburg (East)/Heidelberg (West), and Jena (East)/Oldenburg (West). The re-
### Table 11: Control aversion in the student cities in East and West.

<table>
<thead>
<tr>
<th></th>
<th>Low control</th>
<th></th>
<th>Medium control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(e(2) - \max[e(1), 2])</td>
<td>(e(3) - \max[e(1), 3])</td>
<td>(e(2) - \max[e(1), 2])</td>
<td>(e(3) - \max[e(1), 3])</td>
</tr>
<tr>
<td>Magdeburg (East)</td>
<td>0.044</td>
<td>0.290</td>
<td>0.052</td>
<td>0.091</td>
</tr>
<tr>
<td></td>
<td>(0.112)</td>
<td>(0.123)</td>
<td>(0.278)</td>
<td>(0.217)</td>
</tr>
<tr>
<td>Oldenburg (West)</td>
<td>-0.206**</td>
<td>-0.163</td>
<td>-0.292</td>
<td>-0.349*</td>
</tr>
<tr>
<td></td>
<td>(0.097)</td>
<td>(0.106)</td>
<td>(0.276)</td>
<td>(0.188)</td>
</tr>
<tr>
<td>Jena (East)</td>
<td>-0.141</td>
<td>-0.169</td>
<td>-0.287</td>
<td>-0.275</td>
</tr>
<tr>
<td></td>
<td>(0.111)</td>
<td>(0.121)</td>
<td>(0.285)</td>
<td>(0.214)</td>
</tr>
<tr>
<td>Heidelberg (West)</td>
<td>-0.367***</td>
<td>-0.412***</td>
<td>-0.499*</td>
<td>-0.774***</td>
</tr>
<tr>
<td></td>
<td>(0.116)</td>
<td>(0.126)</td>
<td>(0.282)</td>
<td>(0.220)</td>
</tr>
<tr>
<td>Magdeburg * Half2</td>
<td>-0.125</td>
<td>-0.272</td>
<td>-0.159</td>
<td>0.516</td>
</tr>
<tr>
<td></td>
<td>(0.123)</td>
<td>(0.278)</td>
<td></td>
<td>(0.244)</td>
</tr>
<tr>
<td>Oldenburg * Half2</td>
<td>-0.272**</td>
<td>-0.402</td>
<td>-0.260</td>
<td>0.588</td>
</tr>
<tr>
<td></td>
<td>(0.107)</td>
<td>(0.277)</td>
<td></td>
<td>(0.210)</td>
</tr>
<tr>
<td>Jena * Half2</td>
<td>-0.132</td>
<td>-0.250</td>
<td>-0.230</td>
<td>0.573</td>
</tr>
<tr>
<td></td>
<td>(0.121)</td>
<td>(0.285)</td>
<td></td>
<td>(0.234)</td>
</tr>
<tr>
<td>Heidelberg * Half2</td>
<td>-0.332**</td>
<td>-0.422</td>
<td>-0.643***</td>
<td>0.126</td>
</tr>
<tr>
<td></td>
<td>(0.129)</td>
<td>(0.284)</td>
<td></td>
<td>(0.242)</td>
</tr>
<tr>
<td>(b_4(2) - b_4(1))</td>
<td>0.002</td>
<td>0.002</td>
<td>-0.003**</td>
<td>-0.003**</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Female</td>
<td>0.080</td>
<td></td>
<td>-0.163</td>
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<tr>
<td></td>
<td>(0.110)</td>
<td></td>
<td>(0.216)</td>
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</tr>
<tr>
<td>Partner</td>
<td>-0.014</td>
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</tr>
<tr>
<td></td>
<td>(0.107)</td>
<td></td>
<td>(0.210)</td>
<td></td>
</tr>
<tr>
<td>Studies_human</td>
<td>0.098</td>
<td></td>
<td>-0.151</td>
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</tr>
<tr>
<td></td>
<td>(0.149)</td>
<td></td>
<td>(0.292)</td>
<td></td>
</tr>
<tr>
<td>Studies_tech</td>
<td>-0.282**</td>
<td></td>
<td>-0.558**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.134)</td>
<td></td>
<td>(0.261)</td>
<td></td>
</tr>
<tr>
<td>Studies_social</td>
<td>0.242</td>
<td></td>
<td>0.368</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.162)</td>
<td></td>
<td>(0.316)</td>
<td></td>
</tr>
<tr>
<td>Trustworthiness</td>
<td>-0.043*</td>
<td></td>
<td>-0.148**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.024)</td>
<td></td>
<td>(0.048)</td>
<td></td>
</tr>
<tr>
<td>Life_Control</td>
<td>0.042</td>
<td></td>
<td>0.024</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.030)</td>
<td></td>
<td>(0.059)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>1,353</td>
<td>1,353</td>
<td>1,343</td>
<td>1,353</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-1885.703</td>
<td>-1878.722</td>
<td>-1859.606</td>
<td>-2212.890</td>
</tr>
</tbody>
</table>

**Hypothesis testing: East = West**

**Matched city pairs**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Magdeburg = Oldenburg in rounds 1-10</td>
<td>(p = 0.0929)</td>
<td>(p = 0.3690)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magdeburg = Oldenburg in rounds 6-10</td>
<td>(p = 0.3664)</td>
<td>(p = 0.4267)</td>
<td>(p = 0.7389)</td>
<td>(p = 0.8106)</td>
</tr>
<tr>
<td>Jena = Heidelberg in rounds 1-10</td>
<td>(p = 0.1646)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jena = Heidelberg in rounds 6-10</td>
<td>(p = 0.2590)</td>
<td>(p = 0.3142)</td>
<td>(p = 0.2020)</td>
<td>(p = 0.1498)</td>
</tr>
</tbody>
</table>

**Add-on: Non-matched city pairs**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Magdeburg = Heidelberg in rounds 1-10</td>
<td>(p = 0.0115)</td>
<td>(p = 0.0271)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magdeburg = Heidelberg in rounds 6-10</td>
<td>(p = 0.2442)</td>
<td>(p = 0.3867)</td>
<td>(p = 0.1385)</td>
<td>(p = 0.2175)</td>
</tr>
<tr>
<td>Jena = Oldenburg in rounds 1-10</td>
<td>(p = 0.6599)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jena = Oldenburg in rounds 6-10</td>
<td>(p = 0.3882)</td>
<td>(p = 0.3358)</td>
<td>(p = 0.7961)</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** Standard errors in parentheses. \(***\) (1%); \(**\) (5%); \(*\) (10%) significance level.

The upper four regressors apply to all rounds in models 1 and 4, but only to rounds 1-5 in the remaining models.

Results are reported in the bottom of Table 11. On the one hand, we observe systematic differences between students from Magdeburg and Heidelberg as aversion to both low and medium control is significantly more negative in Heidelberg. These differences vanish when agents gain experience. On the other hand, none of the comparisons suggests that control aversion differs between students from Jena and Oldenburg. Had we considered only students from Magdeburg and Heidelberg, our conclusion would have been ‘still different after all these years’ (Brosig-Koch et al., 31).
2011), whereas the mere comparison of students from Jena and Oldenburg would have supported ‘good-bye Lenin’ (Alesina and Fuchs-Schündeln, 2007). These different findings emphasize the methodological value of selecting comparable locations (as far as possible), considering more than one location within a given culture, and relying on repetitions in cross-cultural research.

In summary, students’ choices confirm that the influence of state coercion on control aversion is only short-lived.²⁵

5.3 Methodological aspects

In terms of payment scheme and (known) scale of interactions, the three treatments are incremental variations from the laboratory to our main experiment. Indeed, treatment StudentsAllPaid uses the payment scheme and scale of interactions that usually prevail in the laboratory and treatment StudentsFewPaid-2 uses the payment scheme of our main experiment and known scale of interactions. Note that treatments StudentsAllPaid and StudentsFewPaid-1 not only differ in the payment scheme, but also in the scale of interactions. Interactions take place within the local subject pools in StudentsAllPaid and across the four student subject pools in both StudentsFewPaid treatments. Therefore, to establish whether the payment scheme matters, we first have to find out whether the scale of interactions matters. As we lack an intermediate treatment between the two, we do this check indirectly by comparing treatments StudentsFewPaid-1 and StudentsFewPaid-2 which only differ in the knowledge about the scale of interactions.

Data analyses in this subsection rely on all subjects who participated in the respective treatments, interactions with artificial partners excluded. To test whether there are significant differences between the methodological treatments, we rely on linear mixed regression models with random intercepts on the level of subjects.²⁶

Agents’ choices and control aversion in the methodological treatments

Table 12 shows summary statistics of agents’ effort levels for the methodological treatments (for a graphical illustration, see Appendix F.1.1). The numbers of observations reflect the numbers of choices of all agents across rounds, interactions with artificial partners excluded.

In StudentsFewPaid-1 and StudentsFewPaid-2, both the average and median effort levels are very similar for each of the three control levels. Regression coefficients of two treatments do not differ significantly at the 10 percent level for each of the three control levels. Accordingly, the scale of interactions does not seem to affect choices as knowing about it or not makes little difference, and we pool these two treatments resulting in StudentsFewPaid. To find out about the behavioral impact of the payment scheme, we now compare StudentsFewPaid and StudentsAllPaid. Again, average efforts under no, low and medium control are very similar, and quartiles are nearly identical for each of the three control levels in the two treatments. Our descriptive statistics suggest that the payment scheme does not affect agents’ average efforts, which is again supported by regression results.

Table 13 reports four regression models to test whether the scale of interactions or the payment scheme affect control aversion. Models 1 and 3 compare the treatment StudentsFewPaid-2 with StudentsFewPaid-1, which is represented by the constant. Knowing about the scale of interactions affects choices of agents, but not their beliefs as to how others will behave

²⁵Results on principals’ choices and the beliefs of both roles are as follows. The medium control level is chosen most often in all locations and even more so as the session progresses (see Appendix E.2.1). Student principals in the East enforce higher effort levels than in the West. Agents’ beliefs largely match principals’ behavior, as the large majority of agents in all locations expects principals to impose medium control and these expectations increase as the session progresses. Agents in Magdeburg expect more restrictions than agents in Oldenburg, while agents’ expected frequencies of no, low and medium control are very similar in Jena and Heidelberg (see Appendix E.1.3). Principals in the two East German locations expect lower effort in the absence of control than principals in the two West German locations, while the expected effort increases with the control level in all locations (see Appendix E.2.2).

²⁶We do not include random session effects because we have too few sessions per treatment to do so. All regression details not reported here are available upon request.
Table 12: Agents’ efforts as a function of the principal’s control level in the methodological treatments.

Note: In each panel, the first row reports the average effort for each control level. The second row reports standard deviation followed by 1st quartile followed by median followed by 3rd quartile for each control level.

interactions has no significant impact on control aversion. Thus, we pool both treatments and test whether control aversion in the treatments StudentsFewPaid differs from StudentsAllPaid (represented by the constant) in models 2 and 4. Paying all subjects or paying only few subjects does not affect control aversion. We conclude that neither the scale of interactions nor the payment scheme has a meaningful impact on students’ reactions to control.27

Table 13: Control aversion in the methodological treatments.

Note: In models 1 and 3, the constant refers to treatment StudentsFewPaid-1, while in models 2 and 4, the constant captures treatment StudentsAllPaid.

6 Conclusion

Our paper provides the first evidence on the (in)stability of control-related preferences and therefore makes a novel contribution to the literature on cultural persistence and change. Control aversion has entered the economic literature only recently, though it is of high relevance for economists as it challenges a core assumption of economics, namely that people respond

27This conclusion also applies to principals’ choices and the beliefs of both roles. Neither the scale of interactions nor the payment scheme affect principals’ choices or agents’ and principals’ beliefs in a meaningful way as we never reject the null hypothesis at the 10 percent level. For details, see Appendix F.
positively to incentives. Prior to our study, different shares of control-averse people have been documented in a few studies conducted in laboratories of different countries. Our data suggest that control preferences are affected by the nature of the politico-economic system. However, this effect is only short-lived.

We investigate whether state coercion affects the interplay between control and motivation, as well as the stability of this potential effect across generations. To do so, we exploit the division of Germany after the Second World War and the reunification of East and West Germany in 1990 as a natural experiment. Following division, East Germans experienced a coercive regime while West Germans experienced a liberal regime. After reunification, East Germans and West Germans alike have been living in a liberal democracy.

Relying on a large-scale online experiment with East and West Germans of different generations, our data suggest that the imposition of the different regimes led to more control aversion in the West than in the East, and this difference is more pronounced for the older generation born before 1980, while the difference vanishes in the younger generation of East and West Germans who essentially grew up in reunified Germany. Still, for East Germans who have been socialized under a coercive regime, the experience of a liberal regime does not make them to completely abandon the control-related preferences they acquired earlier.

Surprisingly, in our setting, intrinsic motivation in the absence of control is very similar among East and West Germans. Whether this finding is specific to our sample of highly educated professionals is a question open to future research. Notably, we hardly observe control aversion among our older East German professionals, a sample of highly skilled people who are used to relatively much freedom and responsibility at work.

More control aversion in the West is driven by more frequent control-averse choices, while the strength of reactions to control is similar in both parts of Germany. We test a series of potential additional predictors for control aversion, including sociodemographic characteristics and in particular work-related experiences, but they do not help to explain the difference in control aversion between East and West.

Taking a broader perspective on German history of the 20th century, one could speculate about the distribution of control preferences before the German division. All Germans have experienced two world wars and it is unlikely that control aversion was widespread under these conditions and in a time where conservative values including obedience were much more common than today. Thus, conceivably, while East Germans learned to tolerate control even more under their coercive regime, West Germans developed more control aversion under the liberal regime within a few decades, again suggesting that control preferences are likely to adjust rather quickly to institutional incentives.

References


