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THE LONG-LASTING EFFECTS OF EXPERIENCING COMMUNISM ON ATTITUDES TOWARDS FINANCIAL MARKETS

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Abstract

Attitudes towards capital markets and stock-market investment still differ widely between Western and formerly communist countries, but there is also significant heterogeneity within the East. We argue that the speed of convergence is predicted by the quality of life-time experiences under communism. Utilizing novel German brokerage and bank data we document that, decades after Reunification, East Germans invest significantly less in stocks and hold more negative views on capital markets if they had unrelated positive experiences, e.g., from Olympic games or living in celebrated showcase cities. Results reverse for East Germans with negative experiences, like environmental pollution and religious oppression.

JEL Classification: D03, D14, D83, D84, E21, G11

Keywords: Capital Markets, Communism, Life-time experiences, positive versus negative emotional tagging, Stock-market participation

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

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

June 4, 2020

Abstract

Attitudes towards capital markets and stock-market investment still differ widely between Western and formerly communist countries, but there is also significant heterogeneity within the East. We argue that the speed of convergence is predicted by the quality of life-time experiences under communism. Utilizing novel German brokerage and bank data we document that, decades after Reunification, East Germans invest significantly less in stocks and hold more negative views on capital markets if they had unrelated positive experiences, e.g., from Olympic games or living in celebrated showcase cities. Results reverse for East Germans with negative experiences, like environmental pollution and religious oppression.

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Attitudes towards capitalism still differ widely across formerly communist countries. For example, 85% of the population in Poland approve the change to a market economy, but only 55% in Bulgaria, according to the PEW research center.[1] Similarly, responses from the World Value Survey on income inequality show that around 30% of the population in Russia and Ukraine, but only 19% in Slovenia and 12% in Poland, view income equality as an essential characteristic of a democracy. There is also significant heterogeneity with regard to stock-market participation: Only 2-4% of Slovaks participate in the stock market, while this rate is more than twice as high in Slovenia.[2]

What predicts the vast differences in convergence and adjustment to financial and other markets after the fall of the Iron Curtain? There are of course country-specific factors that have played a role, such as different approaches to labor market reforms, privatization or entrepreneurship.[3] We argue that an additional determinant plays a significant role in explaining differences in adjustment to capitalism, even within a country: variation in individual life experiences under the communist regime. Those who accumulated relatively positive experiences under communism continue to adhere to the regime's anti-capitalist doctrine, even if these past experiences were unrelated to economic or financial outcomes. Decades later, they hold negative views on capital markets and stock-market investment, and invest less in the stock market personally. They also suffer negative wealth consequences from lower returns and higher bank fees. Those, instead, whose life was negatively affected by the communist regime embrace the market-based system and invest personally in the stock market, even if their negative past experiences (such as religious oppression, air pollution, or TV reception) were unrelated to financial markets.

Our analysis focuses on Germany. Germany is a unique testing ground for long-lasting exposure effects since it was divided into a capitalist and a communist part after World War II, but reunified in 1990. In the capitalist West, the German Exchange in Frankfurt re-opened under American protectorate in 1945. In the communist East (the former GDR), there was no stock market, and people were exposed to strongly negative views about capitalism in general and the stock market

[1] See the 2019 survey discussed in Wike, Poushter, Silver, Devlin, Fetterolf, Castillo, and Christine Huang (2019).
[2] Data are from the second wave of the ECB Household Finance and Consumption Survey.
[3] See Brainerd (1998), Hamm, King, and Stuckler (2012), McMillan and Woodruff (2002).

in particular. In fact, the GDR stood out in its intense propagation of the anti-capitalist doctrine even relative to other communist countries.[4]

We test for the predictors of adjustment utilizing (1) extensive proprietary brokerage and bank data on households' (stock-market) investments, (2) representative surveys on capitalism and stock market participation, which we fielded both across East and West Germany and within East Germany, and (3) a large set of granular, regional indicators. The core data is a novel and comprehensive data set from the brokerage entity of a large German branch bank. It provides detailed holding, transaction, and demographic information for about 200,000 clients from 2004 to 2012. The large size of the data, also relative to the household finance literature,[5] is essential to analyze within-East differences, as only 20% of the German population live in East Germany. While prior literature has established persistent East-West differences, the East is not a monolithic block of homogenous agents. Our unique data allows us to uncover the predictors of the vast within-East differences in adjustment as it provides a large number of within-East observations, differently from the data available to prior literature. Taking the parent company of the broker and the bank data together, our analysis uses data from financial institutions that command a 50% market share in Germany. Importantly, this share does not remarkably differ between East and West Germany. Moreover, the financial products and services offered to clients are uniform between East and West.

Our baseline estimation establishes that, even though East Germans have faced the same investment universe and the same legal and regulatory framework as West Germans for almost 30 years, they exhibit a significantly lower willingness to take stock-market risk, both at the extensive and the intensive margin. East Germans' stock-market participation is 15.6 pp lower and, conditional on participating, they hold 7.2 pp less stocks in their portfolios. The results replicate in our data from a large private bank, which includes individuals' cash holdings and further wealth controls. We also find significant differences in stock-market participation for several (arguably more homogeneous) subsets of investors in East and West Germany, including investors living in East and

[4] The more intense propaganda arguably reflected that the GDR could not legitimize itself as a "national state" like the other communist regimes (Haury (2004)): Its territory was defined by the Allies and Soviets, Germans were living on both sides of the border, and West Germany publicly claimed to represent all Germans. The indoctrination served to stabilize the political system and to differentiate the GDR from the West.

[5] For comparison, the well-known Odean (1999) data comprises 78,000 individual investors. Other examples include Hoechle, Ruenzi, Schaub, and Schmid (2018) (40,000 clients of a Swiss retail bank), Laudenbach, Loos, Pirschel, and Wohlfahrt (2020) (50,000 investors), and Meyer and Pagel (2019) (103,000 clients of an online bank).

West Berlin, and investors living in characteristics-matched cities closely located on each side of the former border. Moreover, individuals who moved from the former GDR to West Germany after Reunification also invest significantly less than West Germans even though they share the same aggregate economic environment of the West and self-selected into it.

We test for several alternative mechanisms and show that East-West differences in wealth, income, trust, risk tolerance, familiarity with stocks, and financial literacy are unable to account for the stock-market participation gap. East and West German investors also do not hold significantly different stock-market expectations, ruling out that pessimism about returns among East Germans drive our results. However, when we elicit attitudes towards the stock market, we find that significantly more East than West Germans think that investing in the stock market is simply immoral. The decision to abstain from investing in the stock market is coupled with negative attitudes towards financial markets.

