The Long-lasting Effects of Experiencing Communism on Financial Risk-Taking

Christine Laudenbach, Ulrike Malmendier, and Alexandra Niessen-Ruenzi[*]

December 2018

Abstract

We analyze the long-term effects of living under communism and its anticapitalist doctrine on financial risk-taking. 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 for whom we expect stronger emotional tagging, for example those living in communist "showcase cities" or cities of Olympic gold medalists. In contrast, East Germans with negative experiences of the communist system, e. g., those experiencing environmental pollution and suppression of religious beliefs and those without access to (Western) TV entertainment, invest more in the stock market today. Election years appear to have trigger effects inducing East Germans to reduce their stock-market investment further. We provide evidence of negative welfare consequences, as indicated by investment in more expensive actively managed funds, less diversified portfolios, and lower risk-adjusted returns.

JEL-Classification Codes: D03, D14, D83, D84, E21, G11
Keywords: Personal experiences, Stock market participation, Communist doctrine

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. From the role of women in the workplace to xenophobia, from camping in a tent or a trailer to consumer frugality, it is easy to draw statistical maps of Germany that clearly delineate the former border. As the international media has been wondering about the Germans, after the Wall has been down for longer than it was up, why do "walls in their heads" remain?[1]

One such difference concerns the financial situation and wealth accumulation of East and West Germans. East Germans are lagging behind in net wealth, far beyond what lower income levels and higher unemployment rates can explain. 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.[2] Moreover, these differences in wealth accumulation are strongly correlated with differences in financial decision making, in particular stock-market participation. Across all counties in East Germany, mutual fund and stock ownership hover around 0 to 9%, while going up to 60% in some counties in West Germany.

In this paper, we analyze to what extent the persistent differences in financial decision-making are predicted by prior lifetime experiences. Personal lifetime experiences have been found to be an important driver of financial risk taking. Risk perception and investment in risky asset markets are particularly influenced by experienced market returns over the lifetime (e.g., Malmendier and Nagel (2011)), experienced inflation (e.g., Malmendier and Nagel (2016)), personal investment outcomes (e.g., Strahilevitz, Odean, and Barber (2011), Kaustia and Knüpfer (2008)), and an investor's local environment (e.g., Laudenbach, Loos, and Pirschel (2017), Kaustia and Knüpfer (2012)). However, an important difference in this setting is that, rather than having positive or negative prior experiences, East Germans had virtually no experience with risky assets. Their financial decisions used to be limited

---

[1] See, e.g., New York Time, 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."

[2] 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."

to choosing between the saving account, a type of mortgage-backed security, and a form of (life) insurance savings account. Why, then, do East Germans appear to have such a persistently negative attitude towards stock-market investment, on average?

In this study, we turn to the deeper underpinning of experience effects. A large literature on affect and memory shows that emotions determine how strongly experiences are anchored in memory. 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)). Specifically, the affective system determines which components from the collection of processed information are preserved in memory (Bergado, Lucas, and Richter-Levin (2011)). According to the concept of emotional tagging (Richter-Levin and Akirav (2003)), emotionally arousing events may be better remembered since emotionally dependent information can be modulated into enhanced memory. In the context of autobiographical memory retrieval, Piefke et al (2003) show how different responses to an experience depend on positive versus negative valence in that different brain areas get activated.

While these underpinnings are of interest in any "experience effect" context, they are particularly relevant here, where East Germans did not have direct experiences, and we will turn to the notion that communist government messaging may have influenced citizens, and aim to understand the heterogeneity and persistence of such influence. That is, rather than focusing exclusively on the exposure to macroeconomic realizations, we ask how the ideological and emotional priming of lifetime experiences affects the intensity and even direction of experience effects. We link experience with an anti-capitalist (communist) regime to individuals' long-term willingness to invest in capital markets and ask whether there is variation by intensity and direction of exposure, depending on whether experiencing communism has a positive or negative emotional tagging.

The object of our analysis are differences in financial risk-taking between East and West Germans decades after Reunification. As emphasized in prior research (Alesina and Fuchs-Schündeln (2007)), Germany is a unique testing ground 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 have lived in a capitalist system, with 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 socialist system, were excluded from stock-market participation, and were exposed to strongly negative views about capitalism in general and stock markets in particular. The GDR's focus on condemning capitalism was caused by the fact that, in contrast to other communist regimes, it could not legitimate itself by referring to a "national state" (Haury (2004)). Its territory was defined by the Allies and Soviets, and there were Germans living on both sides of the border. Further, West Germany publicly claimed to represent all Germans and called the GDR regime "puppets of Moscow" (Haury (2004)). To stabilize its political system and to differentiate itself from the West, GDR propaganda focused on the communist doctrine and its strongly negative views about stock markets. For example, Lenin (1919) remarked with respect to the stock market: *"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."*. Survey results in this paper suggest that exposure to such a doctrine matters even today: Significantly more East Germans than West Germans think that investing in the stock market is simply immoral.

We first develop a theoretical framework to understand how different experiences in East and West Germany 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, in East Germany, experience with the market is restricted, and therefore learning about the stock market can occur only through signals from the government. Trusting citizens in East Germany believe the government signals to be true, while there is a share of citizens distrusting the government and not updating their beliefs. Distrust may

stem from many potential factors, for example attitudes towards communism or capitalism. Our model predicts that attitudes towards the stock market continue to differ in East and West Germany long after Reunification. We also use this framework to highlight potential drivers of heterogeneity in the East-West difference in financial risk taking. These include intensity of exposure to government signals prior to Reunification, attitudes towards or distrust against the government, and the effect of a resurgence of pro-communist signals during election years.

We test these predictions in a comprehensive data set of brokerage as well as data of bank clients, augmented by several other data sources. Our core data is a large investor data set from the brokerage entity of a large German branch bank, from 2004 to 2012. It provides detailed holding, transaction, and demographic information for about 200,000 clients and is thus significantly larger than most of the data sets used in the household finance literature. The size matters particularly in our context where we aim to analyze East-West differences and the long-run consequences of exposure to the communist system, as well as within-East differences due to different emotional tagging. Only 20% of the German population live in the East, and the East is split up in 70 "Landkreise" (county). Identification requires data that contains enough investors within each county, e.g. in order to use regional proxies like Stasi employees etc. Taken 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, and importantly share does not remarkably differ between East and West Germany.

We show that East German investors exhibit significantly lower willingness to take stock-market risk, both on the extensive and the intensive margin. Even though they are now subject to the same investment universe and identical legal and regulatory framework as West German investors, East German clients are 19.4 pp less likely to participate in the stock market, and conditional on participating, hold 7.2 pp less risky assets in their portfolios. We replicate these findings on our bank data set, obtained from a large private bank, that also includes individuals' cash holdings and further wealth controls. Both in

4

terms of statistical significance and in terms economic magnitude, the estimate effects are remarkably similar across those data sets.

Analyzing portfolio holdings, we find that East Germans invest less in more capitalist firms, namely financial institutions or firms located in the US, and more in firms located in (formerly) communist countries, as well as formerly state-owned German companies. Results hold if we include proxies for trust, familiarity, and financial literacy. They also hold if we control for differences in risk attitudes and income on an individual and a regional basis, and if we re-run the analysis for a subset of investors who moved from the former GDR to West Germany after Reunification. Even though they now live under the same economic circumstances as their West German counterparts, they are still less likely to invest in the stock market. Similarly, we also find significant differences in participation for an (arguably more homogenous) subset of investors living in East vs. West Berlin and for a subset of individuals living in two comparable cities closely located on each side of the former border. These findings should mitigate concerns that our main result is driven by differences in wealth and economic development across German counties.

Fuchs-Schündeln and Masella (2016) show that the length of exposure to a communist system matters for longer-term labor market outcomes for men. In line with these findings, we show that the stock market participation gap between East and West Germans is larger for individuals who were more exposed to the communist doctrine of the GDR. These are investors older than 50 years, and those that live further away from the former border to West-Germany.

The emphasis of our analysis lies not only on the exposure to communism itself but on *how* an individual has experienced the communist system, i.e. whether positive or negative emotions are associated with it. Specifically, we show that our results are stronger if the proposed ideas of the regime were consistent with East Germans' personal experiences and thus associated with positive emotions. We argue that this should have been the case for investors living in renamed cities, namely cities that obtained communist names when belonging to the GDR. The act of renaming a city was celebrated publicly and intensively

and we conjecture that individuals living in one of these cities were strongly exposed to anti-capitalist ideology. For example, the district administration of the city of Chemnitz, which was renamed to "Karl Marx Stadt", was said to have a flagship role in promoting communist ideology with an enormous number of voluntary state-security collaborators (spys) (Horsch, 1997). Aside transporting communist ideology directly, the GDR regime saw sports as a means to demonstrate the superiority of socialism over the capitalist system. Particularly the olympic games were used to evoke a feeling of "we" against "the enemy", and olympic winners were celebrated as national heroes. With this in mind, we use an alternative proxy for positive emotional tagging of communist experience for individuals living in the same city as an olympic (gold) medal winner. In line with our conjecture, we find that our baseline effect is indeed stronger for individuals living in renamed cities or in the same city as an olympic (gold) medal winner.

We also examine whether our main result is weaker for individuals whose experience with the communist system may be tagged with negative emotions. Indoctrination as well as propaganda may be less effective if it contradicts people's cultural values or their everyday experiences (McGuire, 1993). For example, Adena, Enikolopov, Petrova, Santarosa, and Zhuravskaya (2015) find that exposure to Nazi radio increased support for the regime, but only in places with historically high levels of anti-Semitism. In places with low levels of anti-Semitism, exposure to Nazi radio actually resulted in lower levels of support for the Nazi party. To test this conjecture in our context, we first exploit exogenous variation in access to West German TV, caused by part of the population living in areas (for example, in valleys) where TV signals from the West could not be received. 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.[3] Since access to West

---

[3]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

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.

Another common feature of the communist systems is that religion is interpreted as a tool used by the ruling classes to suppress people belonging to the working class. Thus, atheism was propagated in communist countries like the GDR from early on in schools. Therefore, we conjecture that religious people are likely to form negative views about the communist system and should hold more positive views about Western countries in which freedom of religion is much more respected. We show that differences between East and West German investors are indeed mitigated in counties with high levels of religiosity. Furthermore, we show that the stock market participation gap is less pronounced in areas that were highly polluted during GDR times. Environmental pollution directly contradicts the claim of the communist regime to protect the environment in the interest of peoples' well-being.

We also test whether our results on stock market participation are stronger for regions where communist ideology seems to be more in line with existing opinions and beliefs (Jowett and O'Donnell (2012) and Adena, Enikolopov, Petrova, Santarosa, and Zhuravskaya (2015)). As a first test, 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 a 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 dimension by making use of time-series differences in the salience of ideological experiences and resulting views and beliefs. We conjecture that our baseline effect should be stronger in election years, when public attention is focused on

to post-Reunification levels of consumption (Bursztyn and Cantoni, 2016) and to protest diffusion during the 1989 East German revolution (Kern, 2011).

7

political topics and pro-communist signals should be more salient. 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 associated with strongly positive or negative emotions are most relevant for behavior.

In addition, we contribute to various strands of the literature on socioeconomic differences between East and West Germans. Rainer and Siedler (2009) and Heineck and Süssmuth (2013) show that trust levels are lower in East Germany compared to West Ger-

8

many. Lichter, Löffler, and Siegloch (2016) show that higher levels of STASI surveillance led to lower levels of social capital as measured by interpersonal and institutional trust in post-Reunification 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) identify local surveillance intensity as a key driver of the personality of former GDR citizens. Bucher-Koenen and Lamla (2014) show that there is a significant financial literacy gap between East and West Germany. We contribute to this mostly survey-based literature by investigating empirical data and hence the actual investment decisions of individuals in East- and West Germany.

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 the reunification. In the model, citizens in West Germany 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, instead, both (formerly) East and West Germans receive the same direct signals from the market. While beliefs converge, the differences in experiences prior to reunification continue to drive a wedge in beliefs between the East and West.

In the empirical analysis we will consider beliefs both in terms of expected returns and, to a lesser extent, in terms of their moral judgment of the stock market as an institution. Here, we focus on beliefs about future returns.

2.1   Setup

In our model, citizens are trying to learn about the value of investing in the stock market. There are two possible states of the world, $\{G, B\}$, where G indicates that investing in the stock market is good, and B that it is bad. Citizens start with a prior $P(B) = 0.5$ when

born, and update beliefs applying Bayes' rule to the signals they receive, albeit with the twist that some may receive distorted signals and not fully account for the distortion. We assume, given the equity premium, that the true state is G.

Citizens who are exposed to the stock market receive signals $\sigma_t \in \{g, b\}$ about the true state of the world in each period t, with $p(\sigma_t = g|G) = p(\sigma_t = b|B) = \theta$, $\theta \in (0.5, 1]$. While West Germans have access to the stock market and receive the true signals, East Germans do not, prior to reunification.[4] Instead, East Germans receive government signals $s_t \in \{g, b\}$ about the value of investing in the stock market, which may be distorted. For simplicity, we model the East German government as sending only b signals to their citizens.

We consider two types of updating behavior among East Germans in response to the government signals. "Followers" take the government information at face value and believe that the government is passing on the true signal, i.e., $p(s_t = g|G) = p(s_t = b|B) = \theta$. Others do not believe the information provided by the government. They believe instead (in this case, correctly) that the signals sent by the government have no information.

Whether or not an East German subscribes to the views of the communist government could depend on many factors. More pro-communist people will be more inclined to believe a message from the East German government than more pro-capitalist people. In the empirical analysis, we will show that the inclination to subscribe to the government's messaging about capitalism and the stock market is related to their past lifetime experiences under the communist system. The more positive their personal circumstances have been, the more likely they are to endorse the government views and incorporate its signals into their beliefs. We will denote this effect as emotional coloring (or, emotional tagging). In the theoretical analysis, we simply assume that a fraction q of East Germans question the government messaging about the stock market and do not incorporate it into their beliefs (non-followers), and a fraction $1 - q$ does (followers).

After Reunification, both formerly-East and West Germans have exposure and access to the market, and receive the true signals σ_t. In the baseline set-up, citizens update only

---

[4]In this simple model, we abstract from heterogeneity in experiences with the stock market, for example by age, participation in the market, etc.

based on the true signals σ_t after Reunification. Later, in Subsection 2.5, we will explore the implications of a resurgence of communist signals post-Reunification.

2.2 East vs. West Germany

Before Reunification, a citizen with prior belief $P_{t-1}(B)$ responds to receiving (true) signal σ_t at time t by updating to the posterior

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

For example, if $\sigma_t = b$, beliefs will be updated

$$P_t(B|b, P_{t-1}(B)) = \frac{\theta P_{t-1}(B)}{\theta P_{t-1}(B) + (1 - \theta)(1 - P_{t-1}(B))} > P_{t-1}(B)$$

as $\theta > 0.5$. That is, a b signal increases beliefs that the stock market is bad, while a g signal moves beliefs in the opposite direction.

East Germans who subscribe to the views of the government (followers) update their beliefs in the same way in response to government messaging s_t. Non-followers, instead, do not update their beliefs prior to reunification, $P_t(B|s_t) = 0.5 \ \ \forall t, s_t$.

Given the differences in experiences with the market, we can now characterize the average beliefs of East and West Germans at the time of reunification. Let's assume that there are n_1 periods pre-reunification, in which the East receives only bad (government) signals, while the West receives g_1 good and b_1 bad (true) signals, with $n_1 = g_1 + b_1$ and $g_1 > b_1$. Then, (average) beliefs of East Germans, $\bar{P}_{R,\text{East}}$, and beliefs of West Germans, $P_{R,\text{West}}$, at reunification are

$$
\begin{align}
\bar{P}_{R,\text{East}}(B) &= qP_{R,\text{East}}(B|\text{non-follower}) + (1 - q)\,P_{R,\text{East}}(B|\text{follower}) \tag{1}\\
&= q(0.5) + (1 - q)\,\frac{\theta^{n_1}}{\theta^{n_1} + (1 - \theta)^{n_1}} \qquad\qquad \geq 0.5,\\
P_{R,\text{West}}(B) &= \frac{(1 - \theta)^{g_1 - b_1}}{\theta^{g_1 - b_1} + (1 - \theta)^{g_1 - b_1}} \qquad\qquad\qquad\qquad < 0.5. \tag{2}
\end{align}
$$

11

That is, average beliefs of East and West Germans will be different, with East Germans more likely to believe that investing in the stock market is bad than West Germans.

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.*

Note that equations (1) and (2) implicitly highlight three groups of citizens: East German "followers" and East German "non-follower" in (1) and West Germans in (2). At the time of reunification, West Germans have the most positive views of the stock market, while East Germans "followers" have the most negative views of the stock market.

The framework further captures why East and West Germans might continued to have differing beliefs post-reunification. As West Germans have updated the uninformative prior with true signals and East Germans have not (or have updated using distorted government messages), they are starting off from different beliefs at unification and will converge, but not instantly. Let's assume that there are n_2 periods post-Reunification so far, in which all Germans receive g_2 good signals and b_2 bad signals, with $g_2 > b_2$ and, for ease of exposition, $n_1 + b_2 > g_2$. Then (average) beliefs in East and West Germany time $R + n_2$ are

$$
(3) \quad \bar{P}_{R+n_2,\text{East}}(B) = q P_{R+n_2,\text{East}}(B|\text{non-follower}) + (1 - q) P_{R+n_2,\text{East}}(B|\text{follower})
$$
$$
= q \frac{(1-\theta)^{g_2-b_2}}{\theta^{g_2-b_2} + (1-\theta)^{g_2-b_2}} + (1-q) \frac{\theta^{n_1+b_2-g_2}}{\theta^{n_1+b_2-g_2} + (1-\theta)^{n_1+b_2-g_2}}
$$
$$
\leq \bar{P}_{R,\text{East}}(B)
$$
$$
(4) \quad P_{R+n_2,\text{West}}(B) = \frac{(1-\theta)^{(g_1+g_2)-(b_1+b_2)}}{\theta^{(g_1+g_2)-(b_1+b_2)} + (1-\theta)^{(g_1+g_2)-(b_1+b_2)}}
$$
$$
\leq P_{R,\text{West}}(B)
$$

The equations reveal that, while both formerly-East and West Germans move their beliefs towards G post-reunification, the ordering of the three groups remains intact, with

$$
P_{R,\text{West}}(B) < P_{R+n_2,\text{East}}(B|\text{non-follower}) < P_{R+n_2,\text{East}}(B|\text{follower}).
$$

Thus, while all beliefs are converging towards the true state G, there will continue to be a gap in beliefs between the East and West. We note that other determinants, in addition to people holding on to prior experiences, are likely to contribute to the lasting differences between East and West. For example, confirmation bias may result in a slower rate of convergence (or even divergence) after Reunification. Or, East Germans with a negative view of the stock market, who are shying away from stock investment, might not update their beliefs about the benefits of investing at the same rate.

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.

2.3   Intensity of Exposure

Our framework allows to generate comparative statics of citizens with more or less exposure to signals prior to Reunification by varying the size of n_1. Less exposure might be temporal—younger generations have received to fewer signals over their lives so far—or, in the case of East Germans, geographic—government messages might be less effective for idiosyncratic reasons such as conflicting religious beliefs, or the more open exchange with West Germany in certain areas near the border ("Kleiner Grenzverkehr").

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:

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

13

Beliefs of East Germans non-followers will be unchanged as they do not learn from signals prior to reunification. And beliefs of East Germans followers will move more towards B as they receive $\alpha - 1$ additional b signals,

$$\frac{\theta^{(\alpha n_1 + b_2) - g_2}}{\theta^{(\alpha n_1 + b_2) - g_2} + (1 - \theta)^{(\alpha n_1 + b_2) - g_2}} > \bar{P}_{R+n_2,\text{East}}(B|\text{follower}).$$

With more pre-unification signals, the relative weight placed on pre-unification learning is larger, resulting 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 and distance from the border as proxies for exposure to pre-unification signals. We will show that the East-West gap in behavior is larger for populations who likely received more pre-unification signals.

2.4 Direction of Exposure (Emotional Coloring)

As we discussed, we can think of many several determining 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 coloring. In the empirical analysis, we aim to identify several quasi-endogenous factors that may have made living under communism a particularly good experience (e.g., living in a renamed "showcase" city, living in a city with an Olympic medal winners) 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.

We can utilize the model to relate the gap between East and West beliefs to the level of positive versus negative emotional tagging, as proxied by our fraction of followers versus non-followers:

$$\frac{\partial}{\partial q}[\bar{P}_{R+n_2,\text{East}}(B) - P_{R+n_2,\text{West}}(B)] = P_{R+n_2,\text{East}}(B|\text{non-follower}) - P_{R+n_2,\text{East}}(B|\text{follower}) < 0.$$

Result 4 *The wedge in post-Reunification beliefs between East and West is decreasing in the level of distrust of the East government by formerly East Germans (q_E^E).*

In Sections 5.3, 5.4, and 5.5, 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.

2.5 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 tend to provide media platforms and 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). 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 "followers" in East Germany incorporate such messages when they resurge, in addition to the true signals. (Another alternative is that both East and West Germans with emotionally colored anti-capitalism experiences might be receptive.)

Let's consider the case that former West Germans and former East German non-followers ignore these messages, while former East German followers treat these signals as informative.

15

We can then compare the gap in beliefs n_2 periods after Reunification without any elections (Equations (3) - (4)) to the gap in beliefs if the n_2-th period is an election year, in which an additional b messaging is sent by the communist parties. In the latter case, the beliefs of former East German followers are

$$P_{R+n_2,\text{East}}(B|\text{follower}, s_{n_2} = b) = \frac{\theta^{(n_1+b_2+1)-g_2}}{\theta^{(n_1+b_2+1)-g_2} + (1-\theta)^{(n_1+b_2+1)-g_2}} > P_{R+n_2,\text{East}}(B|\text{follower}).$$

The resulting difference in the gap in beliefs is

$$(P_{R+n_2,\text{East}}(B|s_{R+n_2}, \sigma_{R+n_2}) - P_{R+n_2,\text{West}}(B|\sigma_{R+n_2}) - (P_{R+n_2,\text{East}}(B|\sigma_{R+n_2}) - P_{R+n_2,\text{West}}(B|\sigma_{R+n_2}))$$

$$= (1-q) \left(\frac{\theta^{(n_1+b_2+1)-g_2}}{\theta^{(n_1+b_2+1)-g_2} + (1-\theta)^{(n_1+b_2+1)-g_2}} - \frac{\theta^{(n_1+b_2)-g_2}}{\theta^{(n_1+b_2)-g_2} + (1-\theta)^{(n_1+b_2)-g_2}} \right)$$

$$> 0.$$

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

Indeed, in Section 5.6, we find that the gap in behavior between formerly East and West Germans is larger in election years.[5]

3 Data and summary statistics

3.1 Brokerage data

For our main analysis, we obtain monthly security holdings and demographic information on a representative sample of 230,229 retail investor accounts from June 2004 to December

---

[5] We also find evidence that West Germans who are likely to be sympathetic to the communist cause appear to be receptive to anti-stock-market signals and tend to diverge from other West Germans. However, as long as their fraction is relatively small the average change in beliefs among West Germans will outweigh the change among East Germans.

2012. Data are provided by a German brokerage associated with a large bank present in almost all counties of Germany. 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. Summary statistics of our brokerage data are displayed in Panel A.1 of Table 1.

The brokerage bank provided us with account data as well as portfolio holdings. Account data mainly comprise investor characteristics like age, gender, marital status and account related data like the date the account was open or closed (if applicable). One major variable for this study is the ZIP code of an investor, which informs us whether an investor lives in the former GDR and lets us additionally precisely define an investor's local environment, e.g. the distance to the former West-German border. 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. Data on ZIP codes allow us to determine that 20.4% of clients in our sample live in East Germany (i.e., the former GDR). There are 52.6% male investors in our sample, and the average investor is 60 years old. The majority of investors is married (58.2%) and their accounts are on average open for six years. The data on portfolio holdings can be merged to the account data via an anonymized client identifier provided by the bank. These account data contain security identifier (ISIN), volume, current price, and value (in Euro) of every security an investor holds at the beginning of each month. We aggregate these data on the yearly level and find that the average portfolio value in our sample is 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

17

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 A.

Panel B.1 of Table 1 reports differences between East and West German investors in our brokerage sample. In spite of the high level of stock market participation in our brokerage data set, 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%). 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. These differences mandate to include proxies for investors' overall wealth as control variables in our regressions, because they may contribute to the stock market participation gap between East and West German investors.

3.2 Bank data

Since our brokerage data only allows us to analyze stock market participation conditional on having a brokerage account (i.e., a portfolio), we use 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. The bank provided us with a data deduction of these clients' personal characteristics as of August 2017. Again, data on clients' ZIP code allow us to determine that 18.0% of them live in East Germany (i.e., the former GDR). 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. Summary statistics on the bank data set are provided in Panel A.2 of Table 1.

In our bank data, stock market participation is only 12.5% on average. Note that for 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. If clients participate in the stock market, they hold 46.8% stocks in their portfolios.[6] Compared to the brokerage data, clients in the bank data are younger (47 versus 60 years), and hold larger portfolios on average (69,532 Euro vs. 25,965 Euro).

Results in Panel B.2 of Table 1 report differences between East and West German investors in the bank data set. East German investors are again significantly less likely to participate in the stock market (8.0% vs. 13.5%). They also hold a lower fraction of stocks in their portfolios conditional on participating in the stock market (62.7% vs. 72.3%). In line with the brokerage data, we observe that East German clients in the bank data have significantly lower portfolio values. They also have significantly lower savings.

For a subset of 2,133 bank clients, we obtain additional data from a survey that was conducted by the bank at the beginning of 2017 with the intention to assess clients' attitudes towards retirement savings. These data allow us to identify bank clients that have moved from the former GDR to West Germany after Reunification. A detailed description of all variables contained in the bank data set is provided in Appendix A.

3.3 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 A. 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

---

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

living in the same ZIP code area will be linked to the same geographical factors such as, for example, real estate wealth or GDP per capita.

We obtain data on local real estate wealth from the SAVE survey, which is a yearly household panel in Germany.[7] On average, the self-reported real estate wealth of households per county amounts to roughly 152,667 Euro (Panel A.3 of Table 1). It is significantly larger in West Germany compared to East Germany (Panel B.3 of Table 1). Data on regional GDP per capita, the fraction of inhabitants with a High-School degree, and the number of local firms are obtained from the German Federal Statistical Office. All of these variables are significantly larger in West Germany compared to East Germany (Panel B.3 of Table 1). To proxy for trust, we use a variable measuring trust in securities markets from the bank survey. We find that trust in securities markets is significantly lower in East Germany compared to West Germany (3.01 vs. 3.26).

Proxies for familiarity and financial literacy are obtained from responses to the survey data provided by our sample bank.[8] To compute county averages, we use not only survey answers of those clients we have account data on, but answers of the overall sample of 2,133 survey respondents. We find that familiarity with the stock market is significantly higher in West Germany, while there is no significant difference in financial literacy between East and West German investors.

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 affective attitudes towards issues that the system criticises. 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

---

[7]The first wave of SAVE was conducted in 2001 by the Mannheim Research Institute (now Munich Center) for the Economics of Aging (MEA). Detailed information about the scope, the design and results are provided by Boersch-Supan, Coppola, Essig, Eymann, and Schunk (2014).

[8]For the bank data set, we can directly link survey responses to client accounts.

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

$$(5) \qquad P(y_{it} = 1|x_{it}, East_i, Year_t) = \Phi(\alpha + \beta East_i + \acute{\gamma}x_{it} + Year_t),$$

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.[9] Our main independent variable, $East_i$, is a dummy variable equal to one if an investor lives in East Germany, and zero otherwise.[10] We control for investors' gender, age, and marital status, since all of these variables may influence stock market participation. 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 a given county to rule out that supply side effects drive our results. We also include the number of people living in a given county to capture differences between urban and rural areas, and the number of months an account is open as it may take some time before investors purchase the first set of stocks after they have opened their accounts. 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

---

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

[10]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.

are measured at the county level. The regression includes year fixed effects, robust standard errors are clustered by county. 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 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. 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. 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.[11] Furthermore, we find that the longer an account has been opened, the more likely the investor starts participating 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.

To examine investments in risky assets conditional on participating in the stock market, we estimate the following OLS regression:

---

[11]To mitigate concerns that our main result only holds for certain wealth levels, we split our sample in quartiles according to investors' portfolio value, and re-run our main regression for each quartile. Coefficients on the East dummy (not reported) are always negative and statistically significant at the 1% level. Our results also hold, if we include squared portfolio values.

$$(6) \qquad\qquad y_{it} = \alpha + \beta East_i + \dot{\gamma}x_{it} + Year_t + \varepsilon_{it},$$

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}, and year fixed effects as in equation 5, and also add year fixed effects. Results in column (2) of Table 2 show that, conditional on stock market participation, East German investors hold significantly fewer stocks in their portfolios than West German investors, which we calculate as the value of stock holdings in Euro divided by the overall portfolio value in Euro. In economic terms, the fraction of stocks in East German investors' portfolios is about 7.2 percentage points lower than that of West German investors. This translates into a 9.9% difference relative to the average fraction of stocks in investors' portfolios if they participate in the stock market. This result is statistically significant at the 1% level.

Finally, we compute the fraction of bonds held in an investor's portfolio as the value of bonds in Euro divided by the overall portfolio value and use it as the dependent variable in equation 6. Results are reported in column (3) of Table 2. We find a positive and statistically significant coefficient on the East German dummy variable, indicating that the fraction of bonds in East German investors' portfolios is about 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 citicized for representing capitalism.[12]

In the next step, 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

---

[12]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).

the Berlin Wall, and inhabitants had no regular access to the other part of the city. Thus, the case of Berlin serves as a good testing laboratory for our main hypothesis, and at the same time may mitigate concerns regarding differences in economic development and wealth between counties influencing our results for the entire German population.

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, however, 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. Results are reported in Table 3.

We re-confirm the stock market participation gap between East and West Germans also for the Berlin population. Specifically, individuals from East Berlin are 4.6pp less likely to participate in the stock market. Relative 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, too. We do not find that people in East Berlin hold 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.

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 former border between East and West Germany. 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 Table 3 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).

One concern regarding our broker data could be a difference in the selection into the specific brokerage bank between 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. YouGov derives its data by its own panel of over 70,000 respondents in Germany. It collects and connects data on brand usage, brand perception and brand satisfaction. 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. Thus, we can generally look at 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 current as well as the former general market share of this bank among respondents in the panel 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, its 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. The latter, however, would not be observable in our brokerage account data set. To address this concern, we perform a similar analysis for the bank data set (see section 3.2). This data set also comprises investors who have not opened a brokerage account and only hold cash on a regular savings account. 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 4 and confirm the findings from our main data set.

Column (1) of Table 4 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%). 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.

In Appendix B, we re-run the same regressions as in Table 4, but additionally include squared and cubic terms of investors' income, savings, and portfolio values. The latter can only be included in columns (4) and (5), which conditions on investors having opened a

portfolio. We still observe a significantly negative coefficient on the dummy reflecting East German investors, which is of similar economic magnitude than our results in Table 4.

Taken together, in both data sets, we find pronounced differences in stock market participation between East and West Germans almost 30 years after Reunification. Although we include a large set of individual and county level control variables in these regressions, one remaining concern may be that the stock market participation gap between East and West Germans is driven by differences in wealth and economic development between East and West Germany. Therefore, 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. More precisely, we are able to differentiate West Germans, who have never been exposed to the GDR system and West Germans who have lived in the GDR until 1989 and moved to West Germany before 2017.

Columns (1) to (4) in Table 5 show that East Germans who moved to West Germany after Reunification are still less likely to participate in the stock market. In column (1), we find 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%.

The existence of a stock market participation gap between East and West Germans is further supported by statistics published by the German stock institute (DAI) and by self-reported participation data obtained from the German Socio-Economic Panel (GSOEP). Panel A of Figure 4 shows that, according to the DAI data, the participation gap between East and West Germany amounts to 6pp on average, while it is around 10pp according to

27

the GSOEP survey data.[13] In economic terms, the different raw data available to us suggest the following stock market participation gap between East and West Germans: 33% (DAI), 40% (GSOEP), 32% (brokerage data), 29% (bank data). After including control variables in a regression framework, our brokerage and bank data show that a gap of about 19% to 24% remains.

4.2 Differences in attitudes, wealth, and stock market expectations

To better understand why East Germans participate significantly less in the stock market than West Germans, we run a representative survey among 1,598 Germans in July 2018 with the help of the German poll institute NorStat. First, we ask whether a survey respondent participates in the stock market or not. 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 to a participation gap of 24.2% which is in line with our findings from other databases in the previous section. Second, survey respondents who indicated that they do not participate in the stock market received more detailed questions on why this is the case. Results are presented in Panel A of Figure 5.

Survey results show that more East Germans than West Germans think that investing in the stock market is immoral. East Germans also indicate more often that stocks are too risky, that they do not trust the stock market, and that they generally do not like stocks. These differences are all statistically significant. We do not observe significant differences between East and West Germans regarding familiarity with stocks.

In the following, we examine to what extent these differences in attitudes towards the stock market contribute to the stock market participation gap between East and West Germans.[14] Results are presented in Table 6.

---

[13]The jump around the year 2000 in GSOEP is probably due to a change in the survey question. Before 2001, the questionnaire included one question on whether an individual held any security at all. Since 2001, stocks, mutual funds, bonds, derivatives", "fixed income securities" and "insurance certificates" are different categories.

[14]As some of these variable are only available for a small subset of observations, we do not include them in our baseline regressions.

Our survey, as well as previous work (e.g., Heineck and Süssmuth (2013), Fuchs-Schuendeln and Haliassos (2015)), shows that East Germans are more risk averse than West Germans, particularly with respect to stock investments. In column (1) of Table 6, we re-run our main regression from column (1) in Table 2, but additionally include investors' risk tolerance. 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 sub-sample of 48,123 investors. 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). After controlling for risk aversion in our baseline regression, we still observe a significant stock market participation gap between East and West German investors of 22.7pp. We also still find that East German investors hold a lower fraction of stocks in their portfolios (Panel B), while they hold a higher fraction of bonds (Panel C). With respect to risk tolerance itself, we find that risk-loving investors are significantly more likely to participate in the stock market and hold a larger (smaller) fraction of stocks (bonds) in their portfolios.

Next, we examine whether income differentials explain the stock market participation gap between investors from East and West Germany. Similar to our measure of risk aversion, 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) when they open an account. Univariate statistics in Panel B of Table 1 show that West Germans on average earn significantly higher income than East Germans. As higher income may predict stock market participation, in column (2) of Table 6, we add investors' income bracket as additional control variable. In line with our predictions, we find that investors with higher income are significantly more likely to participate in the stock market, and hold a higher (lower) fraction of stocks (bonds) in their portfolios. However, 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.

Our survey results show that East Germans have lower trust in securities markets than West Germans. Since the level of trust is positively associated with stock market participation (Guiso, Sapienza, and Zingales (2006) and Lichter, Löffler, and Siegloch (2016)), we include a survey based measure of trust obtained from the bank data as an additional control variable in our baseline regression (column (3)). We find that trust is indeed positively related to stock market participation. However, the stock market participation gap between East and West German investors remains significant and still amounts to 29.3pp. Conditional on participating in the stock market, East Germans hold 9.3pp fewer stocks in their portfolios (Panel B). At the same time, they hold 21.7pp more 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)). In line with this view, we observe a higher familiarity score for West Germans compared to East Germans in Panel B.3 of Table 1, however, our survey results in Figure 5 do not show a significant difference in familiarity with stocks between East and West Germans. Closely related, differences in financial literacy between East and West Germany may contribute to the stock market participation gap. Therefore, in columns (4) and (5) of Table 6, 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. Familiarity and financial literacy are aggregated at the county level. While we do not find an impact of familiarity on stock market participation (neither at the extensive nor intensive margin), non-familiarity with the stock market predicts a larger fraction of bonds in investors' portfolios. Further, we find that financial literacy is significantly positively related to stock-market participation at the extensive and intensive margin. Most importantly, we still 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 still hold about 9pp fewer stocks and about 20pp more bonds in their portfolios.

In column (6) of Table 6, we include all additional control variables at the same time. Even though the resulting intersection of observations is rather small and drops to 64,553, we still obtain a significant stock market participation gap between East and West German investors at both, the extensive and intensive margin. We also observe that East German investors hold a higher fraction of bonds in their portfolios.[15]

Even if we control for differences in wealth, the participation gap may also be driven by how financially equipped people feel, e.g. whether East Germans think they need to save less compared to West Germans. Data from the bank survey, however, do not show any differences in responses between East and West Germans to the following statement "I am afraid of poverty in old age." The same question was also analyzed by a German opinion poll institute YouGov. They find, if anything, a slightly higher agreement in East Germany to the statement that they are afraid of poverty in old age (56% versus 51% in the West).[16]

It may also be the case that East and West Germans form different expectations regarding the stock market which may result in the stock market participation gap that we observe. We include three questions in our survey to examine whether this is the case. First, we ask "How do you think the stock market will develop over the next couple of months?" We find no significant difference between East and West Germans' expectations. About 26% think that the stock market will rise, 20% think it will stay as is, and 22% think that it will fall. All others chose the "don't know" option. Second, we ask whether respondents think the stock market is currently over-, under- or correctly valued. Again, there is no significant difference 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. The insignificance remains if we restrict our sample to individuals who do not participate in the stock market. In addition, we use data of a

---

[15]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.

[16]Results are provided by Droesser (2016).

stock market sentiment index constructed by the German market research institute Sentix. This index is based on a weekly survey conducted among more than 4,000 respondents. Regional identifiers are available since September 2016, which we use for our purposes. Respondents are asked about their midterm (6 months) return expectations about the DAX being bullish (-1), neutral (0), or bearish (1). We use 84,785 estimates for the time horizon between September 2016 and August 2018 from 1,872 respondents, for whom we know the place of residence. We then construct monthly averages for East and West Germans separately. Figure 6 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).

We conclude that differences in stock market expectations, savings motives, familiarity and financial literacy are unlikely to explain the stock market participation gap between East and West Germans. Differences in risk aversion, trust, and income are significantly different between East and West Germans and may thus contribute to the stock market participation gap. However, even if we control for these differences, a significant participation gap between East and West Germans remains. We argue that the remaining gap may be at least partly explained by exposure to communist ideology, which results in long-lasting, negative views on the stock market. In line with this view, Panel A of Figure 5 already shows that East Germans are more likely to think that investing in the stock market is immoral. In Panel B of Figure 5, we compute the fraction of East and West Germans thinking that investing in the stock market is immoral conditional on whether they prefer the capitalist or the communist system. Results show that particularly in East Germany, individuals with a preference for communism think that investing in the stock market is immoral. Furthermore, 43.1% of East Germans prefer the communist system, while only 32.8% of West Germans do so. Thus, the communist ideology, which was strongly promoted via political propaganda in East Germany, seems to have a long-lasting impact on how East Germans think about the stock market.

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. These results hold if we control for investors' risk aversion, income, financial literacy, trust, and familiarity even today when they are subject to the same investment universe and identical legal and regulatory framework as West German investors. The emphasis of this study lies, however, not only on the exposure to communism itself, but on how the 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. First, we show that differences between East and West Germans are larger for individuals 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. Next, we show that our results are stronger if the proposed ideas of the regime were consistent with East Germans' personal experiences and thus associated with positive emotions, namely for investors living in renamed cities (e.g. Karl Marx Stadt) or regions with Olympic medal winners. Third, we will show that our main result is weaker for individuals whose experience with the communist system may be tagged with negative emotions, namely for religious investors, investors living in polluted areas, or areas without Western TV reception. Lastly, we show that our results are stronger for regions, where communist ideology seems to be more in line with existing opinions and beliefs like regions with a high number of unofficial state-security collaborators or regions, in which the a higher share of inhabitants expresses positive attitude towards the former GDR today. Importantly for our analyses, we use proxies to exploit variation within the former GDR instead of solely analyzing differences between East and West Germany. Appendix C 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 number of Olympic medal winners (correlation coefficient of -0.05), or a high number of STASI collaborators (correlation coefficient of -0.12).

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 individuals with more exposure to the communist doctrine (see result 3 in Section 2). This means that our results should be stronger for older investors 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 should see stronger effects for investors living in counties further away from "West influences", i.e., the former border to West Germany. These investors also 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 individuals 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, we first sort investors in age deciles and plot stock market participation in Figure 7.

We indeed find that the stock market participation gap increases with age and is most pronounced for the highest age deciles. Interestingly, we also observe a larger participation gap for the first decile, which comprises the youngest individuals starting from 10 years of age (the youngest individual in our sample). For these individuals, their parents are likely to make the investment decision on behalf of their child, thus, parents' experiences might be driving the larger gap for the first decile. To make sure that income differentials between different age cohorts of East and West Germans do not drive the graphical pattern we ob-

serve, in Panel B, we first regress age on an individual's income and then form deciles based on the residual of this regressions. We still observe an increasing stock market participation gap for older investors in East and West Germany.

We also examine cross-sectional differences in intensity of exposure to communist ideology using our baseline regression model. In Column (1) of Table 7 we interact the East German dummy variable with an indicator for investors older than 50 years. We find that our baseline effect is indeed more pronounced for older investors, who are 19.2pp less likely to participate in the stock market than their counterparts from West Germany.[17] The difference in stock and bond holdings between East and West German investors (Panels B and C) is also more pronounced for older investors and amounts to 9pp for stock holdings, and 18pp for bond holdings, respectively.

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 and 9 days a quarter, one day at a time. The regions belonging to the travel agreement are displayed in Figure 8. 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

---

[17]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. However, as suggested by Figure 7, the effect is economically larger for older investors and investors in the lowest age decile.

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 investors 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 7 and show that our main results are indeed more pronounced for investors living further away from the West German border. Specifically, East Germans living further away from the West German border are less likely to participate in the stock market at both, the extensive and intensive margin. Also, the fraction of bonds in their portfolios is larger.

In column (3) of Table 7, 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 investors and those living further away from the former border to West Germany.

5.2 Direction of exposure

In order to legitimate and differentiate 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

36

distributed posters that were supposed to demonstrate friendship with their communist allies (see Panel A of Figure 2). At the same time, these posters were used to criticize the US in general, and stock markets in particular (Panel B of Figure 2).

If the regime succeeded with this strategy and if the effect is long-lasting, we expect that stock picking behavior of East German investors today is still biased by these views. More precisely, we expect them to hold more stocks of firms from formerly communist countries such as China, Russia and Vietnam. They should also prefer to buy stocks of (formerly) state-owned German companies, such as Deutsche Post or Deutsche Telekom. At the same time, East Germans should be less willing to hold stocks of firms reflecting Western capitalism, i.e., stocks of financial companies and stocks of US companies. Appendix D 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.[18] 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). We regress the fraction of stocks held in (anti-) capitalist companies on the East German dummy variable and the same set of control variables as in Table 2. Results are reported in Table 8.

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)

---

[18]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.

state-owned German companies. All differences between East and West German investors are statistically significant at the 1% level.[19]

5.3   Positive emotional tagging of communist experience

In the following, we examine the differential impact of communist experience on financial risk taking conditional on its emotional coloring. Since emotions determine how strongly experiences are anchored in memory (Dolan (2002), Richter-Levin and Akirav (2003), LaBar and Cabeza (2006)), we need to understand the strength and direction of emotions a potential event triggered, as this will determine the weight an individual assigns to the experience. We conjecture that two individuals with the same experience of a communist system may respond with different behaviors, depending on whether their experience was tagged with a positive or negative emotion. That is, exposure to communist doctrine may either result in negative views on the stock market, if experiencing communism was associated with positive emotions. In our theoretical framework (see section 2), we think of positive emotions towards the GDR as reflecting a lower level of distrust among East Germans for the GDR (q_E^E). Thus, individuals will behave in line with the communist doctrine. Or, in the case of experiencing communism negatively, it may lead to a higher level of distrust in the signals obtained from the East German government, and therefore positive views on the stock market.

We start by examining whether positive emotions towards the GDR amplify our baseline effect. First, we define a dummy variable indicating whether an investor lives in a city that was renamed after important communist personalities. Until today, almost 30 years after Reunification, streets in many villages in East Germany have names reminding of the communist system like "Rosa Luxemburg" street (a founding member of the communist movement), "Ernst Thälmann" Street (former head of the communist party), or "Street of Friendship" (referring to the alliance between East Germany and Soviet Russia). When the

---

[19]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.

communists came into power in East Germany, several squares, streets, football stadiums or iron works were renamed in order to immortalize communist heroes. One of the pushiest acts was to rename German cities to express national pride. 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 135th 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". The act of renaming a city was celebrated publicly with thousands of workers participating in marches and getting together on the big squares of the city. Individuals living in one of the five 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.[20]

Second, 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. Erich Honecker, who was the GDR's official head of state from 1976 onward stated that *"sport is not an end in itself, but the means to an end"*[21] The general strategy to concentrate on specific disciplines proved successful since athletes form East Germany won a total of 192 gold medals between 1968 and 1989 compared to 67 for West Germany. We collect zip-code level data on the place of birth of all GDR winners of Olympic medals. We conjecture that people living in a place that produced an Olympic medal winner also formed particularly positive views and pride about the GDR. Data on Olympic medal winners are collected from Wikipedia. We then define a dummy variable equal to one if there is an Olympic (gold) medal winner in a given zip-code, and zero otherwise. We exclude the two largest cities of Dresden and Leipzig, because we expect the pride effect to form in smaller communities, where winning an Olympic medal was very special and made the respective inhabitant outstanding of the community.

---

[20]The five renamed cities are Chemnitz, Eisenhüttenstadt, Kriegsdorf, Neuhardenberg, and Werminghoff.
[21]Wilson Center: https://digitalarchive.wilsoncenter.org/resource/sport-in-the-cold-war/episode-17-east-german-soft-power.

Results in Table 9 show that our main results are stronger for East Germans living in (formerly) renamed cities. These investors are less likely to participate in the stock market on both, the extensive and intensive margins, and they hold a larger fraction of bonds in their portfolios. Similarly, East Germans living in the same zip-code area than an Olympic medal winner hold a smaller fraction of stocks and a larger fraction of bonds in their portfolios. We do not find a significant impact on stock market participation at the extensive margin. However, the magnitude of the effect gets larger for gold medal winners, who may have been more prominent and publicly acknowledged than Olympic medal winners in general.

5.4 Negative emotional tagging of communist experience

If positive emotional coloring of communist experience amplifies our main result, we should also observe that our main result becomes weaker if communist experience is tagged with negative emotions. We first examine negative emotional tagging of communist experience through a natural experiment. It is based on differential access of East Germans to West German television broadcasting during GDR times. According to Kern and Hainmueller (2009), 40% of East German households had access to West TV through community antennas. These are large antenna systems that are linked to individual households via cable.[22] However, 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 and West Germany were, however, very comparable and driven by an everyday desire for relaxation. As a result, on both sides of the boarder, inhabitants preferred entertainment over news (Bösch and Classen (2015)). This is in line with findings in Chen and Yang (2018), who show that free access to

---

[22]Access to West TV was never illegal, but under close surveillance by the GDR government.

uncensored Internet in China has little effect on students' acquisition of politically sensitive information from foreign news outlets. Rather, students preferred entertainment websites. Therefore, in contrast to what one may expect, individuals in areas with access to Western television programs were *more* satisfied with the political system of the GDR (Kern and Hainmueller (2009)). 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.[23] Thus, not having access to Western TV should have resulted in negative emotional coloring of experiencing a communist system and thus a lower willingness to follow the communist doctrine.

Based on signal strength calculations from Bursztyn and Cantoni (2016), we define a dummy variable reflecting counties in East Germany that did not receive signals from Western TV stations during GDR times, and interact it with the East German dummy variable. Results are reported in Panel A of Table 10.

We find that having no access to Western television in GDR times indeed reduces the stock market participation gap between East and West German investors by 6.6pp (column (1)). While there is no differential impact of access to West TV on the intensive margin (column (2)), we also find that the difference in the fraction of bonds in East and West German investors' portfolios is only half the size for East German investors living in counties without access to West TV.

In Panel B of Table 10, we examine the stock market participation gap for a more homogenous subsample of investors, i.e., those living in counties without access to West TV during GDR times, and those living in the same 3-digit zip code area but with access to

---

[23]One may have had the opposite hypothesis, i.e, that increased exposure to West TV would foster pro-West or anti-GDR sentiment. This might especially be true if West German TV was broadcasting pro-West propaganda to sympathetic viewers in the East. However, this does not seem to be consistent with the way in which East Germans watched TV. Using a combination of historical data and retrospective interviews, Meyen and Nawratil (2004) paint the following picture of East German attitudes towards West German television: *"Most of the viewers who were able to receive West German TV looked for entertainment on each channel, and they switched back and forth for the respective offerings. If GDR TV placed journalistic broadcasts in the prime time, the ratings were 5% or even below... That worked also the other way around: information programs on the Western channels led to higher ratings of GDR TV."* Television channels reportedly also recognized a higher demand for entertainment over news (Dittmar (2004) and Schubert and Stiehler (2004)).

West TV. By examining differences between geographically close neighbors, we implicitly control for other potentially cofounding factors. Our results are consistent with those from Panel A. We find that East Germans living in counties without access to West TV are 17pp more likely to participate in the stock market than their neighbors in the same 3-digit zip code area who had access to West TV (column (1)). Relative to the average stock market participation for this subsample, this difference amounts to 25.5%. We again find no differential impact on the intensive margin (column (2)), but individuals in counties with no access to West TV hold 15.6% less bonds in their portfolios than those living close by but with access to West TV (column (3)).

McGuire (1993) investigated factors that induced resistance towards ideological priming. He argues that people are more likely to defend themselves against persuasion, if they hold "cultural truism" that is, beliefs that are so ingrained within the cultural milieu that they had never been attacked before. One common feature of communist systems is that they view religion 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 are rarely completely outlawed in communist countries, religious property is frequently confiscated, believers are harassed, and atheism is propagated in schools. Therefore, we conjecture that religious people are likely to have their communist experience tagged negatively, and that they should hold more positive views about Western countries in which freedom of religion is much more respected.

To test whether our baseline results are weaker for individuals in East Germany whose experiences with the GDR system went along with negative emotional coloring, i.e. religious individuals, we define different variables capturing religiosity. First, we define a dummy variable which is equal to one for all counties that maintained a high level of catholic religiosity during GDR times and are still very catholic today, according to the Konrad Adenauer Foundation.[24] Second, we obtain data from the 2011 census on the fraction of

---

[24]These counties are Eichsfeld, thüringische Rhön and sorbische Oberlausitz.

catholics, protestants, or both, on the zip-code level. We then run the same regressions as in Table 2, but interact the East German dummy variable with one of the proxies for religiosity. Results are reported in Table 11.

Results in column (1) show that East Germans are 19.7pp less likely to participate in the stock market. However, the effect is mitigated in counties with high catholic religiosity, with a remaining difference of only 13.2pp. Results are similar if we use the fraction of Catholics (column (2)), the fraction of protestants (column (3)), or the fraction of Catholics and protestants (column (4)), to form the interaction term, respectively.

We also conjecture that people living in areas that were heavily polluted during GDR times experienced communism with a more negative emotional coloring. According to the GDR Constitution, it was in "the interest of peoples well-being, (that) the GDR takes care of protecting the environment". This statement directly contradicted reality for people living in polluted areas. After the German Reunification in 1990, the ministry of environmental affairs of West Germany defined 18 places in the GDR that needed immediate action to stop environmental pollution because of out-aged power plants, filter plants, or chemical plants. We define a dummy variable for all zip-codes belonging to these 18 places and interact it with the East German dummy variable. Results in column (5) of Table 11 show that the stock market participation gap between East and West Germany is again mitigated for investors living in areas that were highly polluted during GDR times.[25]

5.5   Consistency of experience with attitudes towards communism

According to Jowett and O'Donnell (2012), effects of communist ideology on behavior should be greatest when the ideological message is in line with existing opinions, beliefs, and dispositions of the receivers. Thus, our main results should be stronger for East Germans whose political views are in line with the communist ideology of the GDR. In our theoretical framework, we think of these East German "GDR-supporters" as having a lower level of distrust for the GDR (i.e., lower q_E^E).

---

[25]We do not find a significant impact of religiosity and pollution on the fraction of stock and bond holdings, respectively. For the sake of brevity, these results are not reported.

To test whether our main result is stronger for "GDR-supporters", we first exploit cross-sectional variation in the number of state-security collaborators (spys) on the county level. Reasons for serving as a collaborator were manifold, ranging from political and ideological reasons, over personal (material) benefits to pressure. However, 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. Furthermore, the original motivation to become a collaborator and the motivation to continue to work as a collaborator changed over time. Mueller-Enbergs (1995) summarizes a survey conducted within the GDR, where 60.5% of unofficial collaborators stated social requirements as a motivation to join, but 78% as the underlying motivation to still work for the STASI. With regard to pressure the number fell from 23.4% as a motivation to joiin to 12.6% as a motivation to stay. Interesting for our puropse is also the increase in the the respondents answering an end in itself as their underlying motivation from 12% (accession) to 25% (ongoing). Mueller-Enbergs (1995) argues that the conspirative environment with its atmosphere of belonging to a selected group of people had a positive emotional influence on the perception of the governmental institutions in general. Based on these results, we argue that the amount of voluntary STASI collaborator proxies for positive attitudes towards the political system of the GDR. To test this conjecture, we interact the East German dummy variable with the fraction of voluntary STASI collaborators, and perform the same set of regressions as before.

Results are presented in Table 12. They show that East Germans living in regions with a higher fraction of inofficial STASI collaborators are significantly less likely to participate in the stock market at both, the extensive (column (1)) and intensive (column (3)) margin. At the same time, they hold a higher fraction of bonds (column (5)).

As a second measure of positive attitudes towards the communist system of the GDR, we examine regional variations in responses to a 2014 survey conducted by the German polling institute "Infratest" asking 2000 individuals about the GDR's political strengths

44

compared to today's political conditions in Germany.[26] For each county, we compute the fraction of survey respondents who agreed that the GDR had special strength with regard to the political system. We then interact this measure with the East German dummy variable. Results in columns (2) and (4) show that investors living in regions with positive views on the former GDR system are less likely to participate in the stock market at both, the extensive and intensive margin. Also, East Germans with more positive attitudes towards the former political system of the GDR hold a larger fraction of bonds (column (6)).

5.6 Trigger points: Election years

Political attitudes should be particularly salient in election years when public attention is devoted to who should govern and run the country. In these years, former East Germans likely receive (or pay attention to) more signals from pro-communist politicians, family, and friends. In our theoretical framework, 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 our baseline result on the stock market participation gap between East and West Germans is stronger 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 13. 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. [27]

---

[26]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".

[27]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.

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 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 either include German risk factors provided by the Center of Financial Research in Cologne (CFR), or alternatively the global risk factors obtained from Kenneth French's data library.[28]

---

[28]More details on the German risk factors can be found in Artmann, Finter, Kempf, Koch, and Theissen (2012). The global risk factors can be obtained here: `http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html`

Results based on the German risk factors are presented in Panel A of Table 14. We find that East German investors earn significantly lower returns than their West German counterparts. Monthly performance alphas of the return difference portfolio range between –0.07% and –0.11%. This translates into an annual return difference between 0.8% and 1.3%, which is also economically meaningful. In Panel B, results are based on global risk factors. We again observe that East Germans earn significantly lower returns than West Germans, irrespective of whether portfolios are equal- or value weighted. Monthly performance alphas are also very similar in economic terms and again vary between –0.07% and –0.11%.

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-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 C of Table 14.

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

Our previous analysis shows that East Germans are significantly less likely to participate in the stock market than West Germans. This result is unlikely to be driven by differences in wealth levels between East and West Germany or differences in local economic conditions: Our results survive a battery of tests including different proxies for wealth in linear and non-linear specifications. They hold for people living in East and West Berlin, and they are also observable between inhabitants of two structurally very similar cities close to the former border between the FRG and the GDR. Furthermore, we still observe significant differences in stock market participation between West Germans and people who moved from East to West Germany 20 years ago, but nowadays live in West Germany.

We also show that East and West Germans have similar views on the brokerage firm that provided us with the data set used in this paper. Access to branches of the firm is also widespread in both, East and West Germany. The bank survey data described in section 3.2 contains a question on when respondents last took financial advice. 28% of West Germans and 33% of East Germans respond that they never took financial advice. 16% (17%) of West (East) Germans took advice more than five years ago, while 27% (25%) of West (East) Germans took financial advice within the last five years. The remaining respondents took advice within the last two years, including the year of the survey, i.e., 2017. We conclude that differences in the propensity to take financial advice are also unlikely to explain our results.

Our results are also unlikely to be driven by differences in trust levels, familiarity, financial literacy, or risk aversion. Our proxies for these constructs have a significant impact on stock market participation in the expected directions, but do not affect the participation gap between East and West Germans.

Rather, we posit that exposure to communist doctrine results in a long-term anti-capitalistic attitude that makes individuals reluctant to invest in the stock market. In line with this view, differences within East Germany show that a more intense exposure to communism that is connoted with positive emotions increases the stock market participation gap between East and West Germans. Instead, negative communist experiences of East Germans decrease the stock market participation gap.

An alternative view may be that instead of emotional tagging, people who were well off during the GDR regime in absolute terms have a stronger attachment to the communist doctrine. Instead, people who benefitted in relative terms from Reunification may have a weaker attachment to the communist doctrine. As a result, the latter may be more likely to converge to beliefs held in West Germany, including a larger willingness to invest in the stock market. To distinguish between our emotional tagging hypothesis and this "relative standing hypothesis", we examine data from a survey among 1,551 East Germans which was conducted in 1992 by the Office for Empirical Research on Social Economics in Cologne, Germany.[29] This survey asked respondents in East Germany on a three-point scale whether their living standard had (1) improved, (2) stayed the same, or (3) deteriorated after Reunification. Furthermore, the survey asked whether individuals were planning to invest in the stock market in the future (1=yes, 0=no). The correlation between these variables is -0.0377 with a p-value of 0.14. These findings do not support the view that relative standing, rather than exposure to a communist doctrine and how it is anchored in memory drive our main results.

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? It seems like it matters a lot, how the transition from a planned economy to a market economy evolves.

---

[29]We thank the Office for Empirical Research on Social Economics for providing us access to their data.

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 companys 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".[30] Russia's stock market was established in 1992, but even in 2015, stock market participation of the general population reached only 0.8% (of Russia (2015)).

---

[30]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.

8   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. We propose that even experiences made a long time ago still have an impact on individuals' behavior today, if they are tagged with positive or negative emotions and thus strongly anchored in memory. Even if these memories may not be relevant from an objective point of view, emotional tagging motivates individuals to put more subjective weight on these memories.

We also show that the impact of 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. Our results provide a micro-level foundation for macroeconomic growth differentials between East and West Germany.

References

Adena, M., R. Enikolopov, M. Petrova, V. Santarosa, and E. Zhuravskaya, 2015, "Radio and the Rise of The Nazis in Prewar Germany *," *The Quarterly Journal of Economics*, 130(4), 1885–1939.

Alesina, A., and N. Fuchs-Schündeln, 2007, "Goodbye Lenin (or Not?): The Effect of Communism on People's Preferences," *American Economic Review*, 97(4), 1507–1528.

Artmann, S., P. Finter, A. Kempf, S. Koch, and E. Theissen, 2012, "The Cross-Section of German Stock Returns: New Data and New Evidence," *Schmalenbach Business Review*, 64(1), 20–43.

Bergado, J. A., M. Lucas, and G. Richter-Levin, 2011, "Emotional Tagging - A simple hypothesis in a complex reality.," *Progress in Neurobiology*, 94, 64–76.

Boersch-Supan, A., M. Coppola, L. Essig, A. Eymann, and D. Schunk, 2014, "The German SAVE Study - Design and Results," 2nd. edn.

Bönisch, P., and W. Hyll, 2015, "Television role models and fertility: Evidence from a natural experiment," working paper, SOEPpapers on Multidisciplinary Panel Data Research.

Borderpolice, G., 1960, "Bericht über die Lage in der Landwirtschaft im Grenzgebiet an der Staatsgrenze West der DDR," .

Bösch, F., and C. Classen, 2015, *Bridge over troubled water? Deutsch-deutsche Massenmedien*. Vandenhoeck & Ruprecht GmbH.

Bucher-Koenen, T., A. Hackethal, J. Koenen, and C. Laudenbach, 2018, "Do Seemingly Smarter Consumers Get Better Advice?," Working Paper.

Bucher-Koenen, T., and B. Lamla, 2014, "The Long Shadow of Socialism: On East-West German Differences in Financial Literacy," Working Paper.

Bursztyn, L., and D. Cantoni, 2016, "A Tear in the Iron Curtain: The Impact of Western Television on Consumption Behavior," *The Review of Economics and Statistics*, 98, 25–41.

Carhart, M. M., 1997a, "On Persistence in Mutual Fund Performance," *Journal of Finance*, 52, 57–82.

———, 1997b, "On Persistence in Mutual Fund Performance," *Journal of Finance*, 52(1), 57–82.

Chen, Y., and D. Y. Yang, 2018, "The Impact of Media Censorship: 1984 or Brave New World?," *American Economic Review*, forthcoming.

Dittmar, C., 2004, "GDR television in competition with West German programming," *Historical Journal of Film, Radio and Television*, 24(3), 327–343.

Dolan, R. J., 2002, "Emotions, Cognition, and Behavior," *Science*, 298, 1191–1194.

Droesser, C., 2016, *Wir Deutschen und das Geld.* Edel Germany GmbH; Hrsg. Holger Geiler.

Fama, E. F., and K. French, 1993a, "Common risk factors in the returns on stocks and bonds," *Journal of Financial Economics*, 33(1), 3–56.

Fama, E. F., and K. R. French, 1993b, "Common Risk Factors in Returns on Stocks and Bonds," *Journal of Financial Economics*, 33, 3–56.

Friehe, T., H. Müller, and F. Neumeier, 2017, "The effect of Western TV on crime: Evidence form East Germany," working paper, Joint Discussion Paper Series in Economics.

Friehe, T., M. Pannenberg, and M. Wedow, 2015, "Let Bygones be Bygones? Socialist Regimes and Personalities in Germany," Working Paper.

Fuchs-Schuendeln, N., and M. Haliassos, 2015, "Does product familiarity matter for participation?," Working Paper.

Fuchs-Schuendeln, N., and M. Schuendeln, 2015, "On the endogeneity of political preferences: Evidence from individual experience with democracy," *Science*, 347(6226), 1145–1148.

Fuchs-Schündeln, N., and P. Masella, 2016, "Long-Lasting Effects of Socialist Education," *Review of Economics and Statistics*, 98, 428–441.

Goetzmann, W. N., and E. Koell, 2005, "THe History of Corporate Ownership in China: State Patronage, Company Legislation, and the Issue of Control," *http : //www.nber.org/chapters/c*10269.

Grabka, M. M., 2014, "Private Vermögen in Ost- und West- deutschland gleichen sich nur langsam an," DIW Working Paper No. 40/201.

Guiso, L., P. Sapienza, and L. Zingales, 2006, "Does Culture Affect Economic Outcomes?," *Journal of Economic Perspectives*, 20(2), 23–48.

Haury, T., 2004, "Von ,den Finanzkapitalisten' zu ,den Zionisten' - das "werktätige Volk" und seine Feinde," *Unsere Feinde - Konstruktion des Anderen im Sozialismus*, pp. 107–126.

Heineck, G., and B. Süssmuth, 2013, "A different look at Lenins legacy: Social capital and risk taking in the Two Germanies," *Journal of Comparative Economics*, 41, 789803.

Hennighausen, T., 2015, "Exposure to television and individual beliefs: Evidence from a natural experiment," *Journal of Comparative Economics*, 43(4), 956–980.

Horsch, H., 1997, "Hat nicht wenigstens die Stasi die Stimmung im Land erkannt? MfS und SED im Bezirk Karl-Marx-Stadt. Die Entmachtung der Staatssicherheit in den Regionen, Teil 3," .

Hyll, W., and L. Schneider, 2013, "The causal effect of watching TV on material aspirations: Evidence from the valley of the innocent," *Journal of Economic Behavior & Organization*, 86, 37–51.

Jowett, G. S., and V. O'Donnell, 2012, *Propaganda and Persuasion.* Thousand Oaks, CA: Sage Publication.

Kaustia, M., and S. Knüpfer, 2008, "Do investors overweight personal experience? Evidence from IPO subscriptions," *Journal of Finance*, 63(6), 2679–2702.

———, 2012, "Peer performance and stock market entry," *Journal of Financial Economics*, 104(2), 321338.

Kern, H. L., 2011, "Foreign media and protest diffusion in authoritarian regimes: The case of the 1989 East German revolution," *Comparative Political Studies*, 44(9), 1179–1205.

Kern, H. L., and J. Hainmueller, 2009, "Opium for the Masses: How Foreign Media Can Stabilize Authoritarian Regimes," *Political Analysis*, 17, 377–399.

LaBar, K. S., and R. Cabeza, 2006, "Cognitive neuroscience of emotional memory," *Nature*, 7, 54–64.

Laudenbach, C., B. Loos, and J. Pirschel, 2017, "Recent Experiences and Risk Taking: Trading Responses to Changes in the Local Environment," Working Paper.

Lenin, W. I., 1919, *The State: A Lecture Delivered at the Sverdlov University.* Progress Publishers, Moscow.

Liang, P., and S. Guo, 2015, "Social interaction, Internet access and stock market participation - An empirical study in China," *Journal of Comparative Economics*, 43, 883–901.

Lichter, A., M. Löffler, and S. Siegloch, 2016, "The Long-Term Costs of Government Surveillance: Insights from Stasi Spying in East Germany," Working Paper.

Lucarelli, C., and G. Palomba, 2007, "Investor's Behaviour in the Chinese Stock Exchanges: Empirical Evidence in a Systemic Approach," Quaderni di Ricerca n. 297.

Malmendier, U., and S. Nagel, 2011, "Depression Babies: Do Macroeconomic Experiences Affect Risk Taking?," *Quarterly Journal of Economics*, 126(1), 373–416.

——— , 2016, "Learning from Inflation Experiences," *Quarterly Journal of Economics*, 131(1), 53–87.

Marx, K., 1843, *Critique of Hegel's Philosophy of Right*. DeutschFranzösische Jahrbücher.

——— , 1867, *Das Kapital. Band I*. Verlag von Otto Meissner, Hamburg.

McGuire, W., 1993, "Inducing resistance to persuasion: some contemporary approaches," *Advances in Experimental Social Psychology*, 1, 191–229.

Meyen, M., 2003, *Denver Clan und Neues Deutschland. Mediennutzung in der DDR*. Berlin: Ch. LinksVerlag.

Meyen, M., and U. Nawratil, 2004, "The Viewers: television and everyday life in East Germany," *Historical Journal of Film, Radio and Television*, 24(3), 355–364.

Ministry of State Security, G., 1961, "Bericht über die politisch-ideologische Lage im Grenzgebiet," .

Mueller-Enbergs, H., 1995, "Warum wird einer IM? Zur Motivation bei der inoffi ziellen Zusammenarbeit mit dem Staatssicherheitsdienst, in: Zersetzung der Seele. Psychologie und Psychotherapie im Dienste der Stasi, hrsg. von K. Behnke und J. Fuchs," .

of Russia, B., 2015, "Guidelines for the Development of the Russian Financial Market 2016-2018," .

Pistor, K., and C. Xu, 2005, "Governing Stock Markets in Transition Economies: Lessons from China," *American Law and Economics Review*, 7, 184–210.

Rainer, H., and T. Siedler, 2009, "Does democracy foster trust?," *Journal of Comparative Economics*, 37(2), 251–269.

Richter-Levin, G., and I. Akirav, 2003, "Emotional Tagging of memory formation - in the search for neural mechanisms.," *Brain Research Reviews*, 43, 247–256.

Schubert, M., and H.-J. Stiehler, 2004, "A program structure analysis of East German television, 1968–1974," *Historical journal of Film, Radio and Television*, 24(3), 345–353.

Slavtchev, V., and M. Wyrwich, 2017, "TV and Entrepreneurship," working paper, IWH Discussion Papers.

Stiehler, H. J., 2001, *Leben ohne Westfernsehen: Studien zur Medienwirkung und Mediennutzung in der Region Dresden in den 80er Jahren.* Rdiger Steinmetz.

Strahilevitz, M., T. Odean, and B. Barber, 2011, "Once Burned, Twice Shy: How Nave Learning, Counterfactuals, and Regret Affect the Repurchase of Stocks Previously Sold," *Journal of Marketing Research*, 48, 102–120.

Talarico, J. M., K. S. LaBar, and D. C. Rubin, 2004, "Emotional intensity predicts autobiographical memory experience," *Memory & Cognition*, 32, 11181132.

van Rooij, M., A. Lusardi, and R. Alessie, 2011, "Financial Literacy and Stock Market Participation," *Journal of Financial Economics*, 101, 449472.

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.

(41,2215]
(15,41]
(4,15]
[1,4]
No data
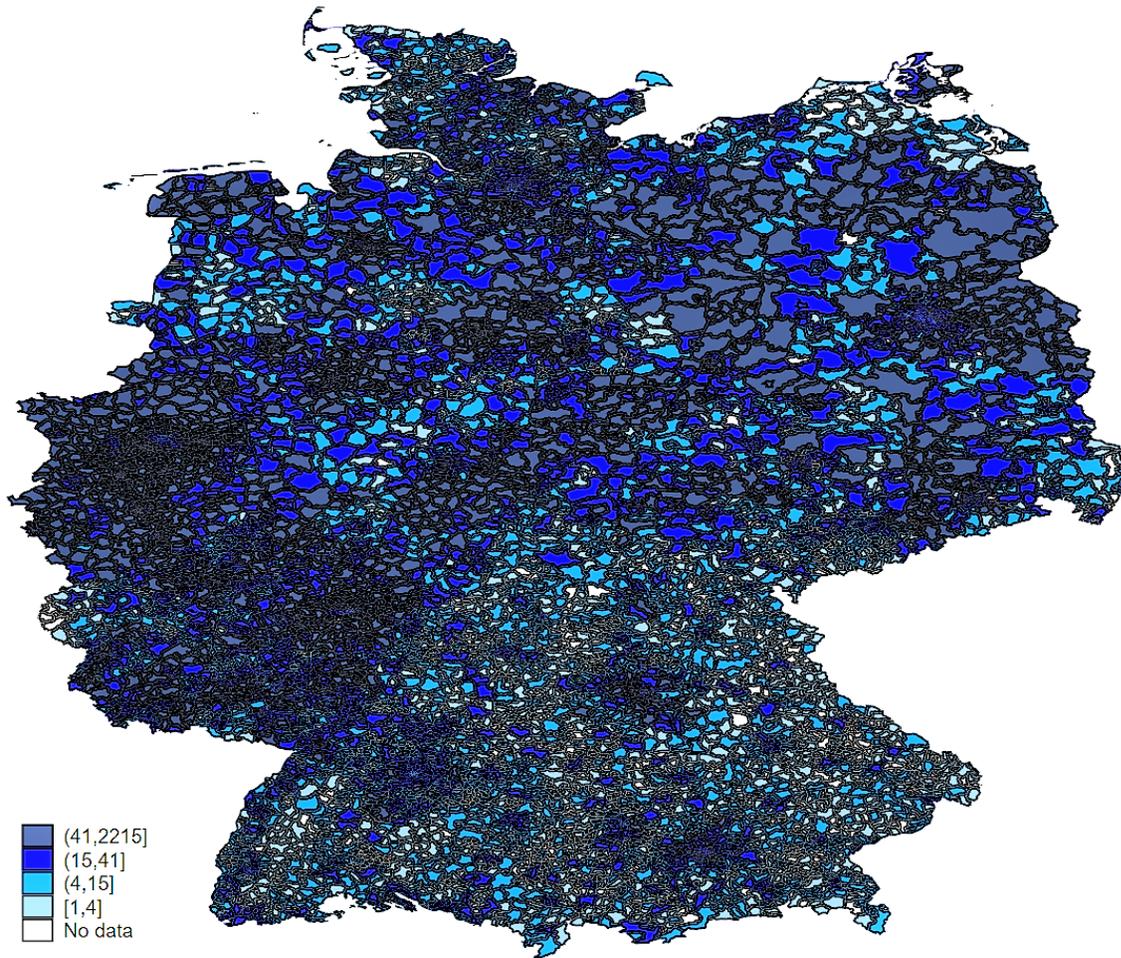
Figure 2: The art of propaganda

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 Wrttemberg, 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)
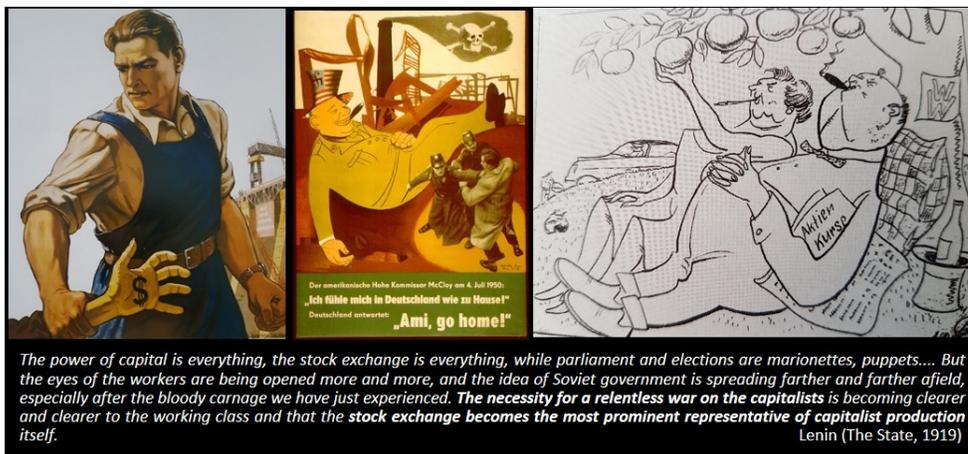
Figure 3: Selection into our Broker Bank

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.
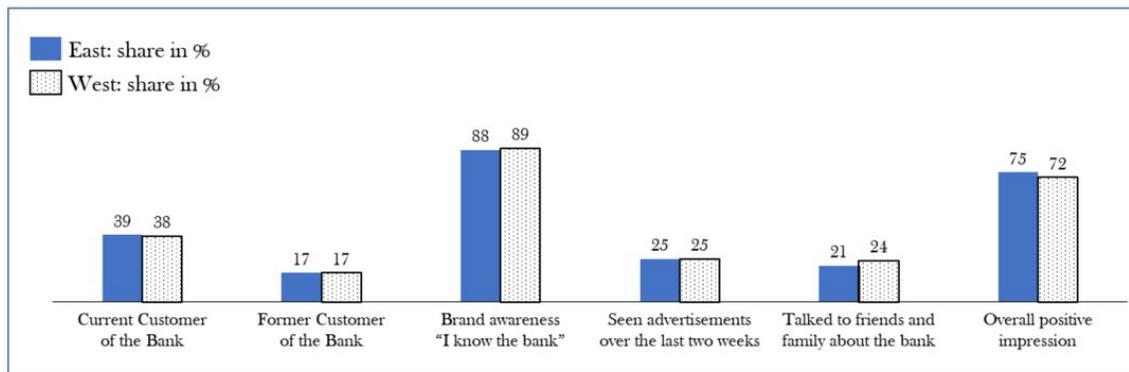
Figure 4: Stock market participation in Germany - Evidence from other data sources

Panel A of this figure shows average stock market participation in East and West Germany based on data provided by the German stock institute (DAI). The y-axis indicates the fraction of individuals owning either stocks and/or mutual funds. The sample period is from 2004 to 2012. Panel B of this figure shows average stock and bond holdings in East and West Germany from 1991-2015 based on data provided by the German Socio-Ecnomic Panel (GSOEP). The y-axis indicates the proportion of respondents that participate in security investments (combining bonds and stocks) in a given year. Year on x-axis refers to the year of participation. There is a one-year lag in terms of survey and actual participation. Until the year 2000 (that is, until participation year 1999), the SOEP questionnaire only asked whether respondents held any securities (stocks, or bonds, or insurance certificates). Since the 2001 survey (that is, since participation year 2000), "fixed income securities" are listed separately and "other securities" include stocks, mutual funds, derivatives, and bonds.

Panel A: Stock market participation - German Stock Institute (DAI)
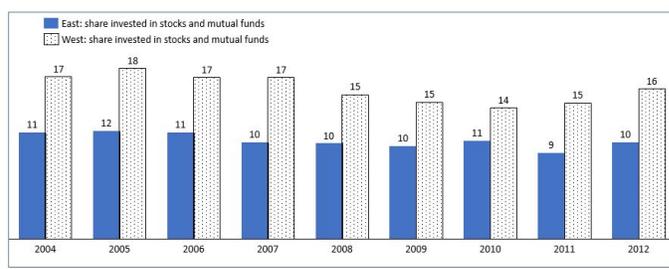
Panel B: Stock and bond holdings - German Socio-Economic Panel (GSOEP)
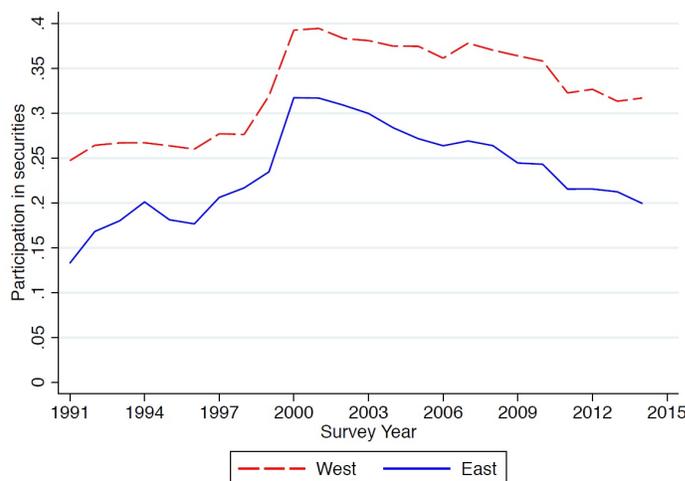
Figure 5: Attitudes towards investing in the stock market

This figure shows results from a representative survey on attitudes towards the stock market among non-participants conducted by the authors via the opinion poll institute Norstat in July 2018 among 1,598 Germans. The survey includes 1,283 West Germans, 246 East Germans, and 69 individuals from Berlin. We first exclude inhabitants of Berlin from the original data as they may be East or West German. The questions below were only shown to individuals who indicated before that they do not participate (and have never participated) in the stock market.

Panel A: Attitudes of non-participants
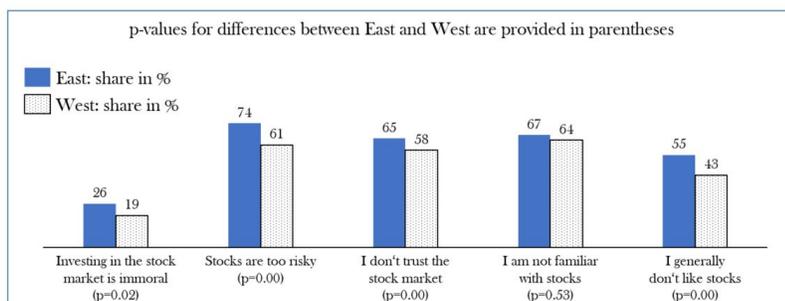
Panel B: Communist ideology and views on the stock market

62
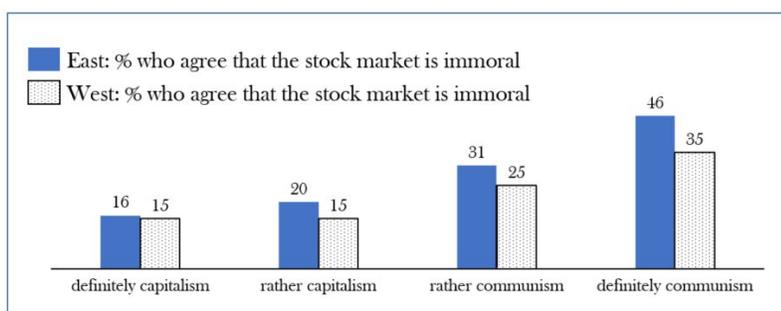
Figure 6: Stock market return expectations

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.

What are your midterm (6 months) price expectations for the DAX?
(-1=bullish, 0=neutral, 1=bearish)
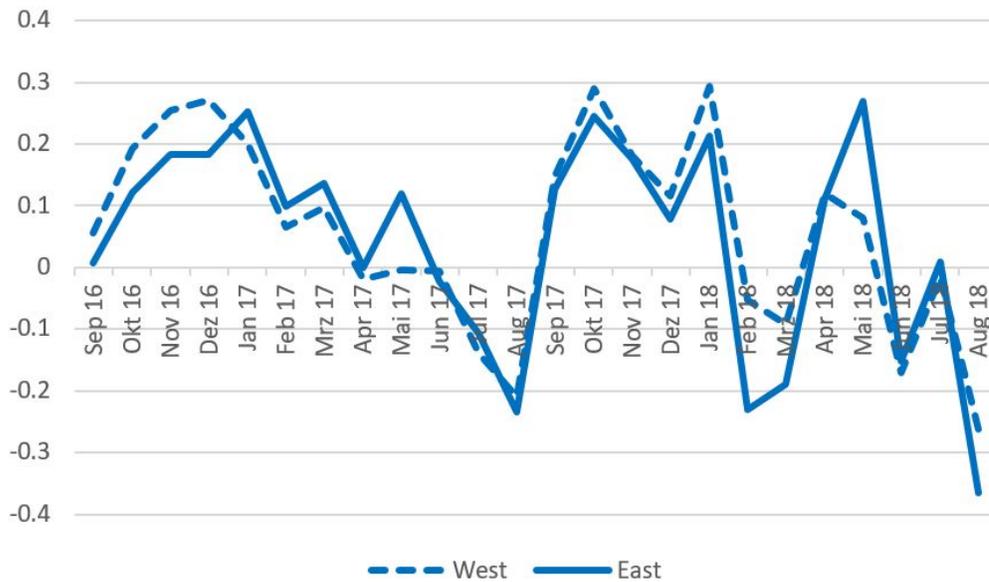
Figure 7: Stock market participation by age

This figure shows the average percentage of East and West German investors' stock holdings for different age deciles in Panel A. In Panel B, we first regress age on an individual's income, and then form deciles based on the residuals of this regression.

Panel A: Participation in % by age deciles
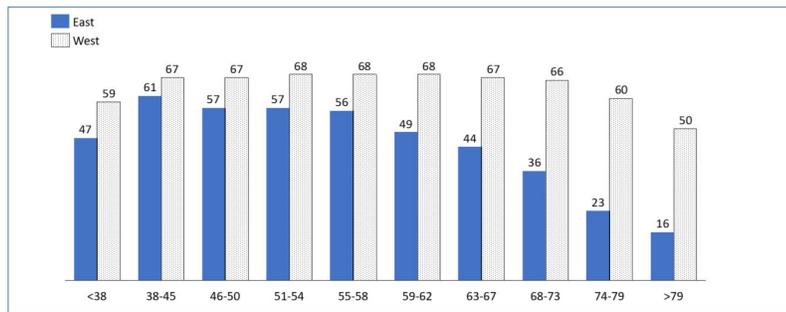
Panel B: Participation in % by residual of age on income
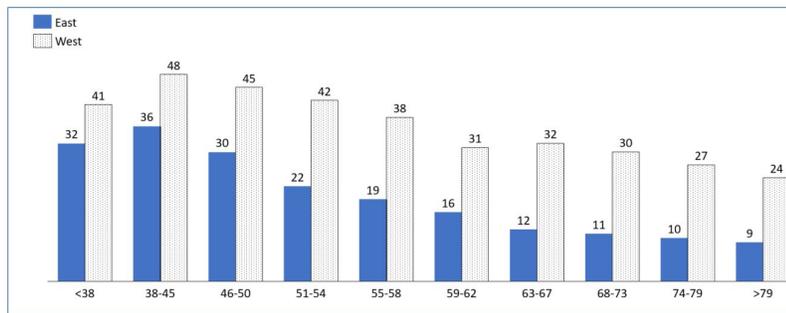
Figure 8: Distance to the border

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 fr inner-deutsche Beziehungen).

Table 1: Summary statistics

Panel A of this table shows the number of observations (Obs.), mean, standard deviation (sd), median (p50), 1st percentile (p1), and 99th percentile (p99) of all variables in our sample. Brokerage data are from 2004 to 2012. 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 A.

Panel A: Summary statistics	Obs.	Mean	sd	p50	p1	p99
	(1)	(2)	(3)	(4)	(5)	(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. 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

Panel A: Summary statistics	Obs.	Mean	sd	p50	p1	p99
	(1)	(2)	(3)	(4)	(5)	(6)
2. Bank data (individual level)						
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
3. 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

Panel B: Differences	East German	West German	Difference	p-value
	(1)	(2)	(3)	(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

Table 1: Summary statistics cont'd

Panel B: Differences	East German (1)	West German (2)	Difference (3)	p-value (4)
2. 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
3. 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 county 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 county 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 A. Regressions are based on the brokerage data set. 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	−0.194***	−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
Observations	839,680	687,464	839,272

Table 3: 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 A. 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
Observations	16,207	14,595	16,204

Table 4: 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 county 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 county 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 A. Regressions are based on the bank data set and are purely cross-sectional using data from 2017.

Table 4: 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 5: 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 county 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 4. All variables are described in detail in Appendix A. 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 6: Alternative explanations

Panel A of 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 county are presented in parentheses. Results in Panel (B) (in Panel (C)) are from pooled OLS regressions, where the dependent variable is the fraction of stocks (bonds) in an investor's portfolio conditional on stock market participation. t-stats based on standard errors clustered by county 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 add investors' income ranging from 1 (below 1,000 Euro per month) to 4 (above 3,000 Euro per month). In column (3), we include a survey based measure for investors' trust in the stock market ranging from 1 (low) to 7 (high). In column (4), investors' familiarity with the stock market is added ranging from 1 (high) to 7 (low). Column (5) additionally includes investors' financial literacy ranging from 0 (low) to 3 (high). 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 A. Regressions are based on the brokerage data set. The sample is from June 2004 to December 2012.

Panel A: Stock market participation						
	Risk tolerance	Income	Trust	Familiarity	Financial literacy	All variables
	(1)	(2)	(3)	(4)	(5)	(6)
East	–0.227***	–0.264***	–0.293***	–0.270***	–0.259***	–0.174***
	(–9.21)	(–9.64)	(–9.90)	(–9.29)	(–9.12)	(–5.50)
Risk tolerance	0.408***					0.407***
(1=low, 3=high)	(40.64)					(37.09)
Income		0.084***				0.063***
(1=low, 4=high)		(19.46)				(11.96)
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)
Control variables	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Pseudo R^2	0.20	0.10	0.21	0.20	0.21	0.22
Observations	176,270	170,824	684,441	699,126	698,373	117,288

75

Panel B: Fraction of stocks in portfolio

	Risk tolerance	Income	Trust	Familiarity	Financial literacy	All variables
	(1)	(2)	(3)	(4)	(5)	(6)
East	−0.145***	−0.152***	−0.093***	−0.094***	−0.091***	−0.164***
	(−8.53)	(−8.30)	(−6.11)	(−6.51)	(−6.39)	(−8.17)
Risk tolerance	0.164***					0.156***
(1=low, 3=high)	(23.02)					(17.68)
Income		0.018***				0.009**
(1=low, 4=high)		(5.62)				(2.36)
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)
Control variables	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Adj. R^2	0.34	0.32	0.09	0.09	0.09	0.35
Observations	95,317	93,145	565,122	577,823	577,148	61,196

Panel C: Fraction of bonds in portfolio

	Risk tolerance	Income	Trust	Familiarity	Financial literacy	All variables
	(1)	(2)	(3)	(4)	(5)	(6)
East	0.167***	0.206***	0.217***	0.205***	0.201***	0.178***
	(6.45)	(7.70)	(9.92)	(9.92)	(9.53)	(6.22)
Risk tolerance	−0.245***					−0.234***
(1=low, 3=high)	(−23.93)					(−30.24)
Income		−0.056***				−0.031***
(1=low, 4=high)		(−14.50)				(−7.81)
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)
Control variables	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Adj. R^2	0.27	0.20	0.24	0.24	0.24	0.28
Observations	176,026	172,256	684,099	698,774	698,021	117,099

Table 7: Exposure to propaganda: Intensity

Panel A of 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 county are presented in parentheses. Results in Panels (B) and (C) are from pooled OLS regressions, where the dependent variable is the fraction of stocks in an investor's portfolio conditional on stock market participation (Panel B), or the fraction of bonds in an investors' portfolio (Panel C). t-stats based on standard errors clustered by county 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
Observations	839,680	837,121	837,121

77

Table 7: cont'd

Panel B: 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
Observations	687,464	685,630	685,630
Panel C: 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
Observations	839,272	836,714	836,714

Table 8: Exposure to communist ideology: Direction

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

Table 8: cont'd

	Companies of financial industry (1)	US companies (2)	Chinese, Russian, or Vietnamese companies (3)	State owned companies (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
Observations	622,777	622,777	622,777	551,624

Table 9: Positive emotional tagging of communist experience: Renamed cities and Olympics

Columns (1) to (3) of this table report marginal effects from logit regressions where the dependent variable is equal to one, if an investor holds stocks and/or equity funds in her portfolio in a given year, and zero otherwise. Columns (4) to (9) report results from pooled OLS regressions. In columns (4) to (6), the dependent variable is the fraction of stocks in an investor's portfolio conditional on stock market participation. In columns (7) to (9), the dependent variable is the fraction of bonds in an investor's portfolio. We include the same control variables as in Table 2. All variables are described in detail in Appendix A. In columns (1) to (3) ((4) to (9)), z-stats (t-stats) based on standard errors clustered by county are presented in parentheses. In columns (1), (4), and (7), we interact the East German dummy variable with an 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). In columns (2), (5), and (8), we interact the East German dummy variable with an indicator which is 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. In columns (3), (6), and (9), we interact the East German dummy variable with an indicator which is equal to one if here was at least one Olympic gold medal winner in the same zip-code area than the investor, and zero otherwise. Regressions are based on the brokerage data set. The sample is from June 2004 to December 2012.

Table 9: cont'd

	Stock market part.			Fraction of stocks			Fraction of bonds		
	Re-named city (1)	Any Olympic medal (2)	Olympic gold medal (3)	Re-named city (4)	Any Olympic medal (5)	Olympic gold medal (6)	Re-named city (7)	Any Olympic medal (8)	Olympic gold medal (9)
East	−0.186*** (−10.57)	−0.189*** (−4.67)	−0.185*** (−4.59)	−0.0690*** (−7.66)	−0.066*** (−3.77)	−0.067*** (−3.76)	0.152*** (9.90)	0.148*** (3.67)	0.147*** (3.64)
East × Renamed city	−0.181*** (−2.90)			−0.112** (−2.41)			0.192*** (3.46)		
East × Any Olympic medal		−0.014 (−0.74)			−0.023* (−1.69)			0.048* (1.79)	
East × Olympic gold medal			−0.034 (−1.32)			−0.027* (−1.86)			0.070** (2.28)
Control variables	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Pseudo/Adj. R^2	0.19	0.19	0.19	0.092	0.092	0.092	0.252	0.250	0.250
Observations	839,680	839,680	839,680	687,464	687,464	687,464	839,272	839,272	839,272

Table 10: Negative emotional tagging of communist experience: Access to West TV

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 county 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 county 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 A. In Panel A, we interact the main East German dummy variable with a dummy variable equal to one for counties in the former GDR that did not receive TV signals from West Germany, and zero otherwise. In Panel B, we only include a dummy variable reflecting counties in the former GDR without access to West TV, and restrict the sample to all individuals living in the same three-digit zip-code area than those without access to West TV. Counties with no access to West TV are defined in Appendix A. 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.

Table 10: cont'd

Panel A: Full sample	Stock market participation (1)	Fraction of stocks in portfolio (2)	Fraction of bonds in portfolio (3)
East	–0.198***	–0.070***	0.163***
	(–10.19)	(–7.31)	(9.67)
East × No West TV	0.066***	0.013	–0.088***
	(4.67)	(0.08)	(–3.42)
Control variables	yes	yes	yes
Year FE	yes	yes	yes
Pseudo/Adj. R^2	0.19	0.09	0.25
Observations	839,680	687,464	839,272

Panel B: Within East Germany	Stock market participation (1)	Fraction of stocks in portfolio (2)	Fraction of bonds in portfolio (3)
No West TV	0.170***	–0.031	–0.156***
	(4.08)	(–0.89)	(–4.90)
Control variables	yes	yes	yes
Year FE	yes	yes	yes
Pseudo/Adj. R^2	0.21	0.10	0.31
Observations	13,185	10,062	13,178

Table 11: Negative emotional tagging of communist experience: Religiosity and pollution

This table presents results from logit regressions where the dependent variable 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 this table report marginal effects evaluated at the mean investor. emphz-stats based on standard errors clustered by county 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 addition, we add variables reflecting religiosity and the extent of environmental pollution, respectively, at a given investor's county. In column (1), we interact the East German dummy variable with an indicator equal to one if an investor is from a county where the catholic church was particularly strong in GDR times (i.e., Eichsfeld, thüringische Rhön, and sorbische Oberlausitz). In column (2) ((3)), we interact the East German dummy variable with the fraction of members of the catholic (protestant) church in a given investor's county according to the 2011 census, respectively. In column (4), we interact the East German dummy variable with the fraction of catholics and protestants in a given investor's county according to the 2011 census. In column (5), we interact the East German dummy with an indicator reflecting the most environmentally polluted counties in the GDR. According to a report from the German ministry of environmental affairs published in 1990, there were 16 counties that needed immediate action because of pollution. These areas are listed in Appendix B. Regressions are based on the brokerage data set. The sample is from June 2004 to December 2012.

Table 11: cont'd

	Catholic area in GDR (1)	Fraction catholics (2)	Fraction protestants (3)	Fraction catholics & prot. (4)	Environm. pollution
East	–0.197***	–0.214***	–0.383***	–0.398***	–0.204***
	(–10.25)	(–10.27)	(–5.23)	(–5.75)	(–10.24)
East × catholic place GDR	0.065***				
	(3.13)				
East × Fraction Catholics		0.003***			
		(3.12)			
East × Fraction Protestants			0.006***		
			(3.31)		
East × Fraction Cath. & Prot.				0.005***	
				(3.68)	
East × Env. pollution					0.052**
					(2.51)
Control variables	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes
Pseudo R^2	0.19	0.19	0.19	0.20	0.19
Observations	839,680	839,680	839,680	839,680	839,680

Table 12: Consistency with attitudes towards communism

Columns (1) and (2) 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 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 county are presented in parentheses. Results in columns (3) to (6) are from pooled OLS regressions, where the dependent variable is the fraction of stocks in an investor's portfolio conditional on stock market participation, or the fraction of bonds in an investors' portfolio, respectively. t-stats based on standard errors clustered by county 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 columns (1), (3), and (5) we interact the East German dummy variable with the fraction of voluntary secret police (STASI) spies who lived in an investor's county during the GDR regime. In columns (2), (4), and (6), we interact the East German dummy variable with the fraction of survey respondents in an investor's county who state that the former political system of the GDR had many positive aspects. Regressions are based on the brokerage data set. The sample is from June 2004 to December 2012.

	Stock market participation		Fraction of stocks		Fraction of bonds	
	STASI volunteers	Liked GDR pol.	STASI volunteers	Liked GDR pol.	STASI volunteers	Liked GDR pol.
	(1)	(2)	(3)	(4)	(5)	(6)
East	−0.143***	−0.116***	−0.056***	−0.029**	0.128***	0.060***
	(−6.05)	(−6.37)	(−4.65)	(−2.45)	(6.42)	(3.12)
East × STASI	−0.081**		−0.044*		0.081*	
	(−2.51)		(−1.69)		(1.66)	
East × liked GDR politics		−0.219***		−0.198***		0.426***
		(−5.65)		(−4.46)		(5.72)
Control variables	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Pseudo R^2	0.194	0.196	0.092	0.093	0.250	0.258
Observations	839,680	839,461	687,464	687,291	839,272	839,053

Table 13: 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 county 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 county 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 A. 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
Observations	839,680	687,464	839,272

Table 14: Are anti-capitalist attitudes costly?

In Panels A and B 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, in Panel A (B), difference returns are regressed on the German (Global) CAPM market factor in columns (1) and (4), on the German (Global) 3 Fama and French (1993a) factors in columns (2) and (5) and on the the German (Global) Carhart (1997b) 4-factor model in columns (3) and (6). German risk factors are computed as described in Artmann, Finter, Kempf, Koch, and Theissen (2012), global risk factors are obtained from Kenneth French's website. In Panel C, 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 county level. Regressions are based on the brokerage data set. The sample is from June 2004 to December 2012.

Panel A: German risk factors

	CAPM_t^{E-W} (1)	Equal weighted 3-Factor_t^{E-W} (2)	4-Factor_t^{E-W} (3)	CAPM_t^{E-W} (4)	Value weighted 3-Factor_t^{E-W} (5)	4-Factor_t^{E-W} (6)
Performance alpha$_t^{East-West}$	-0.080**	-0.070*	-0.097**	-0.109**	-0.098**	-0.089**
	(-2.00)	(-1.80)	(-2.45)	(-2.40)	(-2.37)	(-2.08)
MKTRF^{German}	-0.024***	-0.031***	-0.023***	0.014*	0.007	0.004
	(-4.04)	(-4.45)	(-3.03)	(1.81)	(0.91)	(0.48)
SMB^{German}		-0.034**	-0.026*		-0.037***	-0.040***
		(-2.46)	(-1.85)		(-2.64)	(-2.65)
HML^{German}		-0.016	-0.013		-0.016	-0.017
		(-1.24)	(-0.99)		(-0.84)	(-0.86)
WML^{German}			0.023***			-0.007
			(3.24)			(-0.65)
Adj. R^2	0.110	0.163	0.193	0.023	0.072	0.065
Observations	92	92	92	92	92	92

Panel B: Global risk factors

	CAPM_t^{E-W} (1)	Equal weighted 3-Factor_t^{E-W} (2)	4-Factor_t^{E-W} (3)	CAPM_t^{E-W} (4)	Value weighted 3-Factor_t^{E-W} (5)	4-Factor_t^{E-W} (6)
Performance 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 14: 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

Appendix A: 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.

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 26th 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

Appendix A: 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 clients 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

Appendix A: 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

Appendix A: 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

Appendix A: 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

Appendix B: 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 county 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 county 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 4. 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 A. Regressions are based on the bank data set and are purely cross-sectional using data from 2017.

Appendix B: 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)
Ln(Portfolio Value)^2				-0.060***	-0.041***
				(-6.66)	(-7.48)
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

Appendix C: Correlations between proxies for exposure to communist ideology

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

Variables	Inv. age	Dis-tance	Re-named city	Any Olympic medal	Olympic gold medal	Cath-olics	Poll-ution	No West TV	STASI	Liked loyed politics	Emp-per Capita	GDP
Investor age	1.000											
Distance	0.104	1.000										
	(0.000)											
Renamed city	0.069	0.205	1.000									
	(0.000)	(0.000)										
Any medal	0.036	0.129	0.328	1.000								
	(0.000)	(0.000)	(0.000)									
Gold medal	0.052	0.114	0.380	0.851	1.000							
	(0.000)	(0.000)	(0.000)	(0.000)								
Catholics	-0.106	-0.006	-0.015	0.013	0.006	1.000						
	(0.000)	(0.021)	(0.000)	(0.000)	(0.015)							
Pollution	-0.064	-0.045	-0.064	-0.104	-0.127	-0.050	1.000					
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)						
No West TV	-0.089	0.093	-0.045	-0.052	-0.058	-0.010	0.393	1.000				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)					
STASI	0.187	0.214	0.051	0.152	0.152	-0.240	-0.243	-0.349	1.000			
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				
Likes GDR pol.	0.097	0.338	0.104	-0.095	-0.067	-0.141	-0.091	-0.079	0.092	1.000		
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)			
Employed	-0.041	0.058	0.095	0.141	0.131	0.043	-0.038	0.006	0.048	0.198	1.000	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.016)	(0.000)	(0.000)		
GDP p. Capita	-0.167	-0.109	0.034	-0.050	-0.057	-0.055	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)	(0.000)	(0.000)	

Appendix D: 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

Appendix D: 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