The Long-lasting Effects of Experiencing Communism on Attitudes towards Financial Markets

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Abstract

We analyze the long-term effects of living under communism and its anticapitalist doctrine on attitudes towards financial markets. Utilizing comprehensive German brokerage data, we show that, decades after Reunification, East Germans still invest significantly less in the stock market than West Germans. Consistent with communist friends-and-foes propaganda, East Germans are *more* likely to hold stocks of companies in communist countries (China, Russia, Vietnam), and are particularly unlikely to invest in American companies or the financial industry. Effects are stronger for individuals exposed to positive "emotional tagging," e. g., those living in celebrated communist showcase cities. Effects reverse for individuals exposed to negative experiences, e. g., environmental pollution, suppression of religious beliefs, or lack of access to (Western) TV entertainment. Election years trigger further divergence of East Germans in their stock-market investment. We provide evidence of negative welfare consequences, including less diversified portfolios and lower risk-adjusted returns.

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1 Introduction

Almost 30 years after Germany's Reunification, the persistent differences in beliefs, attitudes, and decision-making between East and West Germans remain striking. Whether we measure the presence of women in the workplace, xenophobia, preferences for state interventions, or solidarity behavior, the corresponding statistical maps of Germany clearly delineate the former border.[1] As echoed in the international media covering East and West Germans three decades after the fall of the Berlin wall, why do "walls in their heads" remain?[2]

One important difference that has received less attention, and that can provide some insights in the deeper mechanism underlying the persistent divide, concerns attitudes towards financial markets, the corresponding investment and savings decisions, and the resulting wealth accumulation. East Germans are lagging behind in wealth accumulation far more than lower income levels and higher unemployment rates can explain,[3] and these differences are strongly correlated with differences in financial decision making, in particular stock-market participation.

In this paper, we document large and persistent differences in stock-market and other financial investment between East and West Germans, but also identify significant differences within East Germany and across different types of stocks. Stock-market investment in East Germany is significantly lower, and the decision to abstain from investing in the stock market is coupled with negative attitudes towards financial markets. However, stocks

[1] For example, Alesina and Fuchs-Schündeln (2007) show that East Germans are more in favor of state interventions than West Germans and predict that it will take one or two generations for preferences to converge. Brosig-Koch, Helbach, Ockenfels, and Weimann (2011) find that East Germans show consistently less solidarity than West Germans with no convergence even 20 years after Reunification. Rainer and Siedler (2009) and Heineck and Süssmuth (2013) show that trust levels are lower in East Germany compared to West Germany. There also is evidence that individuals in East and West Germany differ with regard to locus of control, neuroticism, conscientiousness, and openness (Friehe, Pannenberg, and Wedow (2015)).

[2] See, e. g., New York Times, 2/13/2018, "Germans Quietly Pass an Equinox of Unity, but the Walls Remain", or Washington Post, 10/3/2016, "Germany reunified 26 years ago, but some divisions are still strong."

[3] Median net wealth is EUR 24,800 in the East, but ranges from EUR 55,700 to EUR 112,500 in similar-sized regions in the West. Data from the 2018 survey of 45,000 Germans, conducted by the German online bank Comdirect, cf. Sueddeutsche Zeitung, August 1, 2018, "Wo Deutschland wieder geteilt ist."

of companies from communist countries attract significantly *more* East German ownership, and stock of American companies and the financial industry significantly *less*.

We then provide evidence of significant differences in financial decision-making across East Germans, and show that they are predicted by differences in personal lifetime experiences growing up in the GDR. East Germans with relatively positive experiences, such as those growing up in celebrated "showcase cities," continue to shy away from capital markets. Those with relatively negative experiences, such as those experiencing environmental pollution, religious oppression, or those without access to Western TV entertainment, embrace the stock market significantly more. These differences in financial decision-making have significant implications for individual wealth build-up.

Our evidence suggests that prior exposure to a capitalist or communist environment, combined with personal lifetime experiences under the communist system, predict long-lasting attitudes towards capital markets, both between East and West Germans and within East Germany. While earlier research has related individuals' risk perception and risky investments to their local environment and personal experiences,[4] an important difference in this setting is that, rather than experiencing positive or negative outcomes, East Germans had virtually *no* experience with risky assets. Their financial decisions used to be limited to choosing between a savings account, a type of fixed-income security, and a form of life-insurance savings account. Why, then, do East Germans have such a persistently negative attitude towards stock-market investment, on average?

We turn to the notion of "emotional tagging" to explain the persistent imprint, and directional differences, generated by lifetime exposure. This notion builds on prior cognitive-science literature that relates observed differences in behavior to the long-term effects of ideological and emotional priming (Richter-Levin and Akirav (2003)). As also laid out in the memory research by Kahana (2012), and by Wachter and Kahana (2019) for financial decision-making, emotions are an important component of the context a decision evokes

[4] On the influence of the local environment see, for example, Laudenbach, Loos, and Pirschel (2017), Kaustia and Knüpfer (2012). Research on the role of personal lifetime experiences includes Malmendier and Nagel (2011), Strahilevitz, Odean, and Barber (2011), Kaustia and Knüpfer (2008).

in investors. If the decision is similar to a previous situation it will trigger recall of this previous experience and its (emotional) context, and the corresponding behavior ensues. As proposed in Laudenbach, Malmendier, and Niessen-Ruenzi (2019), we focus on the impact of exposure and the negative or positive emotional context while living under communisms as an important contextual dimension shaping episodic memory. That is, while much of the prior literature on *experience effects* has focused on exposure to macroeconomic realizations, we ask how the ideological and emotional tagging of lifetime experiences affects the behavior in the long-run.

The object of our analysis are differences in financial risk-taking between East and West Germans as well as across East Germans decades after Reunification. As emphasized in Alesina and Fuchs-Schündeln (2007), Germany is a unique testing ground for long-lasting exposure effects since it was formerly divided into two parts, a capitalist and a communist system, but reunified almost 30 years ago. People in the Western part lived in a capitalist system, where the German Exchange in Frankfurt re-opened under American protectorate shortly after World War II, in 1945. People in East Germany (the former GDR), instead, lived in a communist system, were excluded from stock-market participation, and were exposed to strongly negative views about capitalism in general, and the stock market in particular. Relative to other communist countries, the GDR stood out in its propagation of the communist doctrine and its strongly negative views about stock markets, which was referred to as "the root of all evil".[5] Arguably the comparatively stronger GDR propaganda served to stabilize the political system and to differentiate the GDR from the West as it could not legitimize itself as a "national state" like other communist regimes: Germans were living on both sides of the border, and West Germany publicly claimed to represent all Germans and called the GDR "puppets of Moscow" (Haury (2004)). As we will show later, survey results suggest that exposure to such a doctrine matters even today: Significantly more East than West Germans think that investing in the stock market is simply immoral.

[5] See, e. g., Handelsblatt, 11/08/2014, "Millionaires not wanted."

We first develop a theoretical framework to illustrate how different past experiences may influence long-lasting attitudes towards the stock market. We model West Germans as learning about the stock market from their direct observations and experiences. However, East Germans have no direct experience with the stock market, and therefore learn about the stock market through signals from the government, such as doctrine or ideology. Due to the experience-based learning process, attitudes towards the stock market continue to differ in East and West Germany after Reunification. That is, our model captures the observed slow adjustment and convergence. The framework also highlights the potential drivers of heterogeneity within East Germany. These include intensity of exposure to government signals prior to Reunification, attitudes towards the government and its signals, and the effect of a resurgence of pro-communist signals during election years (triggers).

We test these predictions using brokerage as well as bank data, augmented by numerous other data sources. Our core data is a novel and comprehensive data set from the brokerage entity of a large German branch bank. It provides detailed holding, transaction, and demographic information for about 200,000 clients from 2004 to 2012, and is thus significantly larger than most of the data sets used in the household finance literature.[6] The size matters particularly in our context where we aim to analyze not only East-West but also within-East differences. Only 20% of the German population live in the East, and the East is split up into 70 counties. Identification requires data with enough investors within each county, e. g. in order to use regional proxies for emotional tagging. Taking the parent company of the broker together with the bank data set, our analysis uses data from financial institutions that command a 50% market share in Germany. Importantly, this share does not remarkably differ between East and West Germany.

Our first main result shows that East German investors exhibit a significantly lower willingness to take stock-market risk, both at the extensive and the intensive margin. Even though East Germans now face the same investment universe and the same legal and regu-

[6] For comparison, the well-know data set of Odean (1999) comprises 78,000 individual investors. Meyer and Pagel (2019) use a data set of 103,000 clients of an online bank to study investors' responses to realized capital gains.

latory framework as West Germans, they are 19.4 pp less likely to participate in the stock market, and conditional on participating, hold 7.2 pp less stocks in their portfolios.

We replicate these findings on data from a large private bank, that also includes individuals' cash holdings and further wealth controls. Both in terms of statistical significance and in terms of economic magnitude, the estimated effects are very similar across those data sets. In addition, we also find significant differences in participation for an (arguably more homogenous) subset of investors living in East and West Berlin, and for a subset of individuals living in two comparable cities closely located on each side of the former border.

To qualify the difference in stock market participation as a result of the long-lasting effects of experiencing Communism, we test for several alternative mechanisms. To begin with, we provide two pieces of evidence indicating that East-West differences in wealth and income, both at the individual and aggregate level, are unable to account for the stock market participation gap. First, we demonstrate that controlling for investors' income, savings, and portfolio values through highly flexible functional forms, leaves the point estimates for the stock market participation gap virtually unaffected. Second, we show that individuals who after Reunification moved from the former GDR to West Germany invest significantly less than West Germans even though they share the same aggregate economic environment. Furthermore, we demonstrate that potential differences in trust, risk tolerance, familiarity with stocks, and financial literacy are also unable to account for the stock market participation gap. Finally, we show that East and West German investors hold similar stock market expectations, ruling out that potentially more pessimistic expectations among East Germans drive our results.

Instead, we provide evidence that East German investors display a higher propensity to express pro-communist attitudes. We furthermore find that for East Germans pro-communist attitudes are highly associated with abstinence from the stock market. Related, analyzing portfolio holdings, we find that East Germans invest significantly less than West Germans in firms perceived as particularly capitalist, namely financial institutions or firms

located in the US, but *more* in firms located in (formerly) communist countries, as well as formerly state-owned German companies.

Next, we analyze temporal and spatial variation in the exposure to Communism. Fuchs-Schündeln and Masella (2016) show that the length of exposure to a communist system matters for the strength of its impact. In line with these findings, we show that the stock market participation gap between East and West Germans is larger for older individuals who were more exposed to the communist doctrine of the GDR. We next test this notion also using geographic variation: West Germans that lived close to the former inner-German border had the opportunity to visit relatives in the East who also lived close to the border. Hence, they potentially transmitted countervailing influences. Indeed, we find that for East Germans living close to the inner-German border, the stock market participation gap is smaller, while it is bigger for those living further away from the border.

The emphasis of our analysis of exposure effects and the emotional-tagging hypothesis lies not only on the exposure to communism itself, but on *how* an individual has experienced the communist system. Emotionally arousing events are not only remembered *better* (since emotionally dependent information is modulated into enhanced memory according to the emotional-tagging concept (Richter-Levin and Akirav (2003))), it also matters whether an experience is tagged with positive or negative emotions as the affective system determines which components from the collection of processed information are preserved in memory (Bergado, Lucas, and Richter-Levin (2011)).[7]

In this regard, we investigate whether citizens with a plausibly more negative experience of the communist system exhibit weaker exposure effects. First, we use environmental pollution, which was both high on average and varied across the GDR. In spite of the communist regime's claim to protect the environment in the interest of peoples' well-being, the GDR had the highest levels of dust and sulfur dioxide emissions across all European countries (Petschow, Meyerhoff, and Thomasberger (1990)). As a result, the GDR faced a significant

[7] Building on an older literature on mood congruence and state dependence in the 1970s and 1980s (e.g., Weingartner, Miller, and Murphy (1977), Isen et al (1978), Blaney (1986)), modern neurological foundations of mood and memory point to the role of the amygdala in reconsolidating emotional memory traces (Dolan (2002), Richter-Levin and Akirav (2003), LaBar and Cabeza (2006)).

increase of problems in "air-hygienic heavily polluted territories", with almost every second child suffering from respiratory diseases.[8] Thus, East Germans living in highly polluted areas should have negative emotions tagged to their experience with communism. We show that the stock-market participation gap is significantly less pronounced in areas that were highly polluted during GDR times.

Second, we utilize the suppression of religion. As common in communist systems, religious life was heavily suppressed in the GDR (Müller, Pollack, and Pickel (2013)). Accordingly, we conjecture that religious people are likely to form negative views about the communist system and should hold more positive views about Western countries, which honor the freedom of religion. We show that differences between East and West German investors are indeed significantly mitigated in counties with high levels of religiosity.

Third, we exploit exogenous variation in access to West German TV, caused by part of the population living in areas where TV signals from the West could not be received (for example, in valleys). The previous literature has shown that resistance to the communist system was higher in regions of the GDR that did not have access to West TV. According to Kern and Hainmueller (2009), West TV was a major source of entertainment for East Germans, the lack of which resulted in lower satisfaction with the GDR and hence a higher resistance to the political system.[9] Since access to West TV is exogenous to other potentially confounding variables, we follow Bursztyn and Cantoni (2016) and use it as a natural experiment to examine whether our main result is weaker for investors living in these areas. We find this to be the case.

Vice versa, we investigate whether our results are stronger for individuals whose experience with the communist system is likely tagged with positive emotions. We argue that this should have been the case for investors living in renamed "showcase" cities, which obtained

[8] Cf. www.bundesregierung.de/breg-de/aktuelles/wahrheit-ueber-verschmutzung-der-umwelt-336222.

[9] Exposure to West German TV in the East has also been linked to consumption of advertised goods (Bursztyn and Cantoni, 2016), aspirations (Hyll and Schneider, 2013), fertility rates (Bönisch and Hyll, 2015), entrepreneurship (Slavtchev and Wyrwich, 2017), beliefs about the determinants of success (Hennighausen, 2015), and crime (Friehe, Müller, and Neumeier, 2017). Interestingly, exposure to West TV appears unrelated to post-Reunification levels of consumption (Bursztyn and Cantoni, 2016) and to protest diffusion during the 1989 East German revolution (Kern, 2011).

communist names under the GDR regime. Individuals in renamed cities are likely to have their communist experience tagged with positive emotions due to the expression of national pride and the celebrations that came along with the act of renaming a city. For example, the administration of the city of Chemnitz, which was renamed to "Karl Marx Stadt," had a flagship role in promoting communist ideology and a very high number of voluntary state-security collaborators (Horsch (1997)). Indeed, we confirm our hypothesis finding that our results are more pronounced for investors living in renamed cities. Related, we also test for differential effects depending on two revealed measures of positive experience. First, we make use of the variation in support for the secret surveillance system (STASI). Even if reasons for serving as a collaborator were manifold, Mueller-Enbergs (1995) name political and ideological reasons as the dominant motivation for serving as an unofficial collaborator. We show that our baseline results are stronger for regions with a high number of unofficial state-security collaborators. In addition, we use data from a survey conducted in 2014 on how positive individuals view the former political GDR system and link the answers to our investors on a regional level. Again, we find lower levels of stock market participation in regions with a more positive attitude towards the former GDR.

Finally, we also establish the emotional tagging of prior experiences by making use of time-series differences in the salience of environmental features.

ideological experiences and resulting views and beliefs. According to salience theory (Bordalo, Gennaioli, and Shleifer (2012)), limited attention of decision makers makes it impossible to consider all relevant information. Rather, attention is shifted towards salient aspects of a decision problem, which are then overweighed in the decision making process and trigger the corresponding behavior. Following this theory, we conjecture that our baseline effect should be stronger in election years, when public attention is focused on political topics and pro-communist messages sent by left-wing political parties are more salient. In these years, the salience of pro-communist messages may trigger East Germans' reluctance to invest in the stock market even more. Our results support this view.

Overall, our findings suggest that experiences that connote strong positive or negative emotions are relevant for individuals' behavior even almost 30 years after they have been made. This is in line with evidence from cognitive psychology and neuroscience, suggesting that experiences made under strong emotional influence are particularly salient to individuals and a strong driver of behavior (Dolan (2002), Talarico, LaBar, and Rubin (2004), and LaBar and Cabeza (2006)). We show a long-lasting effect of emotionally tagged experiences with communism on financial risk taking even decades later. Individuals living in regions with pro-communist views are particularly averse to participate in the stock market, and pay a high price in terms of foregone wealth accumulation, lack of diversification, and excess fees.

Our paper contributes to the growing literature on experience effects cited above. Much of this research provides direct evidence of a beliefs channel, i. e., of a significant effect of lifetime experiences on stock-market expectations. A closely related literature in political economy and labor economics suggests that political and labor-market experiences have long-lasting effects through different channels, such as the formation of preferences and norms, or due to frictions in post-experience adjustment (Alesina and Fuchs-Schündeln (2007), Lichter, Löffler, and Siegloch (2016)). Fuchs-Schuendeln and Schuendeln (2015), for example, argue that the time a person has lived under a democratic system determines her political preferences for democracy. Our analysis of the long-term effects of experiencing communism and its emotional tagging combines the thrust of the finance literature and the political economy literature on experience effects. It further sheds light on the deeper underlying debate on how experiences are weighted and suggests that experiences tagged with strongly positive or negative emotions are most relevant for behavior.

2 Theoretical Framework

We first present a theoretical framework to illustrate how past experiences of living in East versus West Germany could lead to long-lasting differences in attitudes towards the stock market, even decades after Reunification.

In the model, citizens in both West and Germany learn about the quality of investing in the stock market. There are two distinct interpretations regarding the quality of the stock market: quality might either reflect the monetary value in terms of expected returns, or it might reflect the ideologically shaped social value of investing in the stock market. In our empirical analysis, we will distinguish between these two dimensions and analyze over which dimension East and West Germans hold systematically different beliefs. West Germans learn about the value of investing in the stock market from their observations of the market. In East Germany, experience with the market is restricted, and therefore learning about the stock market is influenced by signals from the government. After Reunification, both (formerly) East and West Germans receive the same signals from the market. While beliefs converge, differences in experiences prior to Reunification continue to drive a wedge in beliefs between the East and West.

Setup. Citizens are trying to learn about the quality of investing in the stock market which is either $\{G, B\}$, where G indicates that investing in the stock market is good, and B that it is bad. Citizens start with a prior $P(B) = 0.5$. We assume that the true state is G. Before Reunification, West German citizens receive signals $\sigma_t \in \{g, b\}$ about the true state of the world in each period t, with $p(\sigma_t = g|G) = p(\sigma_t = b|B) = \theta$, $\theta \in (0.5, 1]$. East Germans, in contrast, receive government signals $s_t \in \{g, b\}$ which may be distorted by the communist doctrine. For simplicity, we model the East German government as sending only b signals to their citizens. We assume that East Germans believe a fraction $q \in [0, 1]$ of government signals to be true, and a fraction $1 - q$ to have no information value. Varying q we can increase or decrease East Germans' propensity to believe in government signals.

After Reunification, both formerly-East and West Germans have exposure and access to the market, and receive the true signals σ_t. When receiving a trusted signal σ_t at time t, individuals update beliefs applying Bayes' rule to the posterior

$$P_t(B|\sigma_t, P_{t-1}(B)) = \frac{p(\sigma_t|B)P_{t-1}(B)}{p(\sigma_t|B)P_{t-1}(B) + p(\sigma_t|G)(1 - P_{t-1}(B))}.$$

East vs. West Germany. Given differences in observed signals, we can characterize the beliefs of East and West Germans at the time of Reunification. Assume there are n_1 periods pre-Reunification, in which East Germans receive only bad (government) signals, while West Germans receive g_1 good and b_1 bad signals, with $n_1 = g_1 + b_1$ and $g_1 > b_1$. Then, beliefs of East Germans, $P_{R,\text{East}}$, and beliefs of West Germans, $P_{R,\text{West}}$, at Reunification are

$$
\begin{aligned}
P_{R,\text{East}}(B) &= \frac{\theta^{qn_1}}{\theta^{qn_1} + (1-\theta)^{qn_1}} && \geq 0.5, \\
P_{R,\text{West}}(B) &= \frac{(1-\theta)^{g_1-b_1}}{\theta^{g_1-b_1} + (1-\theta)^{g_1-b_1}} && < 0.5.
\end{aligned} \tag{1}
$$

Result 1 *At Reunification, there will be a wedge in beliefs about the value of investing in the stock market, with West Germans viewing stock-market investment more favorably than East Germans.*

The framework further captures why East and West Germans might continue to have differing beliefs post-Reunification. As they start off from different beliefs at Reunification they will not instantly converge to the same belief. Assume that there are n_2 periods post-Reunification, in which all Germans receive g_2 good signals and b_2 bad signals, with $g_2 > b_2$. Then beliefs in East and West Germany are

$$
\begin{aligned}
P_{R+n_2,\text{East}}(B) &= \frac{\theta^{qn_1+b_2-g_2}}{\theta^{qn_1+b_2-g_2} + (1-\theta)^{qn_1+b_2-g_2}} \\
&< P_{R,\text{East}}(B) \\
P_{R+n_2,\text{West}}(B) &= \frac{(1-\theta)^{(g_1+g_2)-(b_1+b_2)}}{\theta^{(g_1+g_2)-(b_1+b_2)} + (1-\theta)^{(g_1+g_2)-(b_1+b_2)}} \\
&< P_{R,\text{West}}(B) < P_{R,\text{East}}(B)
\end{aligned} \tag{2}
$$

Result 2 *After Reunification, there will continue to be a wedge in beliefs between East and West Germans.*

We establish this baseline result empirically in Section 4. In the following, we extend the model to incorporate several additional features: (i) intensity of exposure to govern-

ment signals, (ii) heterogeneity in the inclination to believe government signals (emotional tagging), and (iii) trigger points (resurgence of anti-capitalist signals after Reunification).

Intensity of Exposure. Our framework allows us to study comparative statics for citizens with more or less exposure to signals prior to Reunification by varying the size of n_1.

Consider scaling the number of signals prior to Reunification by a factor of $\alpha > 1$. Beliefs of West Germans then move more towards G as they receive on net $(\alpha - 1)(g_1 - b_1)$ more positive signals:

$$\frac{(1-\theta)^{(\alpha g_1+g_2)-(\alpha b_1+b_2)}}{\theta^{(\alpha g_1+g_2)-(\alpha b_1+b_2)} + (1-\theta)^{(\alpha g_1+g_2)-(\alpha b_1+b_2)}} < P_{R+n_2,\text{West}}(B).$$

Beliefs of East Germans will move more towards B as they receive $\alpha - 1$ additional b signals,

$$\frac{\theta^{(\alpha q n_1+b_2)-g_2}}{\theta^{(\alpha q n_1+b_2)-g_2} + (1-\theta)^{(\alpha q n_1+b_2)-g_2}} \geq P_{R+n_2,\text{East}}(B).$$

More pre-unification signals, hence, result in a larger gap in beliefs between East and West even after Reunification.

Result 3 *The wedge in post-Reunification beliefs between East and West is increasing in exposure n_1 to government signals pre-Reunification.*

In Section 5.1, we will use variation in age as a direct proxy for exposure to pre-unification signals.

Emotional Tagging. Next, we analyze comparative statics with respect to East German's inclination to believe in government signals q:

$$\frac{d}{dq}[P_{R+n_2,\text{East}}(B) - P_{R+n_2,\text{West}}(B)] = \frac{\log\left(\frac{(1-\theta)}{\theta}\right) n_1 \frac{1-\theta}{\theta}^{q n_1+b_2-g_2}}{\left(1+\frac{1-\theta}{\theta}^{q n_1+b_2-g_2}\right)^2} < 0$$

Result 4 *The wedge in post-Reunification beliefs between East and West is increasing in formerly East Germans' inclination to believe in the government (q).*

There are several determinants whether an East German citizen subscribes or does not subscribe to the government's views and messaging. Our main emphasis here is the role of prior lifetime experiences, and in particular emotional tagging. In the empirical analysis, we aim to identify several factors that may have made living under communism a particularly good experience (e.g., living in a renamed "showcase" city) or a particularly bad experience (e.g., conflict with the locally dominant religious beliefs, no access to TV entertainment, high air pollution), and also correlate with indicators of pro-communist sentiment in other domains.

In Section 5.2, we show that the post-Reunification gap in investment behavior is larger for former East Germans who likely had tagged more positive emotions to their experiences with communism or held beliefs more consistent with the communist doctrine and smaller for those who likely had more negative emotions tagged to their experiences.

Trigger Points. So far, we have assumed that after Reunification all citizens receive true signals σ_t from their observations of the stock market in all periods t. However, there may be times when there is a resurgence of anti-capitalist, communist messages. Specifically, election years draw attention to the political messaging of all parties, including the successor of the former ruling party in the East, the Socialist Unity Party of Germany (SED). This salience effect may trigger East Germans to overweigh the communist doctrine which is part of their memory database in decision making (Bordalo, Gennaioli, and Shleifer (2012)). So far we have implicitly assumed that (distorted) messaging about the stock market disappears or is ignored post-Reunification, as the true signal is available to everybody. An alternative assumption is that former East Germans incorporate such messages when they resurge, because they are in line with their previous experiences, while West Germans will not.

Consider that the n_2-th period is an election year, in which an additional b signal is sent by the communist parties. Former West Germans will not systematically change their beliefs. However, East Germans beliefs are equal to

$$P_{R+n_2,\text{East}}(B|b_{R+n_2},\sigma_{R+n_2}) = \frac{\theta^{(qn_1+b_2+1)-g_2}}{\theta^{(qn_1+b_2+1)-g_2}+(1-\theta)^{(qn_1+b_2+1)-g_2}} > P_{R+n_2,\text{East}}(B|\sigma_{R+n_2})$$

Result 5 *In post-Reunification election years, when an additional b signal is received by former East Germans, the gap in beliefs between East and West will be larger than if it was a non-election year.*

Indeed, in Section 5.3, we find that the gap in behavior between formerly East and West Germans is larger in election years.

3 Data and summary statistics

3.1 Brokerage data

For our main analysis, we obtain security holdings and demographic information on a representative sample of 230,229 retail investor accounts from June 2004 to December 2012. Data are provided by a German brokerage associated with a large bank present in almost all counties of Germany. The data include investor characteristics like age, gender, marital status, a clients's zip code and account related data such as the date the account was open or closed (if applicable). Figure 1 displays the distribution of investors in our sample across Germany. In line with population densities, there are more observations in highly populated areas such as, for example, the Ruhr Valley, but the entire country of Germany is fairly represented in our data set. We exclude 1,179 investors living in the city of Berlin, which originally had an Eastern and a Western part. We use these clients for a robustness test later in our analyses. For our final sample, we use 192,606 clients, for whom all personal as well as regional control variables are available.

Summary statistics of our brokerage data are displayed in Panel A.1 of Table 1. 20.4% of clients in our sample live in East Germany (i.e., the former GDR). 52.6% of investors are male with an average age of 60 years. The majority of investors is married (58.2%) and their accounts are on average open for six years. The average portfolio value amounts to EUR 25,965. Stock market participation, defined as a dummy variable equal to one if an investor holds stocks and/or equity funds in her portfolio, and zero otherwise, is on average 82%. This number is quite high, because most brokerage accounts are opened with the purpose to trade stocks and/or to buy and hold equity in retirement savings plans. Similarly, the fraction of stocks held on average in investors' portfolios if they participate in the stock market is 73%, while investors hold on average 14.7% bonds (out of these, roughly 65% are government and public bonds, while 35% are corporate bonds). Only 3.8% of brokerage clients hold passive investments such as index funds or ETFs. A detailed description of all variables contained in the brokerage data set is provided in Appendix Table A1.

Panel B.1 of Table 1 reports differences between East and West German investors in our brokerage sample. The raw data already suggests striking differences in investment behavior between East and West Germans. East Germans participate significantly less in the stock market than West Germans (61% vs. 87%). While the fraction of stocks conditional on stock market participation is also significantly lower in East German investors' portfolios (67% vs. 74%), East German investors hold more bonds than West German investors (30% vs. 11%). However, we also observe that East and West German investors differ in characteristics that are related to stock market participation like overall wealth levels. Specifically, we find that West German investors hold significantly larger portfolios, live in counties with higher GDP per capita and higher real estate wealth, and receive higher income. Our main analysis tests whether the differences in stock market participation between East and West Germans holds conditional on systematically differing factors relevant for stock market participation.

3.2 Supplemental data

To control for other factors that have been shown to influence stock market participation, but are not available in our brokerage or bank data sets, we make use of various additional data sources. They are listed in detail in Appendix Table A1. As these variables can not be linked to individual investors directly and are mostly available on the county level, we use investors' ZIP code information to merge these variables to investors in our sample. Thus, investors living in the same ZIP code area will be linked to the same geographical factors such as, for example, real estate wealth obtained from the SAVE survey or GDP per capita from the German Federal Statistical Office. In addition, we also use supplemental data from a representative survey which we ran in two waves in July and December 2018 with the help of the German poll institute NorStat. Data from this survey are used to asses East and West Germans' stock market expectations as well as their attitudes towards the economic system.

4 Stock market participation in East and West Germany

It is one characteristic feature of communist systems like the GDR to manipulate individuals in a way that they form strongly negative views on issues that the system criticizes. With respect to the stock market, Lenin (1919) stated that "The necessity for a relentless war on the capitalists is becoming clearer and clearer to the working class and that the stock exchange becomes the most prominent representative of capitalist production itself." (see Figure 2). Similarly, according to Karl Marx, "All surplus-value, in the particular form of profit, interest, returns, is in its essence unpaid labor." (Marx (1867)). In this section, we test whether individuals exposed to anti-capitalist propaganda of the GDR formed negative attitudes towards the stock market, and whether these attitudes still result in lower stock market participation even today.

4.1 Baseline result

To examine differences in stock market participation between East and West German investors, we run the following logit regression:

$$P(y_{it} = 1|x_{it}, East_i, Year_t) = \Phi(\alpha + \beta East_i + \gamma' x_{it} + Year_t), \tag{3}$$

where the binary indicator y_{it} equals 1 if investor i holds stocks and/or equity funds in her portfolios in year t, and zero otherwise. x_{it} is a vector of control variables.[10] Our main independent variable, $East_i$, is a dummy variable equal to one if an investor lives in East Germany, and zero otherwise.[11] We control for individual-level characteristics including gender, age, marital status, and the number of months an account has been open. We also control for the value of an investor's portfolio to account for differences in financial wealth.

Further, we include the number of banks present in an investor's county to rule out supply side effects as well as the number of people living in a given county to capture differences between urban and rural areas. Finally, we capture differences in local economic development, education, and wealth by including real estate wealth, the fraction of inhabitants with a high school degree, local GDP, and the number of local firms in our regression. These variables are measured at the county level. The regression includes year fixed effects, robust standard errors are clustered by municipality. Marginal effects evaluated at the mean investor are presented in column (1) of Table 2.

Results in column (1) show that the average East German investor is 19.4pp less likely to participate in the stock market than a West-German investor. The difference is significant at the 1% level and economically meaningful: Given that the average stock market participation in our sample is 81.9%, living in East Germany is associated with a 24% lower probability

[10] Results are very similar if stock market participation is defined as investors holding stocks (but not equity funds) in their portfolios.

[11] Note, that this information is only available for one point in time (when the account is opened at the bank). For a subset of investors, examined in a later analysis, we observe whether they have moved from East to West Germany based on survey data.

to be invested in the stock market. This corroborates results 1 and 2 from our model in section 2, according to which West Germans view the stock market more favorably than East Germans after Reunification and in subsequent years.[12]

With respect to our control variables, we find that female investors and older investors are less likely to participate in the stock market. We also find that investors with larger portfolio values are significantly less likely to participate in the stock market, which may seem counterintuitive. This result is driven by the fact that many investors in our sample opened an online brokerage account for retirement saving purposes, and usually invest small amounts of money according to a monthly savings plan in just one broadly diversified equity fund. If we drop small portfolio values below 5,000 Euro, the coefficient turns significantly positive.[13] Furthermore, we find that a longer opening time of the account predicts higher participation in the stock market. Comparing the economic significance of the variables included in this regression, being from East Germany is a stronger predictor of stock market participation than most of the other control variables such as gender or portfolio value.

After assessing differences in stock market participation between West and East Germans at the extensive margin, we next turn to the intensive margin. Hence, we examine investments in risky assets conditional on participating in the stock market. To do so, we estimate the following OLS regression:

$$y_{it} = \alpha + \beta East_i + \gamma' x_{it} + Year_t + \varepsilon_{it}, \tag{4}$$

where y_{it} now refers to the fraction of stocks held in an investor's portfolio conditional on holding any stocks or equity funds in her portfolio. We include the same vector of control variables, x_{it} as in equation 3. Results in column (2) of Table 2 show that, conditional on stock market participation, East German investors hold significantly 7.2 percentage points

[12] In further analyses (not reported), we find that the effect is robust and significant for each year in our sample, and that it does not fade over time.

[13] However, we decided to keep these observations in the sample since these investors also made an active decision to participate in the stock market and invest money in equity funds to save for retirement.

fewer stocks in their portfolios than West German investors. This translates into a 9.9% difference relative to the average fraction of stocks in investors' portfolios. In column (1) of Appendix Table A11, we show that this difference persists also unconditional on stock market participation.

Finally, we compute the fraction of bonds held in an investor's portfolio and use it as the dependent variable in equation 4. Bonds in our sample are 65% government bonds and 35& corporate bonds. Results are reported in column (3) of Table 2. We find that the fraction of bonds, in East German investors' portfolios is 16.0 percentage points higher than the fraction of bonds in West German investors' portfolios. Compared to the mean fraction of bonds in investors' portfolios, East Germans hold twice as many bonds in their portfolios than West Germans. This may be due to the fact that bonds have features like a fixed interest rate that are more similar to the assets that were available to investors in the former GDR and thus less stigmatized for representing capitalism.[14]

Berlin as a case study: Next, we restrict the sample to individuals living in Berlin, which was split in two parts after World War II. While East Berlin belonged to the GDR, West Berlin belonged to the Federal Republic of Germany. The two parts of the city were separated by the Berlin Wall, and inhabitants had no regular access to the other part of the city. Thus, the case of Berlin serves as a suitable testing ground for our main hypothesis.

We define a new dummy variable, East Berlin, which is equal to one if an individual lives in East Berlin, and zero, if she lives in West Berlin. We then run the same regressions as in Table 2.[15] Results are reported in Appendix Table A2. We confirm the stock market participation gap between East and West Germans for the inhabitants of Berlin. Specifically, individuals from East Berlin are 4.6pp less likely to participate in the stock market. Relative

[14]In line with this conjecture, we find in unreported results that East Germans, conditional on investing in bonds, hold a significantly lower fraction of corporate bonds (25%) compared to West Germans (30%), and a higher fraction of government bonds (75% vs. 70%, respectively).

[15]Note, however, that we can not include all control variables such as the number of banks, GDP per Capita, Real estate wealth and Highschool degree, since these variables are only available at the county level. At the same time, we are less concerned about these variables in the Berlin setting, since, for example, all inhabitants of the city should have regular access to a bank located close by.

to the average stock market participation for the city of Berlin (90%), this difference amounts to 5.1%. Thus, the economic magnitude of the effect is less pronounced than for the entire country. This, however, may not be surprising given that particularly some parts of East Berlin (for example, Prenzlauer Berg and Friedrichshain) are nowadays inhabited by many West Germans. We do not find that people in East Berlin hold statistically significant smaller fractions of stocks conditional on participating in the stock market (column (2)), but the fraction of bonds in their portfolios is 2.3pp higher.

Two matched cities as a case study: As an alternative to comparing East and West Berlin, we identify two "matched cities" of comparable size, i.e. Eisenach and Bad Hersfeld, that are located in similar distance to the former West German border. The city of Eisenach is located in East Germany with a distance of 29.8 kilometers to the former inner-German border. It has about 43,000 inhabitants, and 224 observations from this city are included in our database. The city of Bad Hersfeld is located in West Germany with a distance of 30.8 kilometers to the former border. It has about 30,000 inhabitants, and 350 observations from this city are included in our database. The distance between both cities is 59.8 kilometers and a 40 minutes drive according to google maps. Both cities are well-known tourist destinations and are comparable in terms of their industry structure, which is dominated by several medium-sized businesses (Eisenach has a focus on automotive, Bad Hersfeld on textile and logistics).

In unreported results, we re-run our baseline regression from Appendix Table A2 for a restricted sample of individuals living in either Eisenach or Bad Hersfeld. Even though this regression is only based on 574 observations, we still observe significantly lower stock market participation in the East German compared to the West German city (coefficient: -0.0303, t-stat: -2.37). We also find that individuals in Eisenach hold a smaller fraction of stocks in their portfolios conditional on participating in the stock market (coefficient: -0.136, t-stat: -1.80) and a larger fraction of bonds (coefficient: 0.167, t-stat: 3.68).

Selection: In the following, we consider several robustness tests to address multiple concerns regarding our main results.

A first concern regarding our brokerage data could concern differential selection into the specific brokerage bank among East and West German clients. To carefully address this concern, we make use of a data set provided by the international data and analytics group YouGov, which collects and connects data on brand usage, brand perception and brand satisfaction in a panel of over 70,000 respondents. Important for our context, respondents are asked about their residence (state), their perception of different (bank) brands (including the bank with our brokerage entity) as well as the name of the bank with their main account. This allows us to assess the bank brand perception in East and West Germany and additionally look at answers for a group of East and West German respondents, who are clients at our brokerage bank. Figure 3 depicts the results. Generally, the market share of our bank is not significantly different for East and West German respondents (p-value for current customers: 0.21; p-value for former customers: 0.92). East and West German respondents do also not significantly differ in brand and advertisement awareness of the bank: 89% in both areas generally know the bank, 25% in both areas report to have seen advertisements in the last two weeks and a slightly higher fraction of East Germans than West Germans (24% compared to 21%) report to have talked to friends and family about the bank. With regard to clients of the bank, the general evaluation of the bank brand on a five point scale (I hate it, I do not like it, it's ok, I like it, I love it) does also not significantly differ (p-value=0.40).

A second concern regarding our brokerage data is that we only observe stock market participation conditional on having an online brokerage account. The gap in stock market participation may be different for the overall population including individuals who do not invest at all and only hold cash. To address this concern, we make use of an additional data set of 6,903 randomly drawn clients from a larger German bank. This data set allows us to include a broader set of investors in our regressions, i.e., those that have not opened a

brokerage account and only hold cash on a regular savings account.[16] Summary statistics on the bank data set are provided in Appendix Table A3. 18.0% of clients live in East Germany (i.e., the former GDR) and stock market participation is only 12.5% on average.[17] If clients participate in the stock market, they hold 71% stocks in their portfolios.[18] To assess the differences between East and West Germans, we again run a logit regression where the dependent variable is equal to one if an investor generally participates in the stock market (independent of having opened a portfolio), and zero otherwise. Results are reported in Table A4 and confirm the findings from our main data set.

Column (1) of Table A4 shows that the average East German investor is 3.7pp less likely to participate in the stock market than a West-German investor. The difference is significant at the 1% level and economically meaningful: Given an average stock market participation in our bank data sample of 12.5%, living in East Germany is associated with a 30% lower probability to be invested in the stock market. In column (2), we use a specification which is directly comparable to our brokerage data. Conditional on having a portfolio, East German clients in this data set are 18.1pp less likely to participate in the stock market, which corresponds to a 25% lower participation rate relative to the baseline probability of 71% in this sample. This magnitude is very similar to the one we observe in our brokerage data set (i.e., 24%). In column (2) of Appendix Table A11, we show that this difference persists also unconditional on stock market participation. Finally, results in column (3) show that the fraction of stocks conditional on having a portfolio is 17.1pp lower for clients living in East Germany compared to clients living in West Germany.

Taken together, in both data sets, we find pronounced differences in stock market participation between East and West Germans almost 30 years after Reunification. In economic terms, the different raw data available to us suggest the following stock market participation gap between East and West Germans: 32% (brokerage data), and 29% (bank data). After

[16] In addition, we have access to the respective monthly average account balances from January 2016 to August 2017. We use the annual average of these monthly account balance snapshots in our later analysis.

[17] In this sample, we define participation as the percentage of clients holding any single stocks, since the data set does not allow us to define a precise equity measure including assets other than single stocks.

[18] We do not observe bond holdings in the bank data set.

including control variables in a regression framework, our brokerage and bank data show that a gap of about 19% to 24% remains.

4.2 Potential Mechanisms

What explains the persistent gap in stock market participation between East and West Germany? In the following we consider several distinct mechanisms: (i) differences in wealth and income, (ii) differences in trust, risk tolerance and financial literacy, (iii) and differences in stock market expectations as well as attitudes towards the economic system.

Wealth and income: Although the above analysis includes a large set of individual- and county-level control variables, one might hypothesize that the stock market participation gap between East and West Germans can be accounted for by differences in wealth and income. Such differences might either concern aggregate economic conditions or individual-level differences. We provide two additional pieces of evidence to assess this hypothesis.

First, we use survey data on a subset of investors allowing us to identify individuals who moved from East to West Germany after the fall of the Berlin Wall in 1989. This allows us to compare individuals who are currently exposed to the same economic environment but had different experiences regarding the economic system. We provide this comparison in Table 3 for the bank data set. Column (1) shows that movers from East Germany are 4.6pp less likely to invest in the stock market compared to West Germans. In column (2), we exclude all East Germans and only compare West Germans to former East German investors who have moved and now live in West Germany. These movers are 7.2pp less likely to participate in the stock market. In columns (3) and (4), we refine our mover variable and identify investors who have lived in West Germany for a minimum of ten or twenty years. We still find a stock market participation gap of 7.1pp to 10.6pp and effects are again economically large, namely a reduction in the relative participation rate between 28% and 35%.

Our second piece of evidence does not target at differences in aggregate economic conditions, but rather investigates individual-level differences in investors' income, savings and portfolio values which we can leverage in the bank data. In Appendix Table A5, we re-run

the same regressions as in Appendix Table A4, but additionally include squared and cubic terms of investors' income, savings, and portfolio values.[19] The point estimates are remarkably robust to including controls for income and wealth: we still observe East Germans to significantly participate less in the stock market with point estimates similar in magnitude to those in Appendix Table A4. Similarly, conditional on participation, the fraction of stocks held by East Germans is significantly higher and the fraction of bonds significantly lower compared to West Germans.[20]

We conclude that differences in stock market participation between East and West Germany cannot be accounted for by differences in income and wealth neither at the aggregate nor the individual level.

Trust, risk tolerance, familiarity and financial literacy: Next, we investigate whether differences in trust, risk tolerance, familiarity and financial literacy are able to account for the significant differences between East and West Germans' investment behavior.

Prior work indicates that East and West Germans systematically differ in their economic preferences. Heineck and Süssmuth (2013) and Fuchs-Schuendeln and Haliassos (2015) for instance find that East Germans are more risk averse and trust others less than West Germans. We investigate whether risk tolerance and trust – two relevant preferences in the realm of investment behavior (Guiso, Sapienza, and Zingales (2006)) – are driving the stock market participation gap between East and West Germans. We proxy for these preferences as follows: when clients open their account, the brokerage firm assesses their risk attitude on a scale ranging from 1 (conservative) to 3 (speculative). We obtain these data for a

[19] The latter can only be included in columns (4) and (5), which conditions on investors having opened a portfolio.

[20] We also run a placebo test and examine differences between North- and South German investors, excluding East Germany. Since wealth and income is higher in South Germany (i.e., Bavaria and Baden-Wuerttemberg) than in North Germany (see "http://www.bhls.eu/vergleich-norddeutschland-sueddeutschland.html"), similar to the East-West difference, we would expect North Germans to participate less in the stock market than South Germans if differences in wealth are the main driver of stock market participation in Germany. We do not find this to be the case (coefficient on the placebo dummy: -0.001, z-stat: -0.01

sub-sample of 48,123 investors.[21] Trust in the stock market is measured on a 7-point Likert scale in a survey obtained from the bank data (see Appendix Table A1).

Columns (1) and (2) in Table 4 estimate our baseline specification but additionally include investors' risk tolerance and trust, respectively. After controlling for risk tolerance, which has the expected significant positive impact on stock market participation, we still observe a significant stock market participation gap between East and West German investors of 22.7pp. Similarly, when controlling for trust, which also positively predicts stock market participation, the stock market participation gap between East and West Germans still amounts to 29.3pp. In addition, in Appendix Table A6 we still find conditional on these controls that East German investors hold a lower fraction of stocks in their portfolios, while they hold a higher fraction of bonds.

People in East Germany were not exposed to financial markets for 40 years and thus, after Reunification, they were not familiar with most of the financial products offered to West German investors (Fuchs-Schuendeln and Haliassos (2015)). Therefore, we investigate whether differences in familiarity with stocks as well as financial literacy between East and West Germans potentially account for the stock market participation gap. In columns (3) and (4) of Table 4, we include survey-based measures of familiarity ("The stock market is a closed book to me") and the basic financial literacy score of van Rooij, Lusardi, and Alessie (2011) as additional control variables. Both variables are aggregated at the county level. We observe a stock market participation gap of 25.9pp to 27pp between East and West German investors that is not explained by the addition of these variables. We also observe that East German investors conditional on these controls hold about 9pp fewer stocks and about 20pp more bonds in their portfolios (Appendix Table A6).

Finally and complementarily to above, we exploit that the brokerage firm assesses investors' net income at account openings on a scale ranging from 1 (below 1,000 Euro per month) to 4 (above 3,000 Euro per month).[22] We obtain these data for a sub-sample of

[21] Univariate statistics in Panel B of Table 1 confirm our survey results and show that West-German investors have a significantly higher risk tolerance than East German investors (1.74 versus 1.49 on average).

[22] Univariate statistics in Panel B of Table 1 show that West Germans on average earn significantly higher income than East Germans.

48,123 investors. In column (5) of Table 4, we add investors' income bracket as an additional control variable. East German investors are still 26.4pp less likely to participate in the stock market than West German investors even after controlling for income differentials. They also hold 15.2pp fewer stocks in their portfolios, and 20.6pp more bonds conditional on this control (Appendix Table A6).

In column (6) of Table 4, we include all additional control variables at the same time. Even though the resulting intersection of observations drops to 64,553, we still obtain a significant stock market participation gap of 17.4pp between East and West German investors, which amounts to 33% relative to the mean stock market participation. This also holds for the intensive margin (see Appendix Table A6).[23]

Stock market expectations and attitudes towards the economic system: The previous findings imply that differences in wealth and income, trust, risk tolerance, as well as financial literacy are unable to account for the stock market participation gap between East and West Germany. In our model, we propose that differences in stock market participation arise due to differences in beliefs about the value of investing in the stock market. These beliefs may be twofold: first, East and West Germans might have different expectations about the return to investing in the stock market. Alternatively, they might exhibit different ideological attitudes towards the economic system and thus differ in their beliefs about the social value of investing in the stock market.

To systematically test for these two mechanisms, we conducted a representative survey among 1,598 Germans in July 2018 with the help of the German poll institute NorStat. Reassuringly, 24.5% of West Germans, and 18.7% of East Germans responded that they have invested or are currently invested in the stock market. The difference between East and West Germans is statistically significant (p-value 0.054). In economic terms, it corresponds

[23] Aside from risk tolerance, income, familiarity, trust, and financial literacy, differences in participation may also be driven by differences in access to the stock market, for example through employee stocks. While we don't have information on whether investors in our sample hold employee stocks, data provided by the German stock institute (DAI) suggest that the fraction of employee stock holders among all stock investors does not differ largely between East (22%) and West Germany (20%) for the time between 1997 and 2016.

to a participation gap of 24.2% which is in line with our findings from other databases in the previous section.

To test for systematic differences in stock market expectations between East and West Germans, we elicit three items: first, we elicit the expected development of stock values over the next months. Second, we ask whether respondents think the stock market is currently over-, under- or correctly valued. For both questions, we do not detect significant differences between East and West Germans. Finally, we ask what average annual return a respondent would expect if he had invested in the stock market for 30 years. East Germans expect an average of 11.9%, while West Germans expect an average of 13.5%. The difference is not statistically significant. To corroborate these results, we use data of a stock market sentiment index constructed by the German market research institute Sentix based on a weekly survey conducted among more than 4,000 respondents. Respondents are asked about their midterm (6 months) return expectations about the DAX being bullish (-1), neutral (0), or bearish (1). We construct monthly averages for East and West Germans separately for September 2016 to August 2018. Figure 4 depicts our results. They suggest that stock market expectations of East and West Germans are very similar. Results from a two-sided t-test do also not reveal significant differences in stock market expectations between East and West Germans (p-value: 0.31). In sum, we do not find systematic differences between East and West Germans with regards to their stock market expectations.

With respect to realized returns, one may argue that East Germans' lower willingness to invest in the stock market could be driven by bad experiences they made with the stock market immediately after Reunification. However, stock market performance in Germany after Reunification was very positive: An investor who entered the German stock market index DAX in 1990 and held it until 2018 would obtain a return of 7.5%. Furthermore, if somebody entered the DAX between 1990 and 1996 and held it for at least two years, the return would always have been positive.[24]

[24]see "https://www.dai.de/en/what-we-offer/studies-and-statistics/return-triangles.html"

While neither expected nor realized returns are able to account for differences in stock market participation between West and East Germans, we next consider whether attitudes towards the economic system might explain the differences. We elicitied a battery of survey questions measuring anti-capitalist attitudes among East and West Germans. In Panel A of Figure 5, we show the fraction of survey respondents agreeing in response to four anti-capitalist statements, separately for East and West Germany.[25] The figure indicates that East Germans show a higher propensity to express anti-capitalist and rather pro-communist attitudes. For instance, while only 40% of West Germans agree in response to the statement that "Capitalism should be restricted", the fraction agreeing in East Germany equals 51%. The results are indicative that differences in anti-capitalist and pro-communist attitudes are prevailing between East and West Germany.

To assess whether these attitudes can account for the absence of East Germans investing in the stock market, we launched a second survey in December 2018 with the help of NorStat among 1,600 East Germans. The second survey only includes a representative sample of East Germans to gather more observations from East Germany which enables us to conduct a refined analysis on differences within East Germany. We included a modified battery of questions capturing respondents' attitudes towards capitalism and communism on either a 4- or 5-point Likert scale and elicited stock market participation. In Panel B of Figure 5, we assess for East Germans the link between stock market participation and pro-communist attitudes. The figure plots the coefficient on standardized survey responses in OLS regressions with stock market participation as the dependent variable conditional on a rich set of demographic controls. The figure reveals that stronger pro-communist and anti-capitalist attitudes are related to stock market non-participation within East Germany. Thus, the communist ideology, which was strongly promoted via political propaganda in East Germany, appears to have a long-lasting impact on how East Germans think about the economic system and on their decision to invest in the stock market.

[25] We exclude participants from Berlin who might either live in the former East or West.

Particularly, the communist ideology of the GDR aimed at legitimizing and differentiating itself from Western Germany. The GDR regime aimed at strengthening communist views and strongly criticized the economic system of capitalist countries such as the US. At the same time, positive views were conveyed about other communist countries such as Russia, China, or Vietnam. As an example, GDR authorities distributed posters that were supposed to demonstrate friendship with their communist allies (see Panel A of Figure 2). These posters were also used to criticize the US in general, and stock markets in particular (Panel B of Figure 2).

The GDR regime's success in priming communist views on its people is still reflected in the stock picking behavior of East German investors today. Appendix Table A8 lists the top 10 holdings of (anti-) capitalist companies in our sample. Not surprisingly, the top 10 US stocks are well-known companies like Microsoft or Apple. The top 10 stocks belonging to the financial industry are predominantly major German banks, financial advisory firms, as well as insurance companies. With respect to Russian and Chinese firms, the top 10 holdings are predominantly stocks of state owned companies belonging to the Energy or Basic Materials sector.[26] Overall, stocks of communist countries are held by 4,812 investors (3%) in our sample. Investments in stocks of firms in these countries are often conducted via American or Global Depository Receipts (ADRs or GDRs). If we regress the fraction of stocks held in (anti-) capitalist companies on the East German dummy variable (see Table 5), we find that, conditional on stock market participation, East German investors hold a 7.6pp lower share of financial companies and a 4.8pp lower share of US firms than investors from West Germany. At the same time, they hold a 10.4pp higher share of stocks of companies located in Russia, China, or Vietnam, and a 4.1pp higher share of stocks of (formerly) state-owned German companies. All differences between East and West German investors are statistically significant at the 1% level.[27] What, however, explains the variation

[26]There is only one Vietnamese stock held by investors in our sample. It belongs to an asset management company that invests in previously state owned firms in Vietnam. This stock is held by 68 different customers in our sample.

[27]To mitigate concerns that differences in risk-aversion rather than exposure to propaganda drive our results, we re-estimate all regressions and include county-level risk aversion as an additional control variable. Results (not reported) are robust.

in attitudes towards the economic system *within* East Germany? We investigate this issue in the next section.

5 Exposure to Communist Ideology

Our baseline results document that East German investors, who experienced the former GDR system, express a lower willingness to take financial risk on both, the extensive and the intensive margin. The emphasis of this study lies, however, not only on the exposure to communism itself, but on differences between East Germans. We argue that it is crucial how an East German individual has experienced the communist system, i.e. whether positive or negative emotions are associated with it. In this section, we therefore exploit variation in intensity and direction of the exposure within the group of East Germans. First, we show that East Germans who were more exposed to anti-capitalist GDR propaganda in general, namely investors older than 50 years, and those that live further away from the former border to West-Germany, are even less willing to take financial risk.

Thereafter, we investigate heterogeneity by how the communist system was experienced. Specifically, we show that our main result is weaker for East Germans whose experience of the communist system is tagged with negative emotions, namely for religious East Germans and those living in polluted areas, or areas without Western TV reception. Furthermore, we show that our results are stronger for East German investors who plausibly had more positive experiences, namely investors living in renamed cities (e.g. Karl Marx Stadt) and those who reveal a higher satisfaction with the political system of the GDR. Appendix Table A9 shows that our various measures of exposure to communist ideology indeed capture different aspects of communist experience, since correlations between these measures are low. For example, we find a correlation of -0.015 between living in a region with a high share of Catholics and living in a renamed city. Most importantly, we are able to use differences in exposure that also break the link between the former GDR and the economic situation today, which can be shown by the low correlation between living in an area with high GDP

per capita, and for example a renamed city (correlation coefficient of 0.03), or an area with a high fraction of religious people (correlation coefficient of -0.02).

5.1 Intensity of exposure

If experiencing a communist system has indeed long-lasting effects on financial risk taking, the effect should be stronger for East Germans with more exposure to the communist doctrine (see result 3 in Section 2). We test this idea along two margins: first, we hypothesize that our results should be stronger for older people in East Germany who have lived in the GDR for a significant amount of time and thus should have had more exposure to its communist ideology. In addition, we hypothesize stronger effects for East Germans living in counties further away from the former border to West Germany. These individuals had more exposure to communist ideology and less exposure to influences from West Germany, because they are less likely to have relatives just across the border that could otherwise influence the way they were thinking about the different political systems in East and West Germany. In our theoretical framework, we think of these East Germans as being exposed to more signals from the GDR prior to Reunification.

To test the influence of the intensity of exposure to communism on stock market participation, in column (1) of Table 6, we interact the East German dummy variable with an indicator for individuals older than 50 years. We find that our baseline effect is indeed more pronounced for older East Germans, who are 19.2pp less likely to participate in the stock market than their counterparts from West Germany.[28] The difference in stock and bond holdings is also more pronounced for older East Germans and amounts to 9pp for stock holdings, and 18pp for bond holdings, respectively (Appendix Table A10).

After studying variation in exposure time, we next investigate geographic heterogeneity in the intensity of exposure. In 1972, the GDR and the FRG signed a travel agreement "Kleiner Grenzverkehr (border circle of the GDR)", according to which West Germans from nearby areas were allowed to cross the border to the GDR for up to 30 days a year

[28] In an alternative specification (not reported), we run our main regression separately for different age brackets. Coefficients on the East dummy are always negative and statistically significant.

and 9 days a quarter, one day at a time. The regions belonging to the travel agreement are displayed in Figure 6. Traveling to the GDR was permitted to each resident of the FRG living in cities and districts listed as "close to the border". Only those areas of the GDR could be visited, which were listed as belonging to the "border circle of the GDR". The radius of this circle was approximately 100 kilometers. Travelers were allowed to visit relatives. In addition, travel due to purely touristic reasons was also allowed. Living close to the former border to West Germany thus increased the likelihood, that East Germans were exposed to West German influences due to travelers (and relatives) visiting from the FRG. The GDR was well aware of this potential threat to the stability of its political system. Its secret police, the STASI, closely monitored activities among people living close to the border. Specifically, the STASI regularly prepared reports on the "political and ideological situation at the border". According to these reports, negative opinions on the GDR system were expressed more frequently in areas close to the border to West Germany. The GDR attributed these opinions to "hostile attempts of manipulation by relatives and friends from West Germany, [...] leading to negative sentiment in these areas [...] and eventually attempts to escape" (Ministry of State Security (1961), Borderpolice (1960)). Therefore, we conjecture that our results are weaker for investors living close to the border to West Germany, as they are more likely to have experienced both, political propaganda of the GDR, as well as countervailing influences from West Germany.

To test whether our main result is stronger for East Germans living further away from the former border to West Germany, we interact the East German dummy variable with a dummy variable which is equal to one for all investors living outside the border circle area, i.e., more than 100 kilometers away from the former border to West Germany. The dummy is equal to zero for all investors living within the border circle area, i.e., closer or equal to 100 kilometers from the former border to West Germany. Results are presented in column (2) of Table 6 and show that our main results are indeed more pronounced for East Germans living further away from the West German border: they are less likely to participate in the

stock market at both, the extensive and intensive margin and the fraction of bonds in their portfolios is larger (see also Appendix Table A10).

In column (3) of Table 6, we include all interactions as well as the baseline variable differentiating between East and West German investors. We find that our main results remain stronger for older East Germans and those living further away from the former border to West Germany.

5.2 Emotional tagging of communist experience

The impact of communist propaganda on financial risk taking might not only be affected by its intensity, but also by the emotions tagged to its experience. In the following, we examine differential impacts of communist propaganda on East Germans conditional on its emotional tagging. Emotions determine how strongly an experience is anchored in memory (Dolan (2002), Richter-Levin and Akirav (2003), LaBar and Cabeza (2006)). Hence, we conjecture that two East Germans with the same exposure to the communist system may respond with different behaviors, depending on whether their experience was tagged with positive or negative emotions (Laudenbach, Malmendier, and Niessen-Ruenzi (2019)). In our theoretical framework (see section 2), we think of positive emotions towards the GDR as inducing a higher propensity to believe in the government's anticapitalist signals (q). Hence, the negative effect on stock market participation might be amplified if communist propaganda was associated with positive emotions. Vice versa, it might be attenuated if communist propaganda was tagged with negative emotions.

Negative emotional tagging: To begin with, we focus on negative emotional tagging and consider conditions which plausibly induced negative emotions towards the GDR system.

First, we hypothesize that East Germans living in areas that were heavily polluted during GDR times associated more negative emotions with communism. In comparison to all European countries, the GDR had the highest levels of dust and sulfur dioxide emissions, resulting in significant increases of respiratory diseases and skin problems like eczema with

children particularly affected (Petschow, Meyerhoff, and Thomasberger (1990)). After the German Reunification in 1990, the ministry of environmental affairs of West Germany defined 16 counties in the GDR that needed immediate action to stop environmental pollution because of out-aged power plants, filter plants, or chemical plants. We investigate heterogeneity of our main effect by a dummy variable for all zip-codes belonging to these 16 counties.

Second, we hypothesize that East Germans in more religious areas are likely to have had a more negative experience of the communist system. As a common feature of communist systems, religion was viewed as a tool used by the ruling classes to suppress people belonging to the working class. This view has already been articulated by Karl Marx who stated that "religion is opium of the people" (Marx (1843)). While religious groups were not completely outlawed in communist countries, religious property was frequently confiscated and believers harassed. Therefore, we conjecture that East Germans in religious areas are more likely to have had a negative experience of the communist system. We investigate heterogeneity of our main effect along the fraction of catholic and protestant citizens in a county.

Third, we employ a measure of negative experience of the GDR system derived from a natural experiment: differential access to West German television during GDR times. Some regions in the former GDR were either too distant from the western border or West Berlin, or located in valleys behind mountains that blocked TV broadcasting signals. A famous example is the district of Dresden, situated in the Elbe valley, which became known as the "valley of the clueless" (Stiehler, 2001). During the Cold War, the United States used radio projects such as "Voice of America" or "Radio Liberty" to reach East German individuals and expose them to pro-Western political opinions. TV consumption patterns in East Germany, however, indicate that inhabitants preferred entertainment over news due to a desire for everyday relaxation (Bösch and Classen (2015)).[29] Therefore, in contrast to what one may expect, individuals in areas with access to Western television programs were

[29]This is in line with findings in Chen and Yang (2018), who show that free access to uncensored Internet in China has little effect on students' acquisition of politically sensitive information from foreign news outlets. Rather, students preferred entertainment websites.

more satisfied with the political system of the GDR (Kern and Hainmueller (2009)).[30] Thus, not having access to Western TV might have resulted in a lower willingness to follow the communist doctrine. We investigate heterogeneity of our main effect by a dummy variable reflecting counties in East Germany that did not receive signals from Western TV stations.

Columns (1) to (3) in Table 7 analyze heterogeneity by interacting the three proxies for negative emotional tagging with the East Germany dummy variable. East Germans in heavily polluted counties show a statistically significant 5.2%-point smaller stock market participation gap relative to other East Germans (column (1)). Similarly, East Germans in more religious areas (column (2)) and those without access to West TV (column (3)) exhibit a significantly smaller participation gap. These results support the view that East Germans who plausibly experienced communism more negatively show a smaller stock market participation gap relative to West Germans.

Positive emotional tagging: While political and civil liberties were heavily restricted, some aspects of the life in the former GDR might have been experienced positively. Such positive experiences might have increased East Germans' susceptibility to communist propaganda which would amplify our main result. To test this hypothesis, we next consider heterogeneity among East Germans along three distinct proxies for positive emotional tagging.

First, we define a dummy variable indicating whether East Germans live in a city that was renamed after important communist personalities. When the communists came into power, several squares, streets, football stadiums or iron works were renamed in order to immortalize communist heroes. One of the most prominent acts was to rename a city to express national pride.[31] The act of renaming a city was celebrated publicly with thousands

[30] In addition, Meyen (2003) argues that exposure to Western TV may increase the awareness of the dark side of capitalism by making the potential downside of a capitalistic society with high levels of crime, homelessness or unemployment more salient.

[31] Renamed cities were selected by a central committee of politicians. For example, the city of Chemnitz was renamed to "Karl Marx Stadt" in order to celebrate the 135^{th} anniversary of Karl Marx. Originally, it was planned to give the name to the city of Eisenhüttenstadt. However, after the death of Stalin in 1953, Eisenhüttenstadt was spontaneously renamed into "Stalin"-stadt and Chemnitz was given the name "Karl Marx Stadt".

of workers participating in marches and getting together on the big squares of the city. Due to the expression of national pride and the celebrations that came along with the act of renaming a city, East Germans living in one of the five renamed cities are likely to have their experience of communism tagged with positive emotions.[32]

Our second and third proxies of positive emotional tagging represent revealed measures of positive experience. Our second proxy involves the number of state-security collaborators (spys) on the county level. While reasons for serving as a collaborator were manifold, according to Mueller-Enbergs (1995), political and ideological reasons have been the dominant motivation for signing up as a voluntary collaborator at the secret police. Hence, we hypothesize that the amount of voluntary STASI collaborator in a county proxies for positive attitudes towards and experiences with the political system of the GDR.

Third, we examine regional variation in contemporary perceptions about the GDR's political strengths based on a 2014 survey conducted by the German polling institute "Infratest".[33] This variable provides a revealed measure of positive experiences associated with the GDR system. This allows us to investigate heterogeneity of our main effect along the fraction of survey respondents in an investor's county who agreed that the GDR had special strength with regards to the political system.

Columns (4) to (6) in Table 7 analyze heterogeneity among East Germans by interacting the three proxies for positive emotional tagging with the East Germany dummy variable. East Germans living in a renamed city show a significant 18.1%-point lower stock market participation compared to other East Germans. Stock market participation is also significantly lower for East Germans in counties with a higher fraction of STASI volunteers and those that exhibit a more positive perception of the GDR system.[34]

[32]The five renamed cities are Chemnitz, Eisenhüttenstadt, Kriegsdorf, Neuhardenberg, and Werminghoff.

[33]The exact questions was: "If you compare today's social and political conditions to those in the former GDR - Do you think the the GDR had special strength with regard to the political system?" Answering possibilities were "yes", "no" or "I do not know".

[34]We also considered an additional heterogeneity test based on whether an investor lives in a city of a former Olympia (gold) medalist. The GDR's political leadership regarded athletic prowess as an important tool in their efforts to prove their system's superiority to Western liberalism and promote national pride. We conjecture that people living in a place that produced an Olympic medal winner also formed particularly

We conclude that positive and negative emotional tagging can amplify or attenuate the long-lasting effects of communist propaganda on East Germans' willingness to participate in the stock market. In addition, we show in Appendix Tables A12 and A13, that the same patterns persist qualitatively if we consider the fraction of stocks and bonds held in a portfolio. In particular, East Germans who experienced the GDR system more positively invest a lower amount in stocks and a higher amount in bonds. Vice versa, those East Germans who had a more negative experience invest a higher amount in stocks and a lower amount in bonds.

5.3 Trigger points: Election years

In this section, we examine whether there is time series variation in the stock market participation gap between East and West Germans. According to salience theory (Bordalo, Gennaioli, and Shleifer (2012)), cognitive resources are limited and decision makers' attention is likely to be drawn on particularly salient aspects of the decision problem, which are then overweighted in the decision making process. Following this theory, we conjecture that there may be times in which East Germans' memories of the communist system are particularly salient and trigger their reluctance to invest in the stock market even more compared to times where other topics dominate the public debate.

Specifically, political attitudes should be most salient in election years when public attention is devoted to who should govern and run the country. Following the concepts developed in Bordalo, Gennaioli, and Shleifer (2019), elections may provide cues that trigger automatic retrieval of past experiences with political systems. That is, East Germans may receive (or pay attention to) more signals from pro-communist politicians, family, and friends, while West Germans retrieve their past experiences with the capitalist system of the FRG.[35]

positive views and pride about the GDR. Indeed we find in unreported regressions, that investors living in home towns of Olympic medal winner qualitatively exhibit lower stock market participation.

[35]These effects can also be mapped in our theoretical framework from section 2, where we think of election years as a time when there is a resurgence in anti-stock market signals, which increases the gap in beliefs between East and West.

To test whether the stock market participation gap between East and West Germans is larger in election years, we interact the East German dummy variable with an indicator reflecting election years in our sample (i.e., 2005 and 2009). We then run the same regression as in Table 2, but additionally include this interaction term. Result are reported in Table 8. They show that our baseline effect is indeed amplified in election years, with the interaction term being statistically significant at the 1% level for stock market participation and the fraction of bonds in investors' portfolios, respectively.[36]

In unreported results, we also find that the effect of positive emotional tagging on stock market participation (see Table 7) is significantly amplified in election years. This result is in line with the view that elections trigger recall of the GDR's communist ideology, which is then followed by East Germans with positive experience. Following the doctrine by not investing in the stock market happens because (i) communist ideology is now more salient (Bordalo, Gennaioli, and Shleifer (2012)), and (ii) because it is in line with the positive tagging of experiences with the GDR (Bordalo, Gennaioli, and Shleifer (2019)).[37]

6 Financial implications: Portfolio returns, fees, and diversification

Finally, we investigate whether East German investors' exposure to communist ideology and their corresponding reluctance to invest in the stock market is costly to them. A lower life-time investment in the stock market should generally lead to lower financial wealth in East Germany, because East German investors forgo the equity risk premium. Thus, the differences regarding financial risk taking on the micro level we document may partly explain why we still observe large wealth differences between East and West Germans on

[36]This result obtains if we look at the first election year, i.e. 2005, separately to mitigate concerns that effects in 2009 may be cofounded by the financial crisis.

[37]We also find that the negative emotional tagging effect is weakened in election years. If elections indeed trigger the recall of communist norms, there may be a stronger neglect of signals that are contrary to them and, as a result, a smaller stock market participation gap between East and West Germans.

the macro level, with East Germans' total wealth being less than half that of West Germans (Grabka (2014)).

In addition, East German investors may, due to their lack of experience with capital markets or due to a smaller investment universe caused by the avoidance of certain countries or sectors, have lower stock picking skills than West German investors. To test this conjecture, we compare monthly returns of East and West German investors' portfolios. We obtain monthly total return data including dividends from Thomson Reuters Datastream. We then compute monthly portfolio returns on holdings derived from the monthly position statements on a security-by-security level for each investor. For each month in our sample, we form equal or value weighted returns across all investors belonging to the East or West German portfolio, respectively. We then compute the difference return of a portfolio that is long in the East German portfolio and short in the West German portfolio less the risk-free rate and regress it on the excess market return, the Fama and French (1993b) 3-Factor model and the Carhart (1997a) 4-Factor model. In our regressions, we use the global risk factors obtained from Kenneth French's data library.[38]

We observe that East Germans earn significantly lower returns than West Germans, irrespective of whether portfolios are equal- or value weighted (Panel A, Table 9). Monthly performance alphas vary between –0.07% and –0.11%.[39]

In the next step, we examine whether other portfolio characteristics of East German investors are also inferior to those of West German investors. First, we analyze whether an investor holds passive investments, i.e., index funds and/or ETFs in her portfolio, as these assets generally have lower fees compared to actively managed funds. Second, we examine how many different assets East and West German investors hold in their portfolios. Third, we calculate the average fund fees an investors pays for all equity funds in her portfolio in a given year. To further capture the extent of portfolio diversification, we compute the Herfindahl index of all stock holdings in a given portfolio. Finally, we compute the fraction of bank-

[38]The global risk factors can be obtained here: `http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html`

[39]Alternatively, we use German risk factors developed by the Center for Financial Research in Cologne which can be obtained here: `https://www.cfr-cologne.de/`. Our results (not reported) are robust.

owned products included in an investor's portfolio, which are typically associated with a higher total expense ratio (Bucher-Koenen, Hackethal, Koenen, and Laudenbach, 2018).We then run the same regressions as before and use one of these portfolio characteristics as the dependent variable. Results are presented in Panel B of Table 9.

Results in column (1) show that East German investors are significantly less likely to hold index funds or exchange trades funds. In economic terms, East German investors are 26.32% less likely to hold passive investments. We also find that, relative to the average number of assets in our sample, East Germans hold 33.07% fewer assets in their portfolios (column (2)). In addition, East German investors hold more expensive funds: Relative to the mean fee in our sample (1.375%), they pay 3.71% higher fees on their equity funds (column (3)). With respect to portfolio diversification, we find that the Herfindahl index for stock holdings is significantly higher for East German investors' portfolios, indicating that these portfolios are less diversified (column (4)). Finally, we find that investors in East Germany are 7.45% more likely to hold bank-owned products than investors in West Germany.

7 Discussion and Conclusion

We show that experiencing a communist system leads to a persistently lower willingness of East Germans to take financial risk, even almost 30 years after Reunification. Results are stronger (weaker) for individuals whose experiences with the communist system of the GDR are associated with positive (negative) emotions. Experiences with a communist system are costly: East German investors earn lower returns, hold less diversified portfolios, more expensive equity funds, and fewer passively managed assets. These results provide a micro-level foundation for macroeconomic growth differentials between East and West Germany. An interesting question that arises from our findings is how individuals in other transition economies responded to the introduction of a stock market. Does experience with a communist system always negatively affect people's willingness to participate in the stock market?

The fundamental difference between the communist system of the GDR and other formerly communist countries such as China is that the GDR regime was abruptly overthrown. That is, the GDR party's communist doctrine never fundamentally changed. After Reunification, the capitalist system of the FRG including its stock market, legislation, and governance system were immediately established in East Germany. For our empirical analysis, this is essential, as it rules out that weaker investor protection or governance standards drive lower stock market participation in East Germany.

In other communist countries, change happened more gradually and within the system. For example, in China, the communist regime remained in place and transformed the economy stepwise to "state capitalism", thus, the Party's doctrine changed over time. The Party itself established a stock market in 1990. About 60% of the average Chinese company's shares are nontradable shares held by the government itself (Pistor and Xu (2005)). In addition, the Chinese government created incentives for firms to raise equity capital via IPOs. Thereby, the Chinese government signaled that it does not condemn stock markets or investing in shares of companies. Chinese people thus do not face a conflict between political ideology and investing in stocks. As a result, they have more positive views on the stock market, although participation is still very low and amounts to 8-9% (Lucarelli and Palomba (2007), Liang and Guo (2015)). This may be due to shareholder rights protection issues and weak corporate governance (Goetzmann and Koell (2005).

In contrast, the transition in Russia resembled more closely the case of the GDR. After the fall of the iron curtain, Russia quickly abolished price controls and interest rate controls in a short period of time. Many firms were privatized in the 1990s, and the proceeds concentrated on a small amount of oligarchs. As a result, Russians perceived "capitalism just how the Soviets had warned, with a few people requisitioning all the ladders and the vast majority left to be devoured by snakes".[40] Russia's stock market was established in 1992, but even in 2015, stock market participation of the general population reached only 0.8% (Bank of Russia (2015)).

[40]https://www.theguardian.com/inequality/2017/apr/25/unequal-russia-is-anger-stirring-in-the-global-capital-of-inequality

Comparing these transition economies, it appears that quick changes from a planned to a market based economy lead to large adaption problems. Since the new system contradicts the values and experiences that people acquired with the established one, they seem reluctant to accept the new system and its rules. These problems last for several decades and have adverse effects on people's financial well-being.

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Figure 1: Distribution of investors across Germany

This figure shows the number of investors per zip-code area in our brokerage sample across Germany. The sample period covers June 2004 to December 2012.

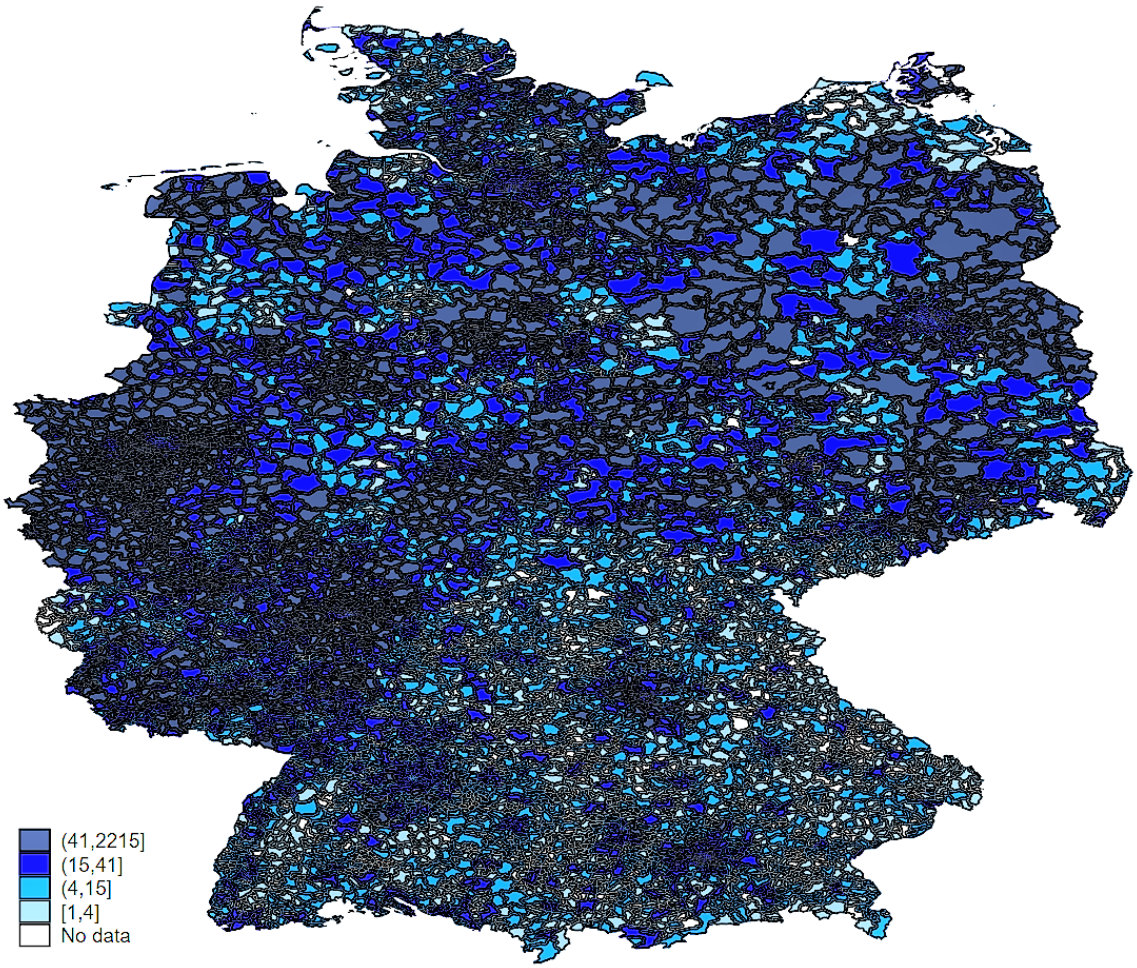


Figure 2: The art of propaganda

This figure shows propaganda posters that were used by the communist regimes of the Soviet union (Panel A) and the GDR (Panel B) to promote anti-capitalist and anti-American attitudes, as well as pro-Russian and pro-Vietnamese attitudes.

Panel A: Communist propaganda pro allies

Source: Landesarchiv Baden Württemberg, Deutsche Historisches Museum, Stadtgeschichtliches Museum Leipzig

Panel B: Communist propaganda against the stock market

Source: V. Ivanov, Vigilance is our weapon, Moscow 1953. Artur Grimmer 1955 in Monika Gibas (2004)

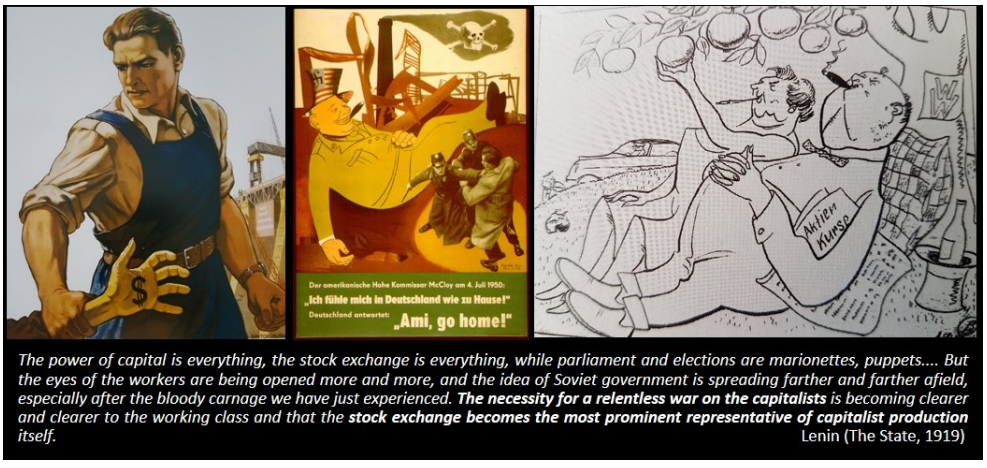


Figure 3: Selection into our Broker Bank

This figure shows survey results provided by the international data and analytics group YouGov. Respondents state whether (a) they are a customer of the bank, to which our broker belongs to (b) they are a former customer of this bank (c) they generally know this bank (d) they have seen advertisements of this bank within the last two weeks e) they have talked to a friend or family member about this bank f) they generally like this bank. Answers to (f) are given on a 1 ("I hate it") to 5 ("I love it") scale. In this figure, answers are shown separately for respondents in East and West Germany. None of the answers differ significantly between East and West Germans.

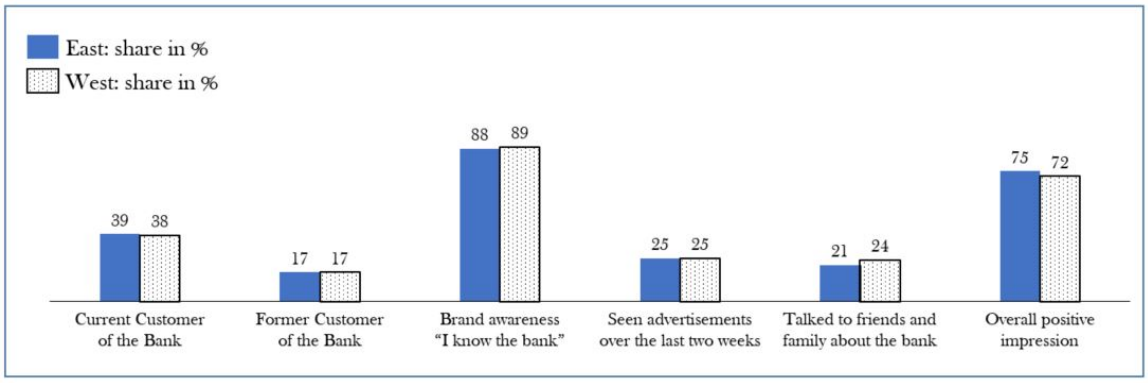


Figure 4: Stock market return expectations

This figure shows average return expectations for the German stock index (DAX) over the next six months based on responses of participants in a survey conducted by the market research firm Sentix separately for respondents in East versus West Germany.

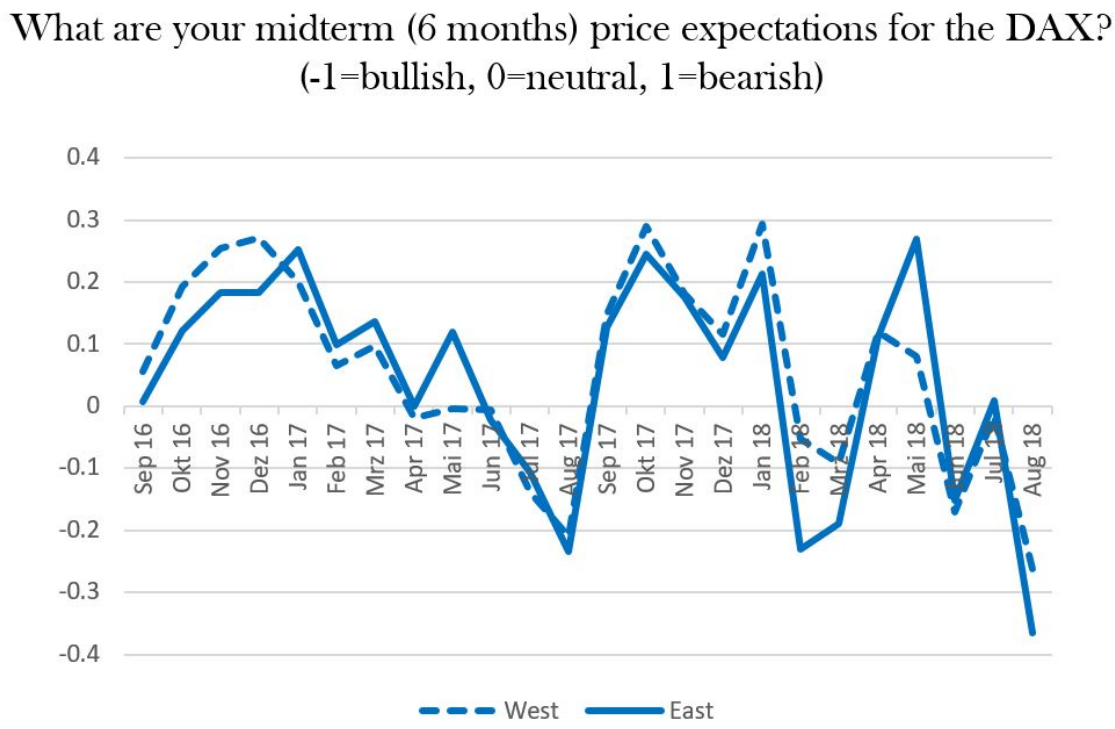
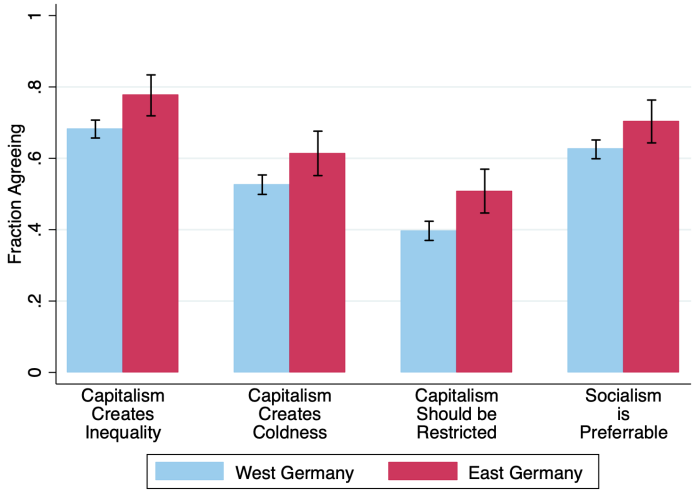


Figure 5: Attitudes towards the economic system and stock market participation

Panel A of Figure 5 shows differences in attitudes towards the economic system between East and West Germans in a survey conducted by the opinion poll institute Norstat in July 2018 among 1,529 Germans (1,283 West Germans and 246 East Germans). The figure shows the fraction of people agreeing to the statements listed on the x-axis. The precise wording of the questions is given in Appendix Table A7. Panel B of Figure 5 shows estimated coefficients on pro-communist attitudes in OLS regressions with stock market participation as the dependent variable. The sample includes 1600 East Germans surveyed by Norstat in December 2018 The independent variables are standardized survey responses capturing attitudes towards communism. Survey responses were elicited on a 4-point or 5-point Likert scale. Additionally included controls are gender, a categorical variable for age (6 groups), a categorical variable for income bracket (10 groups), a categorical variable for education (7 groups), a categorical variable for employment status (9 groups), and state fixed effects. The precise wording of the questions is given in Appendix Table A7.



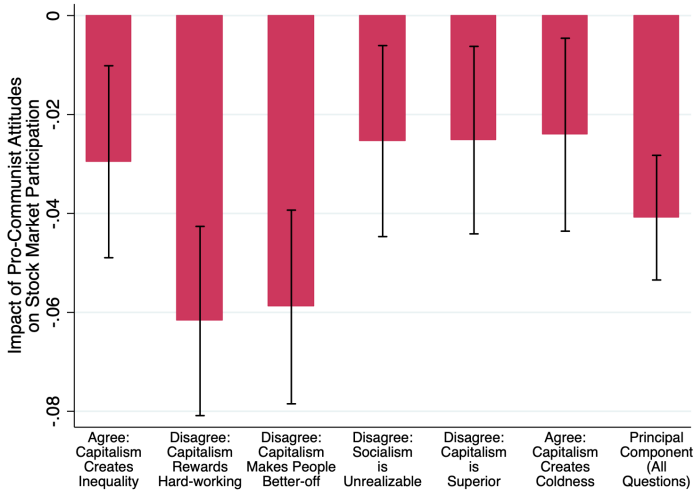


Figure 6: Distance to the border

This figure shows the areas of East and West Germany that belonged to the "Kleiner Grenzverkehr", i.e., the "border circle" region. Traveling to the GDR was permitted to each resident of the FRG living in cities and districts listed as "close to the border". Only those areas of the GDR could be visited, which were listed as belonging to the "border circle of the GDR". Source: Ministry of Inner-German Relationships (Bundesministerium für inner-deutsche Beziehungen).

Table 1: Summary statistics

Panel A of this table shows the number of observations (Obs.), mean, standard deviation (sd), median (p50), 1^{st} percentile (p1), and 99^{th} percentile (p99) of all variables in our sample. Brokerage data are from 2004 to 2012. Panel B shows differences between East and West German investors. All variables are defined in detail in Appendix Table A1.

Panel A: Summary statistics	Obs. (1)	Mean (2)	sd (3)	p50 (4)	p1 (5)	p99 (6)
1. Brokerage account data (individual-level)						
East	839,680	0.204	0.403	0.000	0.000	1.000
Gender (1=male)	839,680	0.526	0.499	1.000	0.000	1.000
Investor age (in years)	839,680	59.56	15.64	59.00	23.00	94.00
Married (1=yes)	839,680	0.582	0.493	1.000	0.000	1.000
Time account is open (in months)	839,680	74.223	32.576	74.000	7.000	137.00
Portfolio value (in Euro)	839,680	25,965	132,268	4,923.47	0.000	304,837
Stock market participation (1=yes)	839,680	0.819	0.385	1.000	0.000	1.000
Fraction of stocks if participating	687,464	0.725	0.391	1.000	0.000	1.000
Fraction of bonds	839,272	0.147	0.328	0.000	0.000	1.000
Passive investments (1=yes)	515,856	0.038	0.192	0.000	0.000	1.000
Number of assets in portfolio	839,680	4.442	6.921	2.000	1.000	31.000
Income (1=low, 4=high)	170,824	2.399	0.929	2.000	1.000	4.000
Risk tolerance (1=low, 3=high)	176,270	1.683	0.557	2.000	1.000	3.000
Fund fees (in %)	60,690	1.375	0.495	1.500	0.070	2.400
Portfolio concentration (Herfindahl)	622,777	0.689	0.331	0.815	0.070	1.000
Fraction of bank owned products	90,215	0.416	0.375	0.285	0.000	1.000
2. County-level controls						
Real estate wealth (in Euro)	839,680	152,667	153,658	132,773	0.000	767,913
Number of local banks	839,680	95.067	54.157	87.000	25.000	330.00
Tot. population (by Zip Code)	839,680	125,258	231,429	32,468	1,105	1,353,186
GDP per capita	839,680	26,927	11,031	23,919	14,649	69,566
Number of local firms	839,680	906.577	620.185	779.000	55.000	2,866
High school degree	839,680	0.160	0.060	0.146	0.076	0.363
Trust (1=low, 7=high)	684,441	3.221	0.710	3.143	1.500	5.500
Familiarity (1=high, 7=low)	699,126	3.583	1.161	3.438	1.000	7.000
Fin. literacy (0=low, 3=high)	698,373	2.679	0.327	2.750	1.000	3.000

Table 1: cont'd

Panel B: Differences	East German (1)	West German (2)	Difference (3)	p-value (4)
1. Brokerage account data				
Gender (1=male)	0.395	0.587	-0.191	0.000
Investor age (in years)	62.532	56.348	6.184	0.000
Married (1=yes)	0.601	0.577	0.024	0.000
Time account is open (in months)	69.124	75.531	-6.407	0.000
Income (1=low, 4=high)	2.109	2.516	-.407	0.000
Risk tolerance (1=low, 3=high)	1.494	1.744	-.249	0.000
Portfolio value (in Euro)	20,248.83	27,431.85	-7,183.02	0.000
Stock market participation (1=yes)	0.609	0.873	-0.264	0.000
Fraction of stocks if participating	0.671	0.735	-0.063	0.000
Fraction of bonds	0.304	0.107	0.197	0.000
Passive investments (1=yes)	0.018	0.043	-0.025	0.000
Number of assets in portfolio	3.185	4.764	-1.579	0.000
Fund fees (in %)	1.450	1.363	0.087	0.000
Portfolio concentration (Herfindahl)	0.738	0.681	0.057	0.000
Fraction of bank owned products	0.440	0.412	0.028	0.009
2. County-level controls				
Real estate wealth (in Euro)	92,850.15	168,012.30	-75,162.17	0.000
GDP per capita	19,698.93	28,933.56	-9,234.63	0.000
High school degree	0.137	0.165	-0.028	0.000
Number of local firms	949.47	893.18	56.29	0.480
Trust (1=low, 7=high)	3.005	3.260	–0.255	0.000
Familiarity (1=high, 7=low)	3.783	3.546	0.237	0.020
Fin. (0=low, 3=high)	2.609	2.692	-0.083	0.237

Table 2: Differences in financial risk taking (brokerage data)

Column (1) of this table presents results from a logit regression with stock market participation as the dependent variable. Stock market participation is equal to one, if an investor holds stocks and/or equity funds in her portfolio in a given year, and zero otherwise. Results in column (1) report marginal effects evaluated at the mean investor. z-stats based on standard errors clustered by municipality are presented in parentheses. Results in columns (2) and (3) are from pooled OLS regressions, where the dependent variable is the fraction of stocks in an investor's portfolio conditional on stock market participation (column (2)), or the fraction of bonds in an investors' portfolio (column (3)). t-stats based on standard errors clustered by municipality are presented in parentheses in columns (2) and (3). The main independent variable, East, is equal to one if an investor lives in East Germany, and zero if an investor lives in West Germany. All variables are described in detail in Appendix Table A1. Regressions are based on the brokerage data set. The sample is from June 2004 to December 2012.

Table 2: cont'd

	Stock market participation (1)	Fraction of stocks in portfolio (2)	Fraction of bonds in portfolio (3)
East	–0.194***	–0.072***	0.160***
	(–10.28)	(–7.80)	(9.77)
Gender (1=male)	0.070***	0.051***	–0.081***
	(19.54)	(16.08)	(–22.14)
Investor age	–0.104***	0.029***	0.141***
	(–17.43)	(3.25)	(15.71)
Married (1=yes)	0.040***	0.026***	–0.041***
	(17.70)	(8.14)	(–12.79)
Ln(Portfolio value)	–0.011***	0.042***	0.034***
	(–8.07)	(33.83)	(21.92)
Ln(Number of local banks)	0.007	–0.019**	0.020**
	(0.81)	(–2.56)	(2.43)
Ln(Total population)	0.007	0.005	–0.010***
	(1.64)	(1.64)	(–2.85)
Time account is open	0.116***	–0.021***	–0.096***
	(30.84)	(–6.84)	(–19.01)
Ln(Real estate wealth)	–0.009***	–0.002	0.003***
	(–6.51)	(–1.47)	(3.55)
High school degree	0.125	0.013	–0.232***
	(1.23)	(0.22)	(–2.61)
Ln(GDP per capita)	0.028*	–0.014	0.023
	(1.90)	(–1.08)	(1.62)
Ln(Number of local firms)	0.004	–0.006*	–0.004
	(0.83)	(–1.74)	(–0.79)
Year FE	yes	yes	yes
Pseudo/Adj. R^2	0.19	0.09	0.25
West mean	0.873	0.735	0.107
Observations	839,680	687,464	839,272

Table 3: Investors who moved from East to West Germany

This table presents results from logit regressions with stock market participation as the dependent variable. Stock market participation is equal to one, if an investor holds single stocks in her portfolio in a given year, and zero otherwise. In all columns, marginal effects evaluated at the mean investor are reported. z-stats based on standard errors clustered by municipality are presented in parentheses. The main independent variable, East, is equal to one if an investor lives in East Germany, and zero if an investor lives in West Germany. Mover is a dummy variable equal to one if an investor has moved from East to West Germany. Moved 10 years ago (Moved 20 years ago) is a dummy variable equal to one if an investor has moved from East to West Germany at least 10 (20) years ago, and zero otherwise. We include the same set of control variables as in Table A4. All variables are described in detail in Appendix Table A1. Regressions are based on the bank data set and survey results obtained from the same bank.

	All observations	Only West Germans		
	(1)	(2)	(3)	(4)
East	-0.080***			
	(-3.27)			
Mover	-0.046*	-0.072**		
	(-1.94)	(-2.14)		
Moved 10 years ago			-0.071*	
			(-1.76)	
Moved 20 years ago				-0.106***
				(-3.01)
Control variables	yes	yes	yes	yes
Pseudo R^2	0.354	0.333	0.329	0.327
Observations	241	198	187	175

Table 4: Alternative explanations

This table presents results from logit regressions with stock market participation as the dependent variable. Stock market participation is equal to one, if an investor holds stocks and/or equity funds in her portfolio in a given year, and zero otherwise. We report marginal effects evaluated at the mean investor. z-stats based on standard errors clustered by municipality are presented in parentheses. The main independent variable, East, is equal to one if an investor lives in East Germany, and zero if an investor lives in West Germany. Regressions include the same set of control variables as in Table 2. In column (1), we additionally control for investors' risk tolerance measured on a scale from 1 (conservative) to 3 (speculative). In column (2), we include a survey based measure for investors' trust in the stock market ranging from 1 (low) to 7 (high). In column (3), investors' familiarity with the stock market is added ranging from 1 (high) to 7 (low). Column (4) additionally includes investors' financial literacy ranging from 0 (low) to 3 (high). In column (5), we add investors' income ranging from 1 (below 1,000 Euro per month) to 4 (above 3,000 Euro per month). Risk and income are measured at the investor level, trust, familiarity, and financial literacy are measured at the county level. All variables are described in detail in Appendix Table A1. Regressions are based on the brokerage data set. The sample is from June 2004 to December 2012.

Stock market participation						
	Risk tolerance	Trust	Familiarity	Financial literacy	Income	All variables
	(1)	(2)	(3)	(4)	(5)	(6)
East	–0.227***	–0.293***	–0.270***	–0.259***	–0.264***	–0.174***
	(–9.21)	(–9.90)	(–9.29)	(–9.12)	(–9.64)	(–5.50)
Risk tolerance	0.408***					0.407***
(1=low, 3=high)	(40.64)					(37.09)
Trust		0.015**				0.090***
(1=low, 7=high)		(2.12)				(3.55)
Familiarity			–0.008			0.062***
(1=high, 7=low)			(–1.54)			(4.43)
Financial literacy				0.049***		0.171***
(0=low, 3=high)				(4.04)		(5.13)
Income					0.084***	0.063***
					(19.46)	(11.96)
Control variables	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Pseudo R^2	0.20	0.21	0.20	0.21	0.10	0.22
West Mean	0.621	0.880	0.880	0.880	0.621	0.607
Observations	176,270	684,441	699,126	698,373	170,824	117,288

Table 5: Exposure to communism and stock picking

This table presents results from tobit regressions where the dependent variable is the fraction of financial companies (column (1)), the fraction of US companies (column (2)), the fraction of Chinese, Russian, or Vietnamese companies (column (3)), or the fraction of (formerly) state-owned companies (column (4)) in an investor's portfolio. We include the same control variables as in Table 2. All variables are described in detail in Appendix Table A1. Robust t-stats are presented in parentheses. Standard errors are clustered by municipality level. Regressions are based on the brokerage data set. The sample is from June 2004 to December 2012.

	Companies of financial industry	US companies	Chinese, Russian, or Vietnamese companies	State owned companies
	(1)	(2)	(3)	(4)
East	–0.076***	–0.048***	0.104***	0.041***
	(–4.74)	(–2.71)	(4.21)	(3.11)
Gender (1=male)	0.083***	0.125***	0.143***	–0.047***
	(14.47)	(18.56)	(9.40)	(–14.37)
Investor age	–0.279***	–0.265***	–0.190***	0.066***
	(–22.49)	(–15.93)	(–6.52)	(8.08)
Married (1=yes)	0.024***	–0.002	–0.003	–0.001
	(4.11)	(–0.31)	(–0.21)	(–0.34)
Portfolio value	0.119***	0.066***	0.137***	0.002**
	(59.71)	(27.16)	(35.63)	(1.96)
Ln(Number of local banks)	0.002	0.015	–0.008	–0.022***
	(0.16)	(1.40)	(–0.46)	(–3.27)
Ln(Total population)	0.004	–0.006	0.007	–0.006**
	(0.99)	(–1.21)	(1.00)	(–2.30)
Time account is open	–0.034***	0.097***	0.060***	–0.040***
	(–7.49)	(14.27)	(4.56)	(–13.28)
Ln(Real estate wealth per county)	–0.003	–0.005***	–0.005*	0.003*
	(–1.10)	(–2.69)	(–1.65)	(1.84)
% High school degree in county	0.198**	0.028	–0.371**	0.034
	(2.16)	(0.27)	(–2.08)	(0.46)
Ln(GDP per capita)	0.004	0.067***	0.095***	–0.040**
	(0.18)	(3.06)	(2.82)	(–2.51)
Ln(Number of local firms)	0.023***	0.012*	0.002	–0.001
	(4.15)	(1.85)	(0.18)	(–0.39)
Year FE	yes	yes	yes	yes
Pseudo R^2	0.096	0.036	0.088	0.019
West Mean	0.102	0.061	0.005	0.188
Observations	622,777	622,777	622,777	551,624

Table 6: Exposure to communism and intensity

This table presents results from logit regressions with stock market participation as the dependent variable. Stock market participation is equal to one, if an investor holds stocks and/or equity funds in her portfolio in a given year, and zero otherwise. We report marginal effects evaluated at the mean investor. z-stats based on standard errors clustered by municipality are presented in parentheses. The main independent variable, East, is equal to one if an investor lives in East Germany, and zero if an investor lives in West Germany. Regressions include the same set of control variables as in Table 2. In column (1), we interact the East German dummy variable with a dummy variable which is equal to one if investors are 50 years of age or older, and zero otherwise. In column (2), we interact the East German dummy variable with a dummy variable equal to one if the shortest distance between a respective East German county and the former border to West-Germany is above 100 kilometers, and zero if a counties is located in an area within a 100 kilometers radius. The latter would belong to the "Border Circle (Kleiner Grenzverkehr)" area. Regressions are based on the brokerage data set. The sample is from June 2004 to December 2012.

Panel A: Stock market participation	Age interaction (1)	Distance interaction (2)	All variables (3)
East	–0.103***	–0.142***	–0.064***
	(–6.66)	(–5.39)	(–3.07)
East × above 50	–0.089***		–0.085***
	(–9.45)		(–9.05)
East × distance		–0.058**	–0.055**
		(–2.23)	(–2.20)
Above 50	0.036***		0.034***
	(7.38)		(7.23)
Control variables	yes	yes	yes
Year FE	yes	yes	yes
Pseudo R^2	0.19	0.19	0.20
West Mean	0.873	0.873	0.873
Observations	839,680	837,121	837,121

Table 7: Emotional Tagging and Stock Market Participation

This table presents results from a logit regression with stock market participation as the dependent variable. Stock market participation is equal to one, if an investor holds stocks and/or equity funds in her portfolio in a given year, and zero otherwise. z-stats based on standard errors clustered by municipality are presented in parentheses. In all columns, we interact the East German dummy variable with different proxies for positive or negative emotional tagging. These proxies are: Column (1): indicator reflecting heavily polluted GDR counties according to a report from the German ministry of environmental affairs published in 1990. Column (2): fraction of catholics and protestants in an investor's county according to the 2011 census. Column (3): indicator reflecting counties in the former GDR that did not receive TV signals from West Germany. Column (4) indicator reflecting if an investor lives in a city that was renamed during the GDR regime. Renamed cities include Chemnitz (Karl-Marx-Stadt), Kriegsdorf (Friedensdorf), Neuhardenberg (Marxwalde), Werminghoff (Knappenrode), and Eisenhüttenstadt (Stalinstadt). Column (5): fraction of voluntary secret police (STASI) spies who lived in an investor's county during the GDR regime. Column (6): fraction of survey respondents in an investor's county who state that the former political system of the GDR had many positive aspects. All variables are described in detail in Appendix Table A1. The sample is from June 2004 to December 2012.

	Stock market participation					
	Neg. Emotional Tagging			Pos. Emotional Tagging		
	(1)	(2)	(3)	(4)	(5)	(6)
East	–0.204***	–0.398***	–0.198***	–0.186***	–0.143***	–0.116***
	(–10.24)	(–5.75)	(–10.19)	(–10.57)	(–6.05)	(–6.37)
East × Env. Pollution	0.052**					
	(2.51)					
East × Fraction Cath. & Prot.		0.005***				
		(3.68)				
East × No West TV (d)			0.066***			
			(4.67)			
East × Renamed city				–0.181***		
				(–2.90)		
East × Stasi					–0.081**	
					(–2.51)	
East × liked GDR politics						–0.219***
						(–5.65)
Control variables	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Pseudo R^2	0.19	0.20	0.19	0.19	0.19	0.20
West Mean	0.873	0.873	0.873	0.873	0.873	0.873
Observations	839,680	839,680	839,680	839,680	839,680	839,461

Table 8: Trigger points: Election years

Column (1) of this table presents results from a logit regression with stock market participation as the dependent variable. Stock market participation is equal to one, if an investor holds stocks and/or equity funds in her portfolio in a given year, and zero otherwise. Results in column (1) report marginal effects evaluated at the mean investor. z-stats based on standard errors clustered by municipality are presented in parentheses. Results in columns (2) and (3) are from pooled OLS regressions, where the dependent variable is the fraction of stocks in an investor's portfolio conditional on stock market participation (column (2), or the fraction of bonds in an investors' portfolio (column (3)). t-stats based on standard errors clustered by municipality are presented in parentheses in columns (2) and (3). The main independent variable, East, is equal to one if an investor lives in East Germany, and zero if an investor lives in West Germany. All variables are described in detail in Appendix Table A1. In this table, we interact the East German dummy variable with a dummy variable which is equal to one for federal election years in our sample, and zero otherwise. Federal elections during our sample period took place in 2005 and 2009. Regressions are based on the brokerage data set. We include the same set of control variables as in Table 2. The sample is from June 2004 to December 2012.

	Stock market participation (1)	Fraction of stocks in portfolio (2)	Fraction of bonds in portfolio (3)
East	–0.186***	–0.073***	0.153***
	(–10.03)	(–8.00)	(9.47)
East × election years	–0.019***	0.004	0.025***
	(–7.56)	(0.92)	(4.96)
Control variables	yes	yes	yes
Pseudo/Adj. R^2	0.19	0.09	0.25
West Mean	0.873	0.735	0.107
Observations	839,680	687,464	839,272

Table 9: Are anti-capitalist attitudes costly?

In Panel A of this table, we show results from a regression with the equal or value weighted return, respectively, of a difference portfolio that is long in East German investors' stock holdings and short in West German investors' stock holdings as dependent variable. To obtain performance alphas, difference returns are regressed on the Global CAPM market factor in columns (1) and (4), on the Global 3 Fama and French (1993a) factors in columns (2) and (5) and on the Global Carhart (1997b) 4-factor model in columns (3) and (6). Global risk factors are obtained from Kenneth French's website. Panel B, column (1), shows marginal effects from a logit regression where the dependent variable is equal to one if an investor holds index funds and/or ETFs in her portfolio in a given year, and zero otherwise. Column (2) shows results from an OLS regression where the dependent variable is the number of assets in an investor's portfolio in a given year. Column (3) shows results from an OLS regression where the dependent variable is the average fund fees an investor pays for all equity funds in her portfolio in a given year. Column (4) shows results from an OLS regression with the Herfindahl index of an investor's stock holdings in a given year as dependent variable. In column (5), the dependent variable of the OLS regression is the fraction of bank-owned products an investor holds in her portfolio. We regress the dependent variable on the East German dummy variable and the same set of control variables as in Table 2. Robust t-stats are presented in parentheses. Standard errors are clustered by municipality level. Regressions are based on the brokerage data set. The sample is from June 2004 to December 2012.

Table 9: cont'd

Panel A: Global risk factors

	Equal weighted			Value weighted		
	CAPM_t^{E-W}	3-Factor_t^{E-W}	4-Factor_t^{E-W}	CAPM_t^{E-W}	3-Factor_t^{E-W}	4-Factor_t^{E-W}
	(1)	(2)	(3)	(4)	(5)	(6)
Performance $\text{alpha}_t^{East-West}$	-0.080**	-0.073**	-0.076**	-0.109**	-0.107**	-0.101**
	(-2.04)	(-2.00)	(-2.08)	(-2.36)	(-2.32)	(-2.18)
MKTRF^{Global}	-0.030***	-0.023***	-0.022***	0.018*	0.020*	0.017
	(-4.59)	(-4.03)	(-3.77)	(1.79)	(1.98)	(1.57)
SMB^{Global}		-0.086***	-0.087***		-0.033	-0.031
		(-3.41)	(-3.49)		(-1.19)	(-1.10)
HML^{Global}		-0.026	-0.022		-0.004	-0.011
		(-1.34)	(-1.08)		(-0.10)	(-0.31)
WML^{Global}			0.008			-0.014
			(0.91)			(-1.04)
Adj. R^2	0.133	0.216	0.212	0.032	0.023	0.025
Observations	92	92	92	92	92	92

Table 9: cont'd

Panel B: Other costs	Passive investments (1)	# of assets (2)	Fund fees (3)	Herfindahl index (4)	Bank owned products (5)
East	–0.010***	–1.509***	0.051***	0.038***	0.031*
	(–5.25)	(–4.74)	(4.71)	(2.72)	(1.73)
Gender (1=male)	0.009***	1.023***	–0.002	–0.036***	–0.060***
	(14.08)	(15.61)	(–0.38)	(–14.28)	(–12.93)
Investor age	–0.029***	–0.196	0.059***	0.043***	0.045***
	(–23.05)	(–1.01)	(4.13)	(4.77)	(4.35)
Married (1=yes)	0.004***	0.314***	–0.002	–0.003	–0.025***
	(6.21)	(5.41)	(–0.28)	(–1.33)	(–5.65)
Ln(Portfolio value)	0.007***	1.137***	–0.011***	–0.075***	–0.090***
	(25.50)	(31.79)	(–6.44)	(–80.25)	(–72.80)
Ln(Number of local banks)	0.003**	0.239	–0.017**	–0.003	0.010
	(2.18)	(1.44)	(–2.42)	(–0.50)	(1.10)
Ln(Total population)	–0.000	0.059	0.000	–0.002	0.003
	(–0.27)	(1.06)	(0.15)	(–1.09)	(0.98)
Time account is open	0.005***	1.798***	–0.000	–0.050***	–0.122***
	(6.24)	(17.41)	(–0.03)	(–13.20)	(–16.91)
Ln(Real estate wealth)	–0.001***	–0.073***	0.003*	0.002*	–0.002
	(–3.72)	(–3.13)	(1.89)	(1.69)	(–1.36)
High school degree	0.040***	2.149	–0.207**	–0.019	–0.087
	(2.82)	(1.16)	(–2.54)	(–0.31)	(–0.86)
Ln(GDP per capita)	0.008***	0.524**	–0.011	–0.010	–0.012
	(2.85)	(2.22)	(–0.68)	(–0.90)	(–0.53)
Ln(Number of local firms)	0.002***	0.157*	–0.012***	–0.005	0.002
	(3.02)	(1.85)	(–2.66)	(–1.53)	(0.43)
Year FE	yes	yes	yes	yes	yes
Pseudo/Adj. R^2	0.11	0.20	0.08	0.34	0.36
Observations	515,856	839,680	60,690	622,777	90,215

Table A1: Brief definitions and sources of main variables

This table briefly defines the main variables used in the empirical analysis. The data sources are:

(i) BRO: Brokerage data , 299,923 retail investors, personal characteristics as of December 2012 and monthly holdings from June 2004 to December 2012,

(ii) BAC: Bank account data: 6,903 clients, personal characteristics as of August 2017, account balances are monthly averages over the time period from January 2016 to August 2017,

(iii) BS: Bank survey, 2,133 respondents, conducted in the first quarter of 2017,

(iv) GFSO: German Federal Statistic Office,

(v) ECB: European Central Bank,

(vi) MC: Manually collected,

(vii) Wiki: Wikipedia,

(viii) KAF: Konrad Adenauer Foundation, http://www.kas.de/wf/de/71.6604/,

(ix) GMEA: German Ministry of Environmental Affairs,

(x) MS: Morningstar,

(xi) CFR: Center for Financial Research, Cologne,

(xii) KFL: Kenneth French's data library,

(xiii) DB: Deutsche Bundesbank,

(xiv) SAVE: SAVE Household Panel conducted by the Munich Center for the Economics of Aging, a department of the Max Planck Institute for Social Law and Social Policy, wave of 2009 with 2,222 respondents across Germany,

(xv) ID: Infratest dimap, 1,022 respondents across East German, survey conducted by the polling institute in 2014

(xvi) BC: Bursztyn and Cantoni (2016),

(xvii) DS: Datastream.

Table A1: cont'd

Variable name	Description	Source
Above 50	An indicator variable equal to one if an investor is 50 years of age or above, and zero otherwise.	BRO, BAC
Any Olympic medal	Indicator variable equal to one if there was at least one Olympic medal winner in the same zip-code area than a given investor, and zero otherwise	MC, Wiki
Catholic Place GDR	An indicator variable equal to one if an investor is from a county where the catholic church was particularly strong in GDR times (i.e., Eichsfeld, Thueringische Rhoen, and sorbische Oberlausitz).	KAF
Chinese, Russian, or Vietnamese firms	Fraction of Chinese, Russian, or Vietnamese companies (stocks) in an investor's portfolio identified via the datastream geography code, specifying the home or listing country of a company security.	BRO, DS
Credit score	A client's default probability as calculated by the bank's internal scoring system.	BAC
Distance	A dummy variable equal to one if the shortest distance between a respective East German county and the former border to West-Germany exceeds 100 kilometers, and zero otherwise.	MC
East	An indicator variable that equals one if an individual lives in East Germany (i.e., Brandenburg, Mecklenburg-Western Pomerania, Saxony, Saxony-Anhalt, Thuringia), and zero otherwise.	GFSO
East Berlin	An indicator variable that equals one if an investor lives in East Berlin, which belonged to the GDR before Reunification (i.e., Friedrichshain, Lichtenberg, Marzahn-Hellersdorf, Mitte, Pankow, Treptow-Köpenick), and zero if an individual lives in West Berlin.	MC
Election years	An indicator variable equal to one for federal election years in our sample, and zero otherwise. Federal elections during our sample period took place in 2005 and 2009.	MC
Employed	An indicator variable that equals one if a client is employed, and zero otherwise.	BAC
Environmental pollution	An indicator equal to one for the most environmentally polluted areas in the GDR, and zero otherwise. According to a press release of the Ministry of Environmental Affairs of the FRG on June 26^{th} 1990, these 16 areas are: Bad Blankenburg, Bad Dürrenberg, Bitterfeld, Buna, Dessau, Dresden, Dresden-Kaditz, Erfurt-Kühnhausen, Freiberg, Leuna, Magdeburg, Röblingen, Schmilka, Thierbach, Wittenberg/Piesteritz, Zehren.	GMEA

Table A1: cont'd

Variable name	Description	Source
Familiarity	County level average of responses to bank survey question on how much individuals agree with the following statement: "The stock market is a closed book to me." Answers are given on a 7 point Likert scale (7=I fully agree).	BS
Financial literacy	County level average of basic financial literacy score following van Rooij, Lusardi, and Alessie (2011). It is based on three quiz-like questions covering the understanding of inflation, interest rates as well as risk diversification. The score counts the number of correct answer ranging from 0 (low literacy) to 3 (high literacy).	BS
Firms of Financial Industry	Fraction of financial companies in an investor's portfolio. Single stock holdings were classified using the ICBIC industry code "8000" for financials.	BRO, DS
Fraction of bank owned products	Fraction of bank-owned products (funds) an investor holds in her portfolio.	BRO, MS
Fraction of bonds	Fraction of bonds in an investor's portfolio.	BRO
Fraction of Cath. & Prot.	Fraction of Catholics and Protestants in an investor's county according to the 2011 census.	GFSO
Fraction of Catholics	Fraction of members of the catholic church in an investor's county according to the 2011 census.	GFSO
Fraction of Protestants	Fraction of members of the protestant church in an investor's county according to the 2011 census.	GFSO
Fraction of stocks if participating	Fraction of stocks in an investor's portfolio conditional on participating in the stock market.	BRO, BAC
Fund fees	Average fund fees (total expense ratios) an investor pays for all equity funds in her portfolio in a given year in percent.	BRO, MS
GDP per Capita	GDP per Capita on the county level.	GFSO
Gender	An indicator variable that equals one if a client is male, and zero if she is female.	BRO, BAC
High school degree	Share of inhabitants in a county with a high school degree according to the 2011 census.	GFSO
HML^{German}	The monthly Fama French value factor for the German stock market.	CFR
HML^{Global}	The monthly Fama French value factor for the global stock market.	KFL
Income (1=low, 4=high)	Self-reported income of broker client ranging from 1 (low) to 4 (high).	BRO
Income (in Euro)	A client's income as proxied by the bank based on regular monthly inflows to the current account.	BAC
Investor age	Age of a client in years.	BRO, BAC

Table A1: cont'd

Variable name	Description	Source
Liked GDR politics	Fraction of survey respondents in an investor's county who agree that the former political system of the GDR had particular strengths. The exact question is: *"If you compare today's social and political conditions to those in the former GDR - Do you think the the GDR had special strength with regard to the political system?"*. Respondents could either agree, not agree, or chose the "don't know" option.	ID
Married	An indicator variable that equals one if the client is married, and zero otherwise.	BRO, BAC
MKTRF^{German}	The monthly market factor (value-weighted CDAX performance) less the risk-free rate (one-month money-market rate) for the German capital market.	CFR
MKTRF^{Global}	The monthly market factor (all CRSP firms incorporated in the US and listed on the NYSE, AMEX, or NASDAQ that have a CRSP share code of 10 or 11) less the risk-free rate (minus the one-month Treasury bill rate) for the global capital market.	KFL
Mortgage	An indicator variable that equals one if the client holds a mortgage with the bank.	BAC
Mover	An indicator variable that equals one if the client has moved from East to West Germany after the fall of the Berlin Wall in 1989. Clients have been asked whether and when they have lived in East Germany during their lifetime.	BS
Moved 10 years ago	An indicator variable equal to one if an investor has moved from East to West Germany at least 10 years ago, and zero otherwise.	BS
Moved 20 years ago	An indicator variable equal to one if an investor has moved from East to West Germany at least 20 years ago, and zero otherwise.	BS
No West TV	An indicator variable equal to one for counties in the former GDR that did not receive TV signals from West Germany, and zero otherwise. Counties with no access to West TV comprise: Dresden Stadt, Altentreptow, Niesky, Anklam, Ribnitz-Damgarten, Malchin, Bautzen, Neubrandenburg Stadt, Ueckermuende, Teterow, Lobau, Pirna, Greifswald Land, Demmin, Goerlitz Land, Grimmen, Wolgast, Greifswald Stadt, Zittau, Goerlitz Stadt, Stralsund Land, Stralsund Stadt, Ruegen.	BC
Number of assets in portfolio	The number of assets in an investor's portfolio in a given year.	BRO
Number of local banks	Number of local bank branches in a given county and year.	DB

Table A1: cont'd

Variable name	Description	Source
Number of local firms	Number of registered firms in a given county and year.	GFSO
Olympic gold medal	An indicator variable equal to one if there was at least one Olympic Gold medal winner in the same zip-code area than an investor, and zero otherwise.	MC, Wiki
Online banking	An indicator variable that equals one if the client has access to online banking, and zero otherwise.	BAC
Passive investments	An indicator equal to one if an investor hold index funds or ETFs in her portfolio in a given year, and zero otherwise.	Broker, MS
Portfolio concentration	Herfindahl index of an investor's stock holdings in a given year.	BRO
Portfolio value	The total value of a client's portfolio in the end of a given year (in Euro).	BRO, BAC
Real estate	An indicator variable that equals one if the client owns a house, and zero otherwise.	BS
Real estate wealth	The average self-reported wealth in real estate elicited by the SAVE household survey. Responses are aggreagted (mean values) per county.	SAVE
Relationship with bank	Number of years, the client has a business relation with the bank.	BAC
Renamed city	An indicator variable equal to one if an investor lives in a city that was renamed during the GDR regime. Renamed cities include Chemnitz (Karl-Marx-Stadt), Kriegsdorf (Friedensdorf), Neuhardenberg (Marxwalde), Werminghof (Knappenrode), and Eisenhuettenstadt (Stalinstadt).	Wiki
Retiree	An indicator variable that equals one if the client is retired, and zero otherwise.	BAC
Risk attitude	A client's answer to the question how much she agrees with the following statement "I do not mind taking risk regarding investments" on a 1 to 7 scale (7="I fully agree").	BS
Risk tolerance	A client's self-reported individual risk tolerance on a scale ranging from 1 (low) to 3 (high) assessed when her brokerage account is opened.	BRO
Savings (in Euro)	A client's average positive balance on a savings account.	BAC
SMB^{German}	The monthly Fama-French size factor for the German stock market.	CFR
SMB^{Global}	The monthly Fama-French size factor for the global stock market.	KFL
STASI	Fraction of voluntary secret police (STASI) collaborators who lived in an investor's county during the GDR regime.	ECB

Table A1: cont'd

Variable name	Description	Source
State owned companies	A dummy variable indicating the largest formerly state-owned companies in Germany: Deutsche Telekom, Deutsche Lufthansa, Deutsche Post, Deutsche Postbank, and Fraport.	MC
Stock market participation	A dummy variable equal to one if an investor holds either stocks or equity funds in her portfolio, and zero otherwise.	BRO
Time account is open	Number of months passed since a client's account was opened with the brokerage.	BRO
Total population	The average number of inhabitants per zip-code area.	GFSO
Trainee	An indicator variable that equals one if the client is a trainee and zero otherwise.	BAC
Trust	The county level average answer to the statement: I have confidence in securities markets. Measured on a 1-7 scale (7= I fully agree).	BS
US firms	Fraction of US companies in an investor's portfolio identified via the datastream geography code, specifying the home or listing country of a company security.	BRO, DS
WML^{German}	The monthly momentum factor for the German stock market.	CFR
WML^{Global}	The monthly momentum factor for the global stock market.	KFL

Table A2: Differences between East and West Berlin

Column (1) of this table presents results from a logit regression with stock market participation as the dependent variable. Stock market participation is equal to one, if an investor holds stocks and/or equity funds in her portfolio in a given year, and zero otherwise. Results in column (1) report marginal effects evaluated at the mean investor. z-stats based on standard errors clustered by investor are presented in parentheses. Results in columns (2) and (3) are from pooled OLS regressions, where the dependent variable is the fraction of stocks in an investor's portfolio conditional on stock market participation (column (2)), or the fraction of bonds in an investors' portfolio (column (3)). t-stats based on standard errors clustered by investor are presented in parentheses in columns (2) and (3). The main independent variable, East Berlin, is equal to one if an investor lives in a zip-code area belonging to the former GDR, i.e., East Berlin, before Reunification, and zero if an investor lives in West Berlin. All variables are described in detail in Appendix Table A1. Regressions are based on the brokerage data set. Observations are restricted to individuals living in Berlin. The sample is from June 2004 to December 2012.

	Stock market participation (1)	Fraction of stocks in portfolio (2)	Fraction of bonds in portfolio (3)
East Berlin	–0.046***	0.006	0.023***
	(–5.76)	(0.45)	(3.27)
Gender (1=male)	0.030***	0.012	–0.059***
	(3.67)	(0.92)	(–7.80)
Investor age	–0.035*	0.044	0.047**
	(–1.89)	(1.42)	(2.11)
Married (1=yes)	0.025***	0.011	–0.013*
	(3.21)	(0.80)	(–1.88)
Ln(Portfolio value)	–0.006***	–0.036***	0.019***
	(–3.74)	(–16.59)	(15.59)
Time account is open	0.077***	0.012	–0.069***
	(13.03)	(0.94)	(–9.39)
Ln(Number of local firms)	0.003	–0.024*	–0.008
	(0.36)	(–1.82)	(–1.08)
Year FE	yes	yes	yes
Pseudo/Adj. R^2	0.14	0.13	0.14
West mean	0.935	0.784	0.046
Observations	16,207	14,595	16,204

Table A3: Summary statistics: Bank data

Panel A of this table shows the number of observations (Obs.), mean, standard deviation (sd), median (p50), 1^{st} percentile (p1), and 99^{th} percentile (p99) of all variables in our sample. Bank data are from 2016 to 2017. Panel B shows differences between East and West German investors. All variables are defined in detail in Appendix Table A1.

Panel A: Summary statistics	Obs. (1)	Mean (2)	sd (3)	p50 (4)	p1 (5)	p99 (6)
Bank data (individual level)						
East	6,903	0.180	0.384	0.000	0.000	1.000
Portfolio value (in Euro)	1,445	50,014	174,830	3,074	0.000	1.000
Stock market participation (1=yes)	6,903	0.125	0.331	0.000	0.000	1.000
Fraction of stocks if participating	866	0.712	0.353	0.940	0.004	1.000
Portfolio (1=yes)	6,903	0.209	0.407	0.000	0.000	1.000
Gender (1=male)	6,903	0.556	0.497	0.000	0.000	1.000
Investor age (in years)	6,903	47.25	15.92	47.00	11.00	87.00
Married (1=yes)	6,903	0.420	0.494	0.000	0.000	1.000
Employed (1=yes)	6,903	0.411	0.492	0.000	0.000	1.000
Trainee (1=yes)	6,903	0.094	0.292	0.000	0.000	1.000
Retiree (1=yes)	6,903	0.061	0.239	0.000	0.000	1.000
Online banking (1=yes)	6,903	0.675	0.468	0.000	0.000	1.000
Mortgage (1=yes)	6,903	0.078	0.269	0.000	0.000	1.000
Relationship with bank (in years)	6.90	15.28	10.56	13.000	1.000	46.00
Credit score (Default Prob.)	6,903	0.006	0.021	0.001	0.000	0.070
Income (in Euro)	6,903	6,811	83,169	1,326	0.000	77,489
Savings (in Euro)	6,903	11,789	71,527	1,630	0.000	141,956
Risk att. (1= averse, 7=prone)	276	3.333	1.999	3.000	1.000	7.000
Fin. literacy (0=low, 3=high)	274	2.65	0.676	3.000	0.000	3.000
Real estate (1=yes)	276	0.496	0.501	0.000	0.000	1.000

Table A3: cont'd

Panel B: Differences	East German (1)	West German (2)	Difference (3)	p-value (4)
Bank data				
Portfolio value (in Euro)	32,217	52,488	-15,231	0.225
Stock market participation (1=yes)	0.080	0.135	-0.055	0.000
Fraction of stocks if participating	0.627	0.724	-0.096	0.010
Portfolio (1=yes)	0.186	0.214	-0.028	0.025
Gender (1=male)	0.512	0.564	-0.052	0.005
Investor age (in years)	47.28	47.25	0.030	0.961
Married (1=yes)	0.400	0.424	-0.024	0.115
Employed (1=yes)	0.411	0.411	0.000	0.999
Trainee (1=yes)	0.079	0.098	-0.019	0.038
Retiree (1=yes)	0.066	0.059	0.007	0.377
Online banking (1=yes)	0.659	0.678	-0.019	0.206
Mortgage (1=yes)	0.069	0.080	-0.011	0.19
Relationship with bank(years)	14.93	15.36	-0.430	0.201
Credit score (Default Probability)	0.006	0.006	0.000	0.976
Income (in Euro)	3,897	7,450	-3,553	0.173
Savings (in Euro)	8,225	12,571	-4,346	0.052
Risk att. (1= averse, 7=prone)	2,511	3,485	-974	0.000
Financial literacy (0=low, 3=high)	2.61	2.65	-0.032	0.780
Real estate (1=yes)	0.447	0.528	-0.081	0.313

Table A4: Differences in financial risk taking (bank data)

Column (1) of this table presents results from a logit regression with stock market participation as the dependent variable. Stock market participation is equal to one, if an investor holds any single stocks in a given year, and zero otherwise. Results in column (1) report marginal effects evaluated at the mean investor. z-stats based on standard errors clustered by municipality are presented in parentheses. Results in column (2) are from a logit regression, where the dependent variable is stock market participation conditional on having a portfolio. Column (3) shows results from a pooled OLS regression, where the dependent variable is the fraction of stocks in an investor's portfolio conditional on stock market participation. t-stats based on standard errors clustered by municipality are presented in parentheses in column (3). The main independent variable, East, is equal to one if an investor lives in East Germany, and zero if an investor lives in West Germany. All variables are described in detail in Appendix Table A1. Regressions are based on the bank data set and are purely cross-sectional using data from 2017.

Table A4: cont'd

	Stock market participation (1)	Participation if portfolio (2)	Fraction stocks in portfolio (3)
East	-0.035***	-0.181***	-0.154***
	(-4.92)	(-3.97)	(-4.80)
Gender (1=male)	0.054***	0.155***	0.154***
	(8.85)	(4.35)	(6.10)
Investor age	0.005***	0.020***	0.010**
	(3.36)	(3.70)	(2.59)
Investor age squared	-0.000**	-0.000***	-0.000***
	(-2.54)	(-4.51)	(-2.44)
Married (1=yes)	-0.001	-0.020	-0.010
	(-0.15)	(-0.61)	(-0.39)
Employed (1=yes)	0.010*	-0.021	-0.030
	(1.68)	(-0.62)	(-1.15)
Trainee (1=yes)	-0.033***	-0.035	-0.090*
	(-3.07)	(-0.71)	(-1.75)
Retiree (1=yes)	-0.016	0.072***	-0.039
	(-1.26)	(-0.96)	(-0.70)
Online banking (1=yes)	0.090***	0.223	0.211***
	(12.96)	(0.043)	(6.54)
Mortgage (1=yes)	-0.022**	-0.129**	-0.111**
	(-2.35)	(-2.23)	(-2.49)
Relationship with bank	-0.000	-0.005***	-0.005***
	(-1.63)	(-2.86)	(-4.50)
Credit score	-1.849***	-2.10	-0.884
	(-3.45)	(-2.01)	(-1.59)
Ln(Income)	-0.010***	-0.000	-0.011***
	(-9.51)	(0.919)	(-3.05)
Ln(Savings)	0.019***	0.005	-0.001
	(15.09)	(0.76)	(-0.25)
Ln(Portfolio value)		0.047***	0.013***
		(8.51)	(3.54)
Pseudo/Adj. R^2	0.157	0.143	0.148
Observations	6,903	1,445	1,340

Table A5: Non-linear wealth controls

Columns (1) to (3) of this table present results from logit regressions with stock market participation as the dependent variable. Stock market participation is equal to one, if an investor holds any single stocks in a given year, and zero otherwise. Results in column (4) are also from a logit regression, where the dependent variable is stock market participation conditional on having a portfolio. We report marginal effects evaluated at the mean investor. z-stats based on standard errors clustered by municipality are presented in parentheses. Column (5) shows results from a pooled OLS regression, where the dependent variable is the fraction of stocks in an investor's portfolio conditional on stock market participation. t-stats based on standard errors clustered by municipality are presented in parentheses in column (5). The main independent variable, East, is equal to one if an investor lives in East Germany, and zero if an investor lives in West Germany. We include the same set of control variables as in Table A4. Additionally, we include income, savings, and portfolio values to the power of two and three to capture a potential non-linear impact of wealth on stock market participation. All variables are described in detail in Appendix Table A1. Regressions are based on the bank data set and are purely cross-sectional using data from 2017.

Table A5: cont'd

	Stock market participation (1)	Stock market participation (2)	Stock market participation (3)	Participation if portfolio (4)	Fraction stocks in portfolio (5)
East	-0.035***	-0.033***	-0.031***	-0.175***	-0.142***
	(-4.92)	(-4.60)	(-4.41)	(-3.81)	(-4.76)
Ln(Income)	-0.010***	-0.026***	0.007	-0.018	-0.059*
	(-9.51)	(-7.58)	(0.54)	(-0.42)	(-1.87)
Ln(Income)^2		0.002***	-0.005*	0.001	0.008
		(5.15)	(-1.79)	(0.08)	(1.23)
Ln(Income)^3			0.000**	0.000	-0.000
			(2.30)	(0.25)	(-0.97)
Ln(Savings)	0.019***	0.021***	0.053***	0.255***	0.090***
	(15.09)	(5.74)	(4.40)	(3.67)	(2.88)
Ln(Savings)^2		-0.000	-0.006***	-0.041***	-0.013**
		(-0.88)	(-2.92)	(-3.40)	(-2.30)
Ln(Savings)^3			0.000***	0.002***	0.001*
			(2.79)	(3.08)	(1.72)
Ln(Portfolio Value)				0.379***	0.272***
				(7.61)	(9.00)
$\text{Ln(Portfolio Value)}^2$				-0.060***	-0.041***
				(-6.66)	(-7.48)
$\text{Ln(Portfolio Value)}^3$				0.003***	0.002***
				(6.48)	(6.61)
Control variables	yes	yes	yes	yes	yes
Pseudo /Adj. R^2	0.157	0.164	0.171	0.186	0.210
Observations	6,903	6,903	6,903	1,445	1,340

Table A6: Alternative explanations: intensive margin

This table presents results from pooled OLS regressions, where the dependent variable is the fraction of stocks (Panel A) or bonds (Panel B) in an investor's portfolio conditional on stock market participation. t-stats based on standard errors clustered by municipality are presented in parentheses. The main independent variable, East, is equal to one if an investor lives in East Germany, and zero if an investor lives in West Germany. Regressions include the same set of control variables as in Table 2. In column (1), we additionally control for investors' risk tolerance measured on a scale from 1 (conservative) to 3 (speculative). In column (2), we include a survey based measure for investors' trust in the stock market ranging from 1 (low) to 7 (high). In column (3), investors' familiarity with the stock market is added ranging from 1 (high) to 7 (low). Column (4) additionally includes investors' financial literacy ranging from 0 (low) to 3 (high). In column (5), we add investors' income ranging from 1 (below 1,000 Euro per month) to 4 (above 3,000 Euro per month). Risk and income are measured at the investor level, trust, familiarity, and financial literacy are measured at the county level. All variables are described in detail in Appendix Table A1. Regressions are based on the brokerage data set. The sample is from June 2004 to December 2012.

Table A6: cont'd

Panel A: Fraction of stocks in portfolio	Risk tolerance	Trust	Familiarity	Financial literacy	Income	All variables
	(1)	(2)	(3)	(4)	(5)	(6)
East	–0.145***	–0.093***	–0.094***	–0.091***	–0.152***	–0.164***
	(–8.53)	(–6.11)	(–6.51)	(–6.39)	(–8.30)	(–8.17)
Risk tolerance	0.164***					0.156***
(1=low, 3=high)	(23.02)					(17.68)
Trust		–0.001				0.037***
(1=low, 7=high)		(–0.15)				(3.17)
Familiarity			0.001			0.028***
(1=high, 7=low)			(0.21)			(3.93)
Financial literacy				0.021***		0.022
(0=low, 3=high)				(2.60)		(0.90)
Income					0.018***	0.009**
					(5.62)	(2.36)
Control variables	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Adj. R^2	0.34	0.09	0.09	0.09	0.32	0.35
West Mean	0.578	0.739	0.740	0.740	0.577	0.576
Observations	95,317	565,122	577,823	577,148	93,145	61,196
Panel B: Fraction of bonds in portfolio	Risk tolerance	Trust	Familiarity	Financial literacy	Income	All variables
	(1)	(2)	(3)	(4)	(5)	(6)
East	0.167***	0.217***	0.205***	0.201***	0.206***	0.178***
	(6.45)	(9.92)	(9.92)	(9.53)	(7.70)	(6.22)
Risk tolerance	–0.245***					–0.234***
(1=low, 3=high)	(–23.93)					(–30.24)
Trust		0.008*				–0.002
(1=low, 7=high)		(1.87)				(–0.16)
Familiarity			–0.008**			–0.064***
(1=high, 7=low)			(–2.09)			(–7.24)
Financial literacy				–0.034***		–0.081***
(0=low, 3=high)				(–3.00)		(–3.14)
Income					–0.056***	–0.031***
					(–14.50)	(–7.81)
Control variables	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Adj. R^2	0.27	0.24	0.24	0.24	0.20	0.28
West Mean	0.406	0.095	0.094	0.094	0.407	0.397
Observations	176,026	684,099	698,774	698,021	172,256	117,099

Table A7: Definition of Survey Questions in Figure 5

This table contains the survey items which were included in our July 2018 (Panel A) and December 2018 (Panel B) surveys conducted by Norstat and employed in Figure 5.

Question Abbreviation	Wording
Panel A	
Capitalism creates inequality	In a capitalistic system, the rich get richer and the poor become poorer.
Capitalism creates coldness	Capitalism creates coldness among people.
Communism is preferable	If the communist ideal was realizable, I would prefer it.
Capitalism should be restricted	Capitalism should be restricted.
Panel B	
Capitalism creates inequality	In a capitalistic system, the rich get richer and the poor become poorer.
Capitalism rewards hard-working	In a capitalistic system, the diligent and hard-working are rewarded because they deserve more.
Everybody better-off in capitalism	Although there are large differences in income and wealth in a capitalistic system, everybody is better off.
Capitalism creates chaos	In capitalism, everyone can decide freely, but this results in chaos.
Communism is unrealizable	The past shows that communism is unrealizable.
Capitalism is superior	Capitalism is the superior economic system and that's why it prevailed worldwide.
Capitalism creates coldness	Capitalism creates coldness among people.

Table A8: Top 10 holdings of (anti-) capitalist stocks

Panel A of this Table contains the Top 10 holdings of stocks belonging to the financial industry or stocks of US companies, respectively, in investors' portfolios. Panel B of this table contains the Top 10 holdings of Russian, and Chinese firms, as well as the top holding of Vietnamese firms. We also add a description on the main business field of these companies and whether they are state-owned or not.

Panel A: Financial industry and US stocks Financial industry	US stocks
DEUTSCHE BANK	CISCO SYSTEMS
COMMERZBANK	MICROSOFT
ALLIANZ	GENERAL ELECTRIC
MUENCHENER RUCK.	INTEL
DEUTSCHE POSTBANK	EMC
WCM BETEILIGUNG UND GRUNDBESITZ	PFIZER
MLP	WORLDCOM (delisted)
COMDIRECT BANK	YAHOO
HYPO REAL ESTATE HLDG. (delisted)	COMMERCE ONE (delisted)
DEUTSCHE BOERSE	DELL
Panel B: Stocks of formerly communist countries Russia	Description
OAO GAZPROM	State owned, Industry: Energy, Oil and Gas
LUKOIL OAO	Industry: Energy, Oil and Gas
ROSNEFT	State owned, Industry: Energy, Oil and Gas
ROSTELECOM	Industry: Communication Services, Telecom Services
NORILSK NICKEL	Industry: Basic Materials, Industrial Metal & Minerals
Yukos Oil (delisted)	Industry: Energy, Oil and Gas
GAZPROM NEFT	Maj. Shareholder: Gazprom (state owned), Industry: Energy, Oil and Gas

Table A8: cont'd

Panel B (cont'd): Stocks of formerly communist countries Russia	Description
MOSENERGO	Maj. Shareholder: Gazprom (state owned), Industry: Utilities - Independent Power Producers
TRADE HOUSE GUM	Industry: Consumer Cyclical
SURGUTNEFTEGAZ	Industry: Energy, Oil and Gas
China	Description
PETROCHINA	Industry: Energy, Oil and Gas
BYD	Industry: Consumer Cyclical, Auto Manufacturers
CHINA LIFE INSURANCE	State owned, Industry: Financial Services, Insurance-Life
CHINA PETROLEUM CHEMCIAL	Maj. Shareholder: Sinopec (state owned), Industry: Energy, Oil and Gas
ICBC	Financial Services, Banks Global
CHINA TELECOM	Maj. Shareholder: China Telecommunication Corp. (state owned), Industry: Communication Services, Telecom Services
TSINGTAO BREWERY	State as Min. SH, Sector/Industry: Consumer Defensive, Beverages Brewers
CHINA CONSTRUCTION BANK	Maj. Shareholder:SH Central Huijin Investment (state-owned), Industry: Financial Services, Banks Global
BANK OF CHINA	Maj. Shareholder:SH Central Huijin Investment (state-owned), Industry: Financial Services, Banks Global
CHINA COSCO SHIPPING	State owned, Industry: Industrials, Shipping & Ports
Vietnam	Description
Vietnam Holding	Industry: Financials, Asset Management; Firm operates a closed end fund investing in former state-owned enterprises and private enterprises in Vietnam

Table A9: Correlations between proxies for exposure to communist ideology

This table shows correlations of all proxies used to examine intensity and emotional tagging of experiencing communism. All variables are described in detail in Appendix Table A1. p-values are provided in parentheses.

Variables	Inv. age	Distance	Renamed city	% Religious	Pollution	No West TV	STASI	Liked GDR politics	Employd	GDP per Capita
Investor age	1.000									
Distance to West	0.104	1.000								
	(0.000)									
Renamed city	0.069	0.205	1.000							
	(0.000)	(0.000)								
% Religious	-0.114	-0.251	-0.120	1.000						
	(0.000)	(0.000)	(0.000)							
Pollution	-0.064	-0.045	-0.064	-0.060	1.000					
	(0.000)	(0.000)	(0.000)	(0.000)						
No West TV	-0.089	0.093	-0.045	0.012	0.393	1.000				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)					
Stasi intensity	0.187	0.214	0.051	-0.270	-0.243	-0.349	1.000			
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				
Likes GDR pol.	0.097	0.338	0.104	-0.276	-0.091	-0.079	0.092	1.000		
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)			
Employed	-0.041	0.058	0.095	-0.002	-0.038	0.006	0.048	0.198	1.000	
	(0.000)	(0.000)	(0.000)	(0.461)	(0.000)	(0.016)	(0.000)	(0.000)		
GDP p. Capita	-0.167	-0.109	0.034	-0.022	0.432	0.263	-0.169	-0.121	0.267	1.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

Table A10: Exposure to propaganda and intensity: intensive margin

This table presents results from pooled OLS regressions, where the dependent variable is the fraction of stocks in an investor's portfolio conditional on stock market participation (Panel A), or the fraction of bonds in an investors' portfolio (Panel B). t-stats based on standard errors clustered by municipality are presented in parentheses. In column (1), we interact the East German dummy variable with a dummy variable which is equal to one if investors are 50 years of age or older, and zero otherwise. In column (2), we interact the East German dummy variable with a dummy variable equal to one if the shortest distance between a respective East German county and the former border to West-Germany is above 100 kilometers, and zero if a counties is located in an area within a 100 kilometers radius. The latter would belong to the "Border Circle (Kleiner Grenzverkehr)" area. Regressions are based on the brokerage data set. The sample is from June 2004 to December 2012.

Panel A: Fraction of stocks in portfolio	Age interaction (1)	Distance interaction (2)	All variables (3)
East	–0.021**	–0.050***	0.001
	(–2.39)	(–3.83)	(0.07)
East × above 50	–0.069***		–0.068***
	(–6.46)		(–6.49)
East × distance		–0.036**	–0.031**
		(–2.23)	(–2.06)
Above 50	0.032***		0.031***
	(6.55)		(6.49)
Control variables	yes	yes	yes
Adj.R^2	0.093	0.092	0.093
West Mean	0.735	0.735	0.735
Observations	687,464	685,630	685,630
Panel B: Fraction of bonds in portfolio	**Age interaction (1)**	**Distance interaction (2)**	**All variables (3)**
East	0.086***	0.112***	0.044
	(7.92)	(5.83)	(1.41)
East × above 50	0.094***		0.090***
	(8.03)		(4.37)
East × distance		0.078***	0.073
		(2.78)	(1.21)
Above 50	–0.024***		–0.023***
	(–5.58)		(–2.98)
Control variables	yes	yes	yes
Year FE	yes	yes	yes
Adj.R^2	0.251	0.253	0.255
West Mean	0.107	0.107	0.107
Observations	839,272	836,714	836,714

Table A11: Fraction of stocks in portfolio (unconditional on participation)

Column (1) of this table presents results from a pooled OLS regression based on the brokerage data set, where the dependent variable is the fraction of stocks in an investor's portfolio. We use the same set of control variables as in column (2) of Table 2. However, we do not condition on investors participating in the stock market. Instead, we set the fraction of stocks in an investors' portfolio to zero if an investor does not participate in the stock market. Column (2) shows results from a pooled OLS regression based on the bank data set, where the dependent variable is the fraction of stocks in an investor's portfolio. We use the same set of control variables as in column (3) of Table A4. However, we do not condition on investors participating in the stock market. Instead, we set the fraction of stocks in an investors' portfolio to zero if an investor does not participate in the stock market. The main independent variable, East, is equal to one if an investor lives in East Germany, and zero if an investor lives in West Germany. All variables are described in detail in Appendix Table A1. t-stats based on standard errors clustered by county are presented in parentheses.

Table A11: cont'd

	% stocks (Broker data) (1)	% stocks (Bank data) (2)
East	-0.195***	-0.030***
	(-11.22)	(-4.26)
Gender (1=male)	0.090***	0.041***
	(20.23)	(8.30)
Investor age	-0.081	0.003***
	(-8.08)	(3.83)
Married (1=yes)	0.056***	-0.000
	(15.32)	(-0.65)
Ln(Portfolio value)	-0.041	0.043***
	(-26.23)	(30.24)
Ln (Number of local banks)	-0.014	
	(-1.40)	
Ln (Total population)	0.010**	
	(2.23)	
Time account is open	0.091***	
	(19.44)	
Ln (Real estate wealth)	-0.006***	
	(-3.70)	
High school degree	0.048	
	(0.47)	
Ln (GDP per capita)	-0.005	
	(-0.25)	
Ln (Number of local firms)	-0.003	
	(-0.56)	
Investor age squared		-0.000***
		(-3.60)
Employed (1=yes)		0.005
		(-0.77)
Trainee (1=yes)		-0.026***
		(-3.39)
Retiree (1=yes)		-0.015
		(-1.02)
Online banking (1=yes)		0.061***
		(8.15)
Mortgage (1=yes)		-0.027***
		(-3.19)
Relationship with bank		-0.001***
		(-3.42)
Credit score		-0.224***
		(-3.76)
Ln(Income)		-0.005***
	89	(-4.49)
Ln(Savings)		-0.002**
		(-2.17)
Adj. R^2	0.168	0.406
Observations	828,492	6,903

Table A12: Emotional Tagging and Fraction Invested in Stocks

This table presents results from pooled OLS regressions. The dependent variable is the fraction of stocks in an investor's portfolio conditional on stock market participation. t-stats based on standard errors clustered by municipality are presented in parentheses. In all columns, we interact the East German dummy variable with different proxies for positive or negative emotional tagging. These proxies are: Column (1): dummy with an indicator reflecting GDR counties that needed immediate action because of pollution after collapse of the GDR according to a report from the German ministry of environmental affairs published in 1990. Column (2): fraction of catholics and protestants in a given investor's county according to the 2011 census. Column (3): indicator which is equal to one for counties in the former GDR that did not receive TV signals from West Germany. Column (4) indicator which is equal to one if an investor lives in a city that was renamed during the GDR regime. Renamed cities include Chemnitz (Karl-Marx-Stadt), Kriegsdorf (Friedensdorf), Neuhardenberg (Marxwalde), Werminghoff (Knappenrode), and Eisenhüttenstadt (Stalinstadt) (column (4)), Column (5): fraction of voluntary secret police (STASI) spies who lived in an investor's county during the GDR regime. Column (6): fraction of survey respondents in an investor's county who state that the former political system of the GDR had many positive aspects. All variables are described in detail in Appendix Table A1. The sample is from June 2004 to December 2012.

	Fraction of stocks					
	Neg. Emotional Tagging			Pos. Emotional Tagging		
	(1)	(2)	(3)	(4)	(5)	(6)
East	–0.079***	–0.088***	–0.070***	–0.069***	–0.056***	–0.029**
	(–8.43)	(–4.34)	(–7.31)	(–7.66)	(–4.65)	(–2.45)
East × Env. Pollution	0.059**					
	(2.09)					
East × Fraction Cath. & Prot.		0.001				
		(1.13)				
East × No West TV			–0.031			
			(–1.27)			
East × Renamed city				–0.112**		
				(–2.41)		
East × Stasi					–0.044*	
					(–1.69)	
East × liked GDR politics						–0.198***
						(–4.46)
Adj.R^2	0.092	0.092	0.092	0.092	0.092	0.093
Observations	687,464	687,464	687,464	687,464	687,464	687,291
West Mean	0.735	0.735	0.735	0.735	0.735	0.735

Table A13: Emotional Tagging and Fraction Invested in Bonds

This table presents results from pooled OLS regressions. The dependent variable is the fraction of bonds in an investor's portfolio. t-stats based on standard errors clustered by municipality are presented in parentheses. In all columns, we interact the East German dummy variable with different proxies for positive or negative emotional tagging. These proxies are: Column (1): dummy with an indicator reflecting GDR counties that needed immediate action because of pollution after collapse of the GDR according to a report from the German ministry of environmental affairs published in 1990. Column (2): fraction of catholics and protestants in a given investor's county according to the 2011 census. Column (3): indicator which is equal to one for counties in the former GDR that did not receive TV signals from West Germany. Column (4) indicator which is equal to one if an investor lives in a city that was renamed during the GDR regime. Renamed cities include Chemnitz (Karl-Marx-Stadt), Kriegsdorf (Friedensdorf), Neuhardenberg (Marxwalde), Werminghoff (Knappenrode), and Eisenhüttenstadt (Stalinstadt) (column (4)), Column (5): fraction of voluntary secret police (STASI) spies who lived in an investor's county during the GDR regime. Column (6): fraction of survey respondents in an investor's county who state that the former political system of the GDR had many positive aspects. All variables are described in detail in Appendix Table A1. The sample is from June 2004 to December 2012.

	Fraction of bonds					
	Neg. Emotional Tagging			Pos. Emotional Tagging		
	(1)	(2)	(3)	(4)	(5)	(6)
East	0.163***	0.205***	0.163***	0.152***	0.128***	0.060***
	(9.60)	(5.64)	(9.67)	(9.90)	(6.42)	(3.12)
East × Env. Pollution	–0.030					
	(–0.49)					
East × Fraction Cath. & Prot.		–0.002*				
		(–1.79)				
East × No West TV			–0.088***			
			(–3.42)			
East × Renamed city				0.192***		
				(3.46)		
East × Stasi					0.081*	
					(1.66)	
East × liked GDR politics						0.426***
						(5.72)
Adj.R^2	0.092	0.092	0.092	0.092	0.092	0.093
Observations	687,464	687,464	687,464	687,464	687,464	687,291
West Mean	0.735	0.735	0.735	0.735	0.735	0.735