These findings motivate the second step of our analysis, where we relate that stock-market investment to the content of communist propaganda and individual intensity of exposure. In terms of type of stock-market investment, we document that stocks from communist countries attract significantly *more* East German ownership, while stocks of American companies and the financial industry attract significantly *less* East German ownership—consistent with communist friends-and-foes propaganda.

We also find that the intensity of exposure to the communist system and its propaganda matters for the strength of its impact, in line with Fuchs-Schündeln and Masella (2016) and Enikolopov, Petrova, and Zhuravskaya (2011). We find that the stock-market participation gap between East and West is larger for older investors who were exposed to the communist doctrine of the GDR for a longer time. We also exploit geographic variation arising from the so-called "Kleiner Grenzverkehr" ('small border traffic'). West Germans who lived close to the former inner-German border were allowed to visit relatives in the East who also lived close to the border. This led East Germans in those areas to receive potentially countervailing signals (Stegmann (2018)). We find that the stock-market participation gap is smaller among East Germans living close to the former inner-German border.

The key determinant of the sizeable within-East differences in convergence we find, however, is how positively or negatively an individual has experienced living under communism. We show that the quality of life under communism—how positive or negative daily life was experienced—colors individuals' general attitude towards communism, including its messaging about captial markets. Positive and joyful experiences, such as celebrating sports victories or festivities in "showcase cities" make inhabitants more receptive to and generate a long-lasting influence of the communist doctrine, including its take on capitalism, even though the positive experiences are unrelated to the economic implications of financial markets. Vice versa, negative experiences, such as religious suppression or exposure to high SO_2 air pollution, induce pro-capitalism, even though such experiences do not convey information about the welfare implications of having a stock market.

This step of our analysis builds on prior research on "experience effects," which has found personal lifetime experience to be an important driver of financial risk taking. For example, stock-market participation has been found to strongly depend on the market returns experienced over one's lifetime so far, both on the extensive and the intensive margin.[6] In our setting, however, East Germans had virtually *no* experience with the stock market prior to Reunification. Their investment choices were limited to a savings account, a fixed-income security, and a (life) insurance savings account. As far as capital markets are concerned, East Germans were exposed only to the communist doctrine, which featured stock markets as "the root of all evil."[7]

In this scenario, prior cognitive-science literature argues that ideological and emotional priming can have long-term effects on behavior. According to this concept, emotionally arousing events are remembered *better* (since emotionally dependent information is modulated into enhanced memory (Richter-Levin and Akirav, 2003)), and it also matters whether an experience is tagged positively or negatively, as the affective system determines which components from the collection of processed information are preserved in memory (Bergado, Lucas, and Richter-Levin (2011)).[8] As a result, the

[6] See, e. g., Malmendier and Nagel (2011) and Malmendier, Pouzo, and Vanasco (2019). Similarly, personal investment outcomes (e. g., Strahilevitz, Odean, and Barber (2011), Kaustia and Knüpfer (2008)) or the local environment (e.g., Laudenbach, Loos, Pirschel, and Wohlfahrt (2020), Kaustia and Knüpfer (2012)) also affect investment in the corresponding asset market.

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

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

same experience can trigger opposite behaviors depending on how it is tagged and stored in memory, revealing the deeper underpinnings of "experience effects." Here, we consider positive and negative past experiences as capturing the emotional context of living under communism ("emotional tagging") to explain the persistent imprint, and directional differences, generated by exposure to a communist system.[9]

We utilize several proxies for positive and negative experiences as well as the influence of communist messaging, some of which have been used in prior literature (e.g., Western TV reception) and some of which are new hand-collected data (e.g., Olympic medal winners). We note that the repeated and differential subsampling of the East German population by unrelated proxies (religion, pollution, TV reception) helps alleviate concerns about other correlates that predict the receptiveness to communist propaganda. All of our proxies have in common that they do not provide any objective information on whether the stock market is good or bad.

First, we use environmental pollution as a proxy for a more negative experience of living under communism. In spite of the communist regime's claim to protect the environment in the interest of peoples' well-being, the GDR had the highest levels of dust and sulfur dioxide emissions across all European countries (Petschow, Meyerhoff, and Thomasberger (1990)). Air pollution was both high on average and varied across the GDR.[10] Thus, East Germans living in highly polluted areas should be more likely to have negative emotions tagged to their experience with communism. Correspondingly, we find that the stock-market participation gap is significantly less pronounced in areas that were highly polluted during GDR times.

Second, we utilize religious oppression. As common in communist systems, religious life was heavily suppressed in the GDR (Müller, Pollack, and Pickel (2013)). We conjecture that religious people are likely to form negative views about the communist system and hold more positive views about Western countries, which honor the freedom of religion. Consistently, we find that differences between East and West German stock-market investment are significantly mitigated in counties with high levels of religiosity: East Germans in religious regions embrace capital markets more.

[9] We thank Peter Bossaerts for first suggesting the link to the emotional tagging literature.

[10] In the "heavily air-polluted territories," almost every second child suffered from respiratory diseases. Cf. www.bundesregierung.de/breg-de/aktuelles/wahrheit-ueber-verschmutzung-der-umwelt-336222.

Third, we exploit exogenous variation in access to West German TV. 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, which may at first seem surprising. As has been documented, though, 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 (Kern and Hainmueller, 2009).[11] Since access to West TV is exogenous to other potentially confounding variables, we follow Bursztyn and Cantoni (2016) and use it as a natural experiment to examine whether our main result is weaker for investors living in these areas without access to Western TV entertainment. We find this to be the case.

In summary, citizens that were exposed to circumstances that made life in the GDR a more negative experience are less receptive of the communist doctrine and propaganda, even if these circumstances were unrelated to economic conditions. This finding is consistent with prior research showing that indoctrination and propaganda are less effective if it contradicts people's cultural values or their everyday experiences (McGuire, 1993; Adena, Enikolopov, Petrova, Santarosa, and Zhuravskaya, 2015).

Vice versa, we find that circumstances that made life in the GDR a more positive experience generated a long-lasting aversion to capitalism and financial markets. A first example is the experience of living in one of the GDR's "showcase" cities, for example the city of Chemnitz, which was renamed to "Karl-Marx-Stadt".[12] The act of renaming under the GDR regime was accompanied by festivals, significant press coverage, and visits of domestic and foreign politicians. These celebrations and expressions of national pride likely tagged the communist experience of residents positively. We confirm that our results are more pronounced for investors living in renamed cities.

Second, we utilize variation in the support for the secret surveillance system (STASI). Extensive research has documented that the dominant motivation for serving as a voluntary, unofficial collaborator (Inoffizieller Mitarbeiter, IM) was political ideology, rather than other plausible reasons such as monetary incentives or extortion (Mueller-Enbergs, 1995). We show that our baseline results are

[11] 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).

[12] Karl-Marx-Stadt, for example, had a flagship role in promoting communist ideology and a very high number of voluntary state-security collaborators (Horsch (1997))

stronger for regions with a high number of voluntary state-security collaborators. In addition, we use data from a survey conducted in 2014 on how positively individuals view the former political GDR system. Again, we find lower levels of stock-market participation in regions with a more positive attitude towards the former GDR.

Lastly, the GDR regime saw sports as a means to transport communist ideology and demonstrate the superiority of socialism over the capitalist system. The Olympic games in particular were used to evoke a feeling of "us against them," and Olympic winners were celebrated as national heroes. With this in mind, we use an alternative proxy for positive tagging of communist experience: living in the same municipality as an Olympic champion. In line with our conjecture, our baseline effect is indeed stronger for individuals living in the same municipality as an Olympic champion.

One possible implication of the suggested emotional-ideological underpinning of experience bias is that, as the salience of ideological experiences varies over time, so should beliefs and choices. In our context, the long-term effect of past exposure to the communist doctrine might be stronger when anti-capitalist messages sent by left-wing political parties are more salient. This is plausibly the case in years of federal elections, when public attention is focused on political topics and pre-election debates provide a forum for anti-capitalist messaging. Consistent with salience theory, we find a significantly higher reluctance of East Germans to invest in the stock market in election years.

Finally, we provide evidence that the differences in financial investment are costly to East Germans. In addition to the negative impact on wealth accumulation due to lower stock market participation, the portfolios of East Germans are less diversified, their portfolio returns are lower, and a higher share of their liquid funds are invested in high-fee products of the bank.

Our paper contributes to several strands of research. Since the Reunification of Germany almost 30 years ago, several papers have shown that there are still profound differences in social norms, personality traits, and wealth between East and West Germans (Fuchs-Schuendeln (2008), Alesina and Fuchs-Schündeln (2007), Bursztyn and Cantoni (2016), Lichter, Löffler, and Siegloch (2019)). Research in political science has shown that post-communist citizens differ consistently in their political, economic, and social attitudes compared to individuals in other countries (Pop-Eleches and Tucker (2017)),[13] but there is less evidence directly on attitudes towards capital markets and

[13]See also Fuchs-Schuendeln and Schuendeln (2015) and Fuchs-Schuendeln (2008).

financial investment. Most importantly, no research to date systematically studies the predictors of faster versus slower convergence in capital-market investment among those with prior exposure to the communist doctrine. We are the first to document large differences within the East and uncover the underlying mechanisms of prior lifetime experiences and exposure. This analysis is possible only due to our uniquely large brokerage dataset combined with several additional data sources which provides us with enough observations to conduct various types of analyses on a very granular level.

In addition to the literature on experience effects cited above, our analysis also closely relates to a literature in political economy and labor economics suggesting 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. 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 positive or negative tagging combines the thrust of the finance literature and the political economy literature on experience effects. It sheds light on the deeper underlying debate on how experiences are weighted and suggests that experiences that are tagged most positively or negatively are most relevant for behavior.

I Data and summary statistics

A Brokerage data

We obtain security holdings and demographic information on a representative sample of 230,229 retail investor accounts from June 2004 to December 2012 from a German brokerage, which is associated with a large bank present in almost all counties of Germany. Importantly, the bank's market share is quite similar between East and West Germany, and the financial products and services offered are uniform between East and West.

The data include investor characteristics like age, gender, marital status, a client's zip code, and account-related data such as the date the account was open or closed (if applicable). Figure 1 displays the distribution of investors in our sample across Germany. The sample closely matches population densities across the country, including highly populated areas such as the Ruhr Valley.

We typically exclude 1,179 investors living in the city of Berlin, which originally had an Eastern and a Western part, but use these clients for a robustness test later. Our final sample consists of 192,606 clients, for whom all personal as well as regional control variables are available.

Summary statistics of our brokerage data are displayed in Panel A.1 of Table 1. 20.4% of clients in our sample live in East Germany (the former GDR). 52.6% of investors are male, 58.2% are married, and the average age is 60 years. The average account has been open for six years and two months, and has a portfolio value of EUR 25,965. Stock-market participation (stocks and equity funds) is high, at 82%, because most brokerage accounts are opened with the purpose to trade stocks or hold equity in retirement savings plans. The fraction of stocks held among stock-market participants is 73%. Investors hold on average 14.7% bonds (of which roughly 65% are government and public bonds, and 35% corporate bonds). Only 3.8% of the sample observations involve clients holding passive investments such as index funds or ETFs. A detailed description of all variables contained in the brokerage data set is provided in Appendix Table A1.

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

B Supplemental data

We use numerous additional sources of data, listed in Appendix Table A1, in order to account for other factors that influence stock-market participation. We use investors' zip code to merge these data. Thus, investors living in the same zip code area are linked to the same geographical factors, such as the number of local firms, or county-level real-estate wealth obtained from the SAVE survey.

In addition, we fielded two waves of a representative survey, via the polling firm NorStat, in July and December 2018. The survey data are used to assess East and West Germans' stock-market expectations, as well as their attitudes towards capital markets and the economic system.

II Stock-market participation in East and West Germany

One characteristic of the communist doctrine is that it aims to induce negative views on competing economic systems. For example, Lenin (1919) emphasized the "necessity of a relentless war on the capitalists." In his supplement to Marx's third volume of "The Capital", Friedrich Engels characterized the stock exchange as "the most prominent representative of capitalist production itself" where "the capitalists take away each other's accumulated capital, and which directly concerned the workers only as new proof of the demoralizing general effect of capitalist economy" (Marx, 1894). In Panel A of Figure 2, we show various examples of this type of propaganda.

In this section, we test whether individuals who lived under the GDR regime and were exposed to its anti-capitalist propaganda formed negative attitudes towards the stock market that persist and result in lower stock-market participation three decades later. We control for standard determinants (such as differences in wealth, income, risk aversion, or financial literacy) and provide evidence of a strong correlation with ideological adherence to the communist doctrine. In the subsequent section, we will then show that differences in exposure and receptiveness to the communist system can be linked to the large within-East differences in attitudes and financial decisions today.

All empirical estimations in this paper can be organized in a simple theoretical framework with heterogeneous learning.[14] We sketch such a model in Appendix B, and summarize the main intuition here: Let's assume East and West Germans initially have the same prior about the stock market. West Germans learn from their direct observations, while East Germans have no direct exposure to the stock market. East Germans might therefore not update their initial beliefs, or might update in response to signals from the government, such as doctrine or ideology. As a result, beliefs about the stock market are different at Reunification. Beliefs converge afterwards, but will and remain different for some time, even as East and West Germans receive the same signals. The

[14]Building on the prior literature on experience effects, we model long-lasting exposure effects through a quasi-Bayesian beliefs channel. More elaborate models of Bayesian learning outside the experience-effect literature can generate similar differences, e. g., explain ideological differences in society as in Gentzkow, Wong, and Zhang (2018).

model captures not only East-West differences and slow convergence, but also accommodates the potential drivers of heterogeneity within East Germany. For example, variation in the intensity of exposure to government signals predicts variation in the negative updating. The effect of more positive or more negative experience with the communist system is captured as resulting in higher or lower receptiveness to government signals, and a resurgence of pro-communist signals during election years post-Reunification as triggering more updating in response to political signals. The empirical analyses address each of these predictions and mechanisms in this order.

A Baseline result

As a starting point, we examine differences in stock-market participation between East and West German investors. We estimate the following logit regression:

$$P(y_{it} = 1|East_i, x_{it}, z_{c(i),t}, \nu_t) = \Phi(\alpha + \beta East_i + \gamma' x_{it} + \delta' z_{c(i),t} + \nu_t), \tag{1}$$

where the indicator y_{it} equals 1 if investor i holds stocks or equity funds in her portfolio in year t, and zero otherwise. Our main independent variable, $East_i$, is a dummy variable equal to one if an investor lives in East Germany, and zero otherwise.[15] The estimation controls for individual-level characteristics x_{it}, including gender, age, marital status, the number of months an account has been open, and the value of an investor's portfolio as a proxy for wealth. We also control for proxies of local economic activities $z_{c(i),t}$. The latter includes the number of banks in an investor's county (to rule out supply-side effects), the number of people living in a given municipality (to capture differences between urban and rural areas), real-estate wealth at the county level, the fraction of inhabitants in a county with a high-school degree, the county's GDP, and the number of local firms per zip-code area (to capture differences in local economic development, education, and wealth). Finally, ν_t are year fixed effects. We calculate robust standard errors, clustered by municipality.

Average marginal effects are reported in column (1) of Table 2. We find that East German investors are 15.6 pp less likely than West German investors to participate in the stock market. The difference is significant at the 1% level and economically meaningful. Given an average stock-market

[15]This information is available as of the time the account is opened. For a subset of investors, examined in a later analysis, we observe whether they have moved from East to West Germany.

participation of 81.9% in the brokerage sample, living in East Germany is associated with a 19% lower probability of investing in the stock market. In robustness checks, we find that the effect is robust and significant for each year in our sample.

Among the control variables, a few estimates are worth emphasizing. Consistent with prior literature, female investors are less likely to participate in the stock market. The same is true for older investors, which likely reflects generational differences. Longer client relationships (measured by the time since opening an account) predict higher participation in the stock market. One estimate that seems puzzling at first is the negative coefficient of portfolio size, which would suggest that wealthier investors were less likely to participate in the stock market. However, we find that this estimate is driven by a specific form of retirement savings common in Germany, where investors deduct a small amount from their earnings every month and invest it in a broadly diversified equity fund. Many investors in our sample opened their brokerage account for retirement saving purposes and appear to follow such a monthly savings plan. If we drop small portfolio values below 5,000 Euro, the coefficient turns significantly positive, while the coefficient of interest is unaffected. Overall, being from East Germany is a stronger predictor of stock-market participation than most of the other control variables, including gender and portfolio value.

Turning to the intensive margin, we examine the amount invested in the stock market conditional on participation. We estimate the following OLS regression:

$$y_{it} = \alpha + \beta East_i + \gamma' x_{it} + \delta' z_{c(i),t} + \nu_t + \varepsilon_{it}, \tag{2}$$

where y_{it} now refers to the portfolio share invested in stock or equity funds. We include the same vectors of control variables x_{it} and $z_{c(i),t}$ as in model (1). Results in column (2) of Table 2 show that, conditional on stock-market participation, East Germans hold significantly fewer stocks in their portfolios (-7.2 pp) than West Germans. This translates into a 9.9% difference relative to the average fraction of stocks in investors' portfolios. In column (1) of Appendix Table A2, we show that this difference persists also unconditional on stock-market participation.

Finally, we turn to bond investment. We re-estimate equation (2) with the fraction of bonds held in an investor's portfolio as the dependent variable. Bonds in our sample are 65% government bonds and 35% corporate bonds. As shown in column (3) of Table 2, we find that the fraction of

bonds is 16.0 pp higher in East German portfolios than among West German investors. Compared to the mean among West German investors, East Germans hold more than twice as many bonds in their portfolios. One possible explanation is that the fixed-income feature of bonds makes them more similar to the mortgage-backed assets and life-insurance savings account that were available to investors in the former GDR, and are thus less stigmatized for representing capitalism. 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).

We perform several robustness checks, including a full replication in a separate bank data set. First, we consider subsets of East and West Germans for whom the institutional environment is likely to be particularly similar.

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

We define a new dummy variable, East Berlin, which is equal to one if an individual lives in East Berlin. We then estimate the same regressions as in Table 2 on the subsample of individuals living in Berlin.[16] Results are reported in Appendix Table A3 and confirm the stock-market participation gap between East and West Germans. Specifically, investors from East Berlin are 5.4 pp less likely to participate in the stock-market. Relative to the average stock-market participation of brokerage-account holders in Berlin (90%), this difference amounts to 6%. Thus, the economic magnitude of the effect is less pronounced than for the entire country. This is not surprising given that many parts of East Berlin (for example, Prenzlauer Berg and Friedrichshain) are nowadays inhabited by many West Germans. We do not find that people in East Berlin hold significantly smaller fractions of stocks conditional on participating in the stock market (column 2), but that the fraction of bonds in their portfolios is 2.3 pp higher (column 3).

[16]Note that we cannot include control variables like GDP per capita, real-estate wealth, and high-school degree, available only at the county level. At the same time, these controls are less important given the restriction to Berlin.

Two matched cities as a case study. As an alternative to comparing East and West Berlin, we identify two "matched cities" of comparable size, Eisenach and Bad Hersfeld, that are located at similar distances to the former West German border.[17] The city of Eisenach is located in East Germany with a distance of 29.8 kilometers to the former inner-German border. It has about 43,000 inhabitants, and 224 observations from this city are included in our database. The city of Bad Hersfeld is located in West Germany with a distance of 30.8 kilometers to the former border. It has about 30,000 inhabitants, and 350 observations from this city are included in our database. The distance between the two cities is 59.8 kilometers, a 40 minutes drive. Both cities are well-known tourist destinations and have comparable industry structures, dominated by medium-sized businesses (Eisenach has a focus on automotives, Bad Hersfeld on textiles and logistics).

We re-estimate the regression from Appendix Table A3 on the 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 East Germany (average marginal effect: -0.129, t-statistic: -3.25). Eisenach investors also hold a smaller fraction of stocks in their portfolios conditional on participating in the stock market (coefficient: -0.136, t-statistic: -1.80), and a larger fraction of bonds (coefficient: 0.167, t-statistic: 3.68).

Next, we perform several robustness tests to address selection concerns.

Market shares. A first concern is differential selection into the brokerage firm among East and West German clients. To carefully address this concern, we obtain access to a panel data set on brand usage, brand perception, and brand satisfaction provided by the international data and analytics group YouGov. The panel consists of over 70,000 respondents, who are asked about their residence (state), their perception of different banks and brands (including the bank of our brokerage entity) as well as the name of the bank where they hold their main account. This allows us to assess the bank-brand perception in East and West Germany and additionally look at answers for a group of East and West German respondents who are clients at our brokerage bank.

Figure 3 depicts the results. Generally, the market share of our bank is not significantly different between East and West German respondents (p-value for current customers: 0.21; p-value for former

[17] We can not conduct a regression discontinuity analysis at the border between East and West Germany, because the GDR and FRG agreed on a special "border circle" with a radius of approximately 100 kilometers. In regions belonging to this zone, limited travel and exchange of goods were permitted.

customers: 0.92). East and West German respondents do not differ in brand and advertisement awareness of the bank either: In both parts of the country, 88-89% generally know the bank and 25% report to have seen advertisements in the last two weeks. 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. The general evaluation of the bank brand is positive for 75% of respondents in East and 72% of respondents in West Germany and the difference is statistically insignificant ($p = 0.40$).

Bank data. A second concern regarding selection into our 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 in the overall population, when including individuals who do not invest at all and only hold cash. To address this concern, we make use of an additional data set of 6,903 randomly drawn clients from a large German bank from June 2017. This data set includes investors who have not opened a brokerage account and only hold cash on a regular savings account.[18] Summary statistics on the bank data set are provided in Appendix Table A4. 18.0% of clients live in East Germany. Stock-market participation is 12.5% on average and corresponds closely to data we obtained from the Deutsche Aktieninstitut (DAI), according to which stock market participation in Germany ranged between 12.2% in 2004 and 10.6% in 2012.

To assess the differences between East and West Germans, we again estimate a logit regression where the dependent variable is equal to one if an investor participates in the stock market (independent of having opened a portfolio). Standard errors are clustered by county, since information on a more granular place of residence is not available. Results are reported in Table 3.

Column (1) of Table 3 shows that the average East German investor is 5.5 pp 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 a 12.5% stock-market participation in our bank sample, living in East Germany is associated with a 44% 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 14.5 pp less likely to participate in the stock market, which corresponds to a 20.4% lower participation rate relative to the baseline probability of 71% in this sample. This magnitude is very similar to the one in our

[18] 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.

brokerage data (19%). Finally, column (3) shows that, conditional on having a portfolio and being a participant, the fraction of stocks is 15.4 pp lower for clients in East Germany than clients in West Germany. In column (2) of Appendix Table A2, we show that this difference holds also unconditional on stock-market participation. We do not observe bond holdings in the bank data and thus cannot examine differences in the fraction of bonds held by East and West German investors.

Taken together, in both data sets, we find pronounced differences in stock-market participation between East and West Germans almost 30 years after Reunification. In economic terms, the coefficient estimates suggest very similar gaps of 19% (brokerage data) to 20% (bank data) after including control variables.

B Possible Mechanisms

What explains the persistent gap in stock-market participation between East and West Germany? We first consider standard economic determinants: differences in wealth, income, and socio-economic characteristics such as trust, familiarity, risk tolerance, and financial literacy. We then turn to differences in stock-market expectations as well as attitudes towards the economic system. Evidence for the latter will be a first step towards the main question we are trying to address – the root of differences *among* East Germans in their adaptation to capitalism and the stock-market.

First, we address the role of wealth, income, and socio-economic characteristics in explaining the baseline estimates. The above analysis includes a large set of individual- and region-level control variables. Yet, we might be concerned about remaining (unobserved) differences. We provide two additional sets of analyses to assess this concern, in which we consider both aggregate economic conditions and individual-level differences.

Movers. To explore the role of aggregate economic conditions, we analyze a subset of investors in our bank data set, who indicated, in a survey of the bank, that they moved from East to West Germany after the fall of the Berlin Wall in 1989. These individuals are currently exposed to exactly the same economic environment as West Germans, but experienced a different economic system in the past. We re-estimate the regression specifications from Table 3 on this subsample, separating Germans who live in the East, Germans who live in the West but moved from East to West, and Germans who live in the West and did not move over from the East.

Table 4 provides the estimation results, with coefficients indicating average marginal effects. Column (1) shows that, compared to (other) West Germans, movers from East Germany are 9.8 pp less likely to invest in the stock market. When we restrict the estimation sample to Germans residing in the West today, we estimate a similar, slightly larger coefficient of −11.5 pp (column 2). Finally, in columns (3), we refine our mover variable and identify investors who have lived in West Germany for a minimum of twenty years, i.e., they moved at or shortly after German Reunification. We find a stock-market participation gap of 17.6 pp. The results reveal a long-lasting aversion to stock-market participation even among (formerly) East Germans who now live in exactly the same economic and institutional environment as West Germans and who even self-selected into the Western environment by migrating.

Wealth, income and socio-economic characteristics. Next, we target individual-level differences rather than aggregate economic conditions: We leverage the more detailed information in the bank data and construct refined proxies of investors' income, savings, and portfolio values. In Appendix Table A5, we include squared and cubic terms of investors' income, savings, and portfolio values in the estimations from Table 3,[19] in addition to the set of controls previously included. The resulting point estimates are remarkably robust. That is, while we know that East and West Germans differ in income, savings rates and wealth (see also Fuchs-Schuendeln (2008)), we still observe East Germans participating significantly less in the stock market after we control flexibly for these differences, with point estimates similar in magnitude to those in Table 3. Moreover, conditional on participation, the fraction of stocks held by East Germans is significantly lower than among West Germans.

North-South placebo test. We also run a placebo test on the differences between North and South German investors, excluding East Germany. Since wealth and income are higher in Southern Germany (i. e., Bavaria and Baden-Wuerttemberg) than in the North,[20] similar to the East-West difference, we would expect North Germans to participate less in the stock market than South Germans if unobserved wealth or income were the main driver of stock-market participation in Germany. We do not find this to be the case (coefficient on the placebo dummy: −0.001, z-statistic: −0.01).

[19] The latter can only be included in estimations that conditions on investors having a portfolio.
[20] See http://www.bhls.eu/vergleich-norddeutschland-sueddeutschland.html.

We conclude that East-West differences in stock-market participation cannot plausibly be accounted for by differences in income and wealth.

Trust, risk tolerance, and financial literacy. We additionally investigate whether differences in trust, risk tolerance, familiarity, and financial literacy explain the significant differences between East and West Germans' investment behavior. We report detailed analyses and descriptions of our proxies and results in Appendix A and Appendix Table A6. We find that trust, risk tolerance, and financial literacy predict stock-market participation, but do not expain the stock-market participation gap between East and West Germans.

Given that differences in the aggregate economic environment as well as individual differences in wealth and income, trust, risk tolerance, familiarity, and financial literacy fail to account for much of the stock-market participation gap, we return to the explanation proposed in our model – differences in beliefs about the value of investing in the stock market. Such differences in beliefs may be twofold: East and West Germans might have different expectations about the return to investing in the stock market. Alternatively, they might differ in their ideological attitudes towards the economic system and thus in their beliefs about the social value of investing in the stock market.

Stock-market expectations. To systematically test for differences in beliefs about the stock-market, we conducted a representative survey among 1,598 Germans in July 2018 with the German polling institute NorStat. For consistency with our estimations, we exclude 69 survey respondents living in Berlin and our final sample consists of 1,529 survey respondents.[21] Reassuringly, 24.4% of West Germans, and 18.7% of East Germans responded that they are currently invested in the stock market. The difference between East and West Germans is statistically significant (p-value 0.054). In economic terms, the corresponding participation gap is 24.2%, closely in line with our estimates from both of the other databases in the previous section.[22]

Regarding stock-market expectations, we ask three questions. First, we elicit the expected development of the stock market over the next months. Second, we ask whether respondents think the stock market is currently over-, under-, or correctly valued. Third, we ask what average annual

[21] We do not have information on survey respondents' ZIP codes to determine whether they live in East or in West Berlin.

[22] Note that our survey question asked about stock-market participation at any time in the past or present. The fraction of West and East Germans holding stocks in a given year is lower. For example, in 2019, only 16.6% of West Germans and 9.8% of East Germans reported to the Deutsche Aktieninstitut (DAI) that they were holding stocks.

return a respondent would expect if he had invested in the stock market for 30 years. As shown in Appendix Table A7, we find no statistically significant differences between East and West Germans in their responses to any of these questions. While various control variables do have significant predictive power, including gender, income, and financial literacy, the coefficient estimate on the East dummy is always insignificant and small. For example, for question one, we find a coefficient on the East dummy of -0.022 with a standard error of 0.030, while the estimated coefficient for the Female indicator is -0.088 with a standard error of 0.024. Using a 95% confidence interval, we can reject effect sizes larger than 0.037 and smaller than -0.080.

We corroborate these results using data from the weekly stock-market sentiment survey run by the German market research institute Sentix Behavioral Indices. The data are collected from more than 4,000 respondents, including institutional and private investors, and we use data of 1,872 respondents for whom we know the place of residence and, after hand-collecting zip codes, whom we can assign to East or West Germany. Respondents are asked whether their midterm (6 months) return expectations about the DAX are bullish (-1), neutral (0), or bearish (1). From the 84,785 estimates in the data, we construct monthly averages, separately for East and West Germans, from September 2016 to August 2018.[23]

Figure 4 depicts the results. Stock-market expectations of East and West Germans are very similar. Results from a two-sided t-test do not reveal any significant differences in stock-market expectations between East and West Germans (p-value: 0.31). In sum, we do not find systematic differences in stock-market expectations between East and West Germans. This is in line with the same findings in Goldfayn and Wohlfart (2019) based on the PHF survey of the Deutsche Bundesbank.

We also note that the realized returns of the German stock market after reunification were very positive: An investor who invested in the German stock-market index DAX in 1990 and held the index until 2018 earned a return of 7.5% p.a.[24] Hence, East Germans' lower willingness to invest in the stock market is unlikely to be driven by bad experiences in the stock market after Reunification.

[23]Monthly averages are calculated based on all estimates in a given month. Results are robust to using only the first wave at the beginning of the month.

[24]See DAI return triangles (2019) on www.dai.de/en/what-we-offer/studies-and-statistics/return-triangles.

Attitudes towards capital markets and stock-market investment. With neither expected nor realized returns able to account for differences in stock-market participation between West and East Germans, we next consider whether attitudes towards the economic system and towards the stock market can explain these differences. In the NorStat survey described above, we also included a several survey questions measuring anti-capitalist attitudes (anti-stock market attitudes) among East and West Germans, such as "In a capitalist system, the rich get richer and the poor get poorer." or "Investing in the stock market is immoral." The exact statements are spelled out in Panel A of Appendix Table A8.

Panel A of Figure 5 shows the fraction of survey respondents agreeing with the various statements, separately for East and West Germany.[25] East Germans consistently show a higher propensity to express anti-capitalist, anti-stock market or pro-communist attitudes. For instance, while only 40% of West Germans agree with the statement that "Capitalism should be restricted," 51% agree in East Germany. The results suggest that differences in anti-capitalist and pro-communist attitudes are prevailing between East and West Germany.

These differences directly link back to the notion of long-lasting experience effects. Exposure to communist ideology appears to affect beliefs and attitudes decades later, and provides for a plausible underpinning for the differences in financial choices. In fact, they might provide an underpinning for within-East differences in adjustment to capital markets.

To further assess this possibility, we launched a second survey with NorStat in December 2018, this time exclusively in a representative sample of 1,600 East Germans. The additional observations from East Germany permit a refined analysis on differences within East Germany. We include a battery of questions capturing respondents' attitudes towards capitalism and communism on either a 4- or 5-point Likert scale, and elicit again stock-market participation. (All statements are spelled out in Panel B of Appendix Table A8.)

In Panel B of Figure 5, we assess the link between stock-market participation and pro-communist attitudes among East Germans. The figure plots average marginal effects on the standardized survey responses from logit regressions with stock-market participation as the dependent variable and a rich set of demographic controls including gender, age, income brackets, education, employment

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

status, and state fixed effects. We calculate robust standard errors. (Regression results are reported in Appendix Table A9.) The figure reveals that stronger pro-communist and anti-capitalist attitudes predict stock-market participation within East Germany. The relationship is strong and significant for each of the statements. In other words, the communist ideology, which was strongly promoted via political propaganda in East Germany, appears to have a long-lasting impact on how East Germans think about the economic system and significantly predicts their decision to invest in the stock market.

Preferences for types of stocks. As a piece of evidence for the plausible role of past exposure to communist ideology in explaining financial choices today, we perform a more granular analysis of stock-market investment. While the stock market was generally denunciated as "the most prominent representative of capitalist production itself" (Engels in (Marx, 1894)) and part of "a paradise for only a few" (see right propaganda poster in Figure 2.A, with the husband holding a paper with stock price listings), the communist propaganda rallied against certain industries and certain countries in particular—first and foremost against the financial industry and the US. Panel A of Figure 2 shows some examples of propaganda material criticizing the US and capitalism (left and middle poster including the dollar sign and American flag). In addition, the GDR authorities conveyed positive views about other communist countries, such as Russia, China, or Vietnam. Panel B of Figure 2 displays some of the posters demonstrating friendship with the communist allies.

We show that these views are reflected in the *types* of stocks East and West Germans invest in today. That is, we test whether the East-West gap is particularly pronounced for stocks of the financial industry and for US companies, and less pronounced, if not reversed, for stock of companies from (former) communist allies. The underlying notion is that the former type of investment (finance, US) is particularly abject, while the latter is more in line with support for communism. A related interpretation is that, if East Germans suspect that stock investment pays off "only for a select few" as firms time the market and reveal inside information to some but not all stakeholders, they may trust managers of companies from former communist countries more.

Appendix Table A10 lists the top ten stocks, in terms of holdings in our data, of finance stocks, US stocks, as well as Russian, Chinese, and Vietnamese shares. Among the "capitalist stocks," the top ten finance stocks are predominantly major German banks, financial advisory firms, and

insurance companies, and the top ten US stocks are well-known companies like Microsoft or Apple. With respect to Russian and Chinese firms, the top ten holdings are predominantly stocks of state-owned companies belonging to the energy or basic materials sector.[26] Overall, stocks of communist countries are held by 4,812 investors (3%) in our sample. Investments in stocks of firms in these countries are often conducted via American or Global Depository Receipts (ADRs or GDRs). Given the prevalence of state-owned firms in this subset, we also consider German state-owned companies more broadly. The idea is that they might be considered "less capitalist" and less likely to exhibit unfair stock-market practices.

Table 5 shows results from regressions of the fraction of stocks held in "capitalist" (US, finance) or "anti-capitalist"(communist countries, state-owned enterprises) stocks on the East dummy and our usual set of controls. We find that, conditional on stock-market participation, East German investors hold a 7.6 pp lower share of financial companies and a 4.8 pp lower share of US firms than investors from West Germany. At the same time, they hold a 10.4 pp *higher* share of stocks of companies located in Russia, China, or Vietnam, and a 4.1 pp *higher* share of stocks of (formerly) state-owned German companies. All differences between East and West German investors are statistically significant at the 1% level.[27] In other words, we detect a long-lasting influence of the anti-capitalism message even in the choice of stocks among East Germans, conditional on them participating in the stock market. The reversal of sign for the more "communist" stocks, which East Germans are more likely to invest in, is particularly interesting and helpful in addressing remaining concerns about unobservables inducing a uniformly lower inclination to invest in stocks.

III Exposure to Communist Ideology: Intensity and Quality

Our baseline results have shown that East Germans' lower willingness to invest in the stock-market is coupled with attitudes that are generally more anti-capitalism and pro-communism. Moreover, their stock-market aversion is strongest in the case of archetypal "capitalist stocks" (US, finance), but reverse in the case of communist-country or state-owned companies.

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

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

Building on these result, we turn to within-East differences and explore *how* such exposure affected the belief system of East Germans. This step of our analysis builds on prior research on "experience effects," which has found personal lifetime experience to be an important driver of financial risk taking, including stock-market participation (cf. Malmendier and Nagel (2011) and Malmendier, Pouzo, and Vanasco (2019)). In our setting, however, East Germans had virtually *no* experience with the stock market prior to Reunification. In this scenario, prior cognitive-science literature argues that ideological and emotional priming can have long-term effects on behavior. Not only are emotionally arousing events remembered *better*, but it also matters whether an experience is tagged positively or negatively, as the affective system determines which components from the collection of processed information are preserved in memory (Bergado, Lucas, and Richter-Levin (2011)). As a result, the same experience can trigger opposite behaviors depending on how it is tagged and stored in memory, revealing the deeper underpinnings of "experience effects."

In the next step of our analysis, then, we test for the determinants of within-East variation, both in attitudes towards capital markets and in their stock-market investment, that capture positive versus negative experiences under the communist system. As formalized in the model in Appendix B, we argue that positive experiences translate into a stronger influence of the communist messaging, and negative experiences into a weaker influence.

We will employ eight different proxies, some of which have been used in prior literature (e.g., Western TV reception) and some of which are new hand-collected data (e.g., Olympic medal winners). We note that the repeated and differential subsampling of the East German population by unrelated proxies (religion, pollution, TV reception) helps alleviate concerns about other correlates that predict the receptiveness to communist propaganda. All of our proxies have in common that they do not provide any objective information on whether the stock market is good or bad.

Appendix Table A11 shows the cross-correlations of the various measures of exposure to communist ideology that we will introduce in this section, and the low values reveal that our measures capture different aspects of communist experience. For example, we calculate a correlation of -0.015 between living in a religious area and a celebrated showcase city. The differences in exposure also break the link between experiences in the former GDR and the economic situation today, as Appendix Table A11 reveals. For example, the correlation between living in an area with high GDP

per capita and in a renamed city is only 0.03, and the correlation with living in an area where a high fraction of people are religious is only -0.02.

A Intensity of exposure

We test for heterogeneous effects due to variation in the intensity of exposure to the communist system (corresponding to the theoretical Result 3 in Appendix B) along two margins: temporal and geographical. (For brevity, we focus on stock-market participation, but report results for the fractions of stocks and bonds in Appendix Table A12.)

On the temporal dimension, we hypothesize that East Germans who have lived in the GDR for a longer time, and who thus have had more exposure to its communist ideology, are more averse to the stock market.

The proposed pattern is easy too see in the raw data. In Figure 6, we sort investors into age deciles and plot stock-market participation conditional on age. As shown in Panel A, the stock-market participation gap increases with age and is most pronounced for the highest age deciles. The result is robust to accounting for income differentials between different age cohorts of East and West Germans. 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. 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.

Turning to the controlled regression framework, we re-estimate our baseline model (1) of stock-market participation, but include an interaction between the East dummy and an indicator for individuals who have experienced the GDR system for longer, proxied for by being 50 years old or older. The estimated coefficient of the interaction term, shown in Table 6, indicates that the baseline effect is indeed more pronounced for older East Germans. They are 24.5 pp less likely to participate in the stock market than their counterparts from West Germany, controlling for age. In an alternative specification, we have also run the main regression model separately for different age

brackets. Coefficients on the East dummy are always negative and statistically significant. We also find that the differences in the amount of stock and bond holdings are more pronounced for older East Germans, amounting to 9 pp for stock holdings and 18 pp for bond holdings (Appendix Table A12).

On the geographic dimension, we exploit the 1972 "Kleiner Grenzverkehr" (Small Border Traffic) travel agreement between the GDR and the FRG. The agreement allowed West Germans from areas close to the border to visit GDR areas close to the border for up to 30 days a year (9 days a quarter, one day at a time) to visit relatives, as well as for touristic reasons. The "border circle" regions belonging to the travel agreement are displayed in Figure 7. The radius of this circle was approximately 100 kilometers. East Germans living close to the former border to West Germany were thus more exposed to West German influences from relatives and other travelers. In fact, it is well-documented that the GDR closely monitored the "border circle" for potential threats to the political stability. According to regular reports by the secret police (STASI) on the "political and ideological situation at the border," negative opinions on the GDR system were expressed more frequently, which the GDR attributed 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), GDR Borderpolice (1960)). In line with this view, Stegmann (2018) finds that GDR districts with fewer travel restrictions exhibited more protest and lower electoral support for the Communist regime.

Returning to the relation between exposure intensity and stock-market attitudes, we conjecture that the non-participation results are weaker for investors living close to the border to West Germany, as they are more likely to have experienced both, the political propaganda of the GDR as well as countervailing influences from West Germany. Or, to frame it in terms of our theoretical model in Appendix B, we consider East Germans outside the "small border traffic" as being exposed to relatively more signals from the GDR prior to Reunification than East Germans inside the border region.

To test this hypothesis, we re-estimate our baseline model (1) but include an additional interaction between the East dummy and an indicator 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.

Results are presented in column (2) of Table 6. We find that our main results are indeed more pronounced for East Germans living further away from the West German border: they are less likely to participate in the stock market at both the extensive and intensive margin, and the fraction of bonds in their portfolios is larger (see also Appendix Table A12).

In column (3) of Table 6, we include all interactions as well as the baseline variable differentiating between East and West German investors. We find that both interaction coefficients remain significant – the baseline stock-market gap remains stronger for older East Germans and those living further away from the former border to West Germany.

B Negative versus positive experiences

The most novel contribution of this study to the literature on *experience effects* is that we develop and test the hypothesis that more positive versus more negative past experiences will color the reception of the communist doctrine, including its anti-capital-markets stance, even when such experiences are unrelated to financial outcomes. That is, two East Germans exposed to the communist system may respond with different long-lasting attitudes and make different choices, depending on whether their experience was tagged positively or negatively.

Negative tagging: We consider three sources of negative tagging.

The first source is air pollution. The GDR had the highest levels of dust and sulfur dioxide emissions among all European countries, resulting in significant increases of respiratory diseases and skin problems like eczema, with children being particularly affected (Petschow, Meyerhoff, and Thomasberger (1990)). After the German Reunification in 1990, the German Ministry of Environmental Affairs issued a press release that identified 18 environmental emergency projects to stop environmental pollution in 16 GDR municipalities that needed immediate action because of outaged power plants, filter plants, or chemical plants. We investigate whether East Germans living in these heavily polluted municipalities, who may have more negative associations with communism, display a *higher* willingness to invest in the stock market than other East Germans.

The second source of plausibly more negative tagging of individuals' experiences under communism is religious suppression. As common in communist systems, religion was viewed as a tool of the ruling class to oppress the working class – "Religion is the opium of the people" (Marx, 1843).

While religious groups were not entirely outlawed, religious property was frequently confiscated and believers harassed. We conjecture that East Germans in more religious areas are more likely to have had a negative experience with the communist system. We investigate heterogeneity of our main effect by the fraction of Catholic and Protestant citizens in a county.

Third, we employ a measure of negative experience derived from differential access to West German television. This measure exploits that some regions in the GDR were either too distant from the Western border and from the television tower in West Berlin to receive Western TV signals, or were located in low valleys or 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). Prior literature has documented that the quasi-exogenous access to Western TV induced higher awareness of Western brands and consumption goods among East Germans (Bursztyn and Cantoni, 2016), but also, maybe more surprisingly, higher satisfaction with their lives, a reduction in the number of applications to emigrate, and fewer attempts to escape the GDR (Kern and Hainmueller, 2009). The latter results may at first seem counter-intuitive: Shouldn't access to Western TV induce *pro*-capitalism and *pro*-Western attitudes? The reason for the increased satisfaction with life in the GDR is twofold: First, a typical East German consumer of Western TV tuned into entertainment, such as crime shows, to relax after work, rather than political news (Bösch and Classen, 2015). Second, the German TV channels did not aim to expose East Germans to pro-Western political opinions, differently from, say, American radio projects such as "Voice of America" or "Radio Liberty" (Uttaro, 1982). As a result, the availability of such entertainment after a day of work in the (state-guaranteed) job increased consumers' satisfaction with their work-life balance in the GDR, rather than their skepticism towards the political system (Kern and Hainmueller, 2009).[28] In fact, Chen and Yang (2019) document the same media consumption pattern in communist China: When provided with free access to uncensored internet, students go to entertainment websites rather than acquiring political information from foreign news outlets.

Regardless of the reason, what matters for our analysis is that the data shows that East Germans with access to Western TV were *more* satisfied with the political system of the GDR. Vice versa,

[28] In addition, Meyen (2003) argues that exposure to Western TV, including its entertainment, increased 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.

not having access to Western TV predicts less satisfaction and a lower willingness to follow the communist doctrine. We investigate heterogeneity of our main effect by an indicator for municipalities in the East that did not receive signals from Western TV stations.

Panel A of Table 7 shows the estimated effects of these three types of variation in exposure. In each column, we interact one of the three indicators of negative tagging with the East dummy. The estimate in column (1) reveals that the stock-market participation gap of East Germans is 12.6 pp smaller in heavily polluted counties. Similarly, East Germans in more religious areas (column 2) and those without access to West TV (column 3) also exhibit a significantly smaller participation gap. These results support the view that East Germans who plausibly experienced communism more negatively are more positively inclined towards capital markets and, as a result, are more open to investing in the stock market than other East Germans.[29]

Positive tagging: The opposite holds for positive experiences. We identify four sources of positive tagging of the GDR experience, i. e., of positive GDR experiences that might have increased East Germans' susceptibility to communist propaganda and hence would amplify our main result.

First, we consider living in one of the GDR's celebrated and "renamed" showcase cities. When the communists assumed power in the newly founded GDR, they renamed numerous squares, streets, football stadiums, and steel works to immortalize communist heroes. One of the most prominent acts, however, was to rename an entire city.[30] The act of renaming a city was celebrated publicly with thousands of workers participating in marches and getting together in the big squares of the city. The celebrations and expressions of national pride likely tagged the experience with communism positively for East Germans in the five renamed cities.[31]

Our second and third proxies of positive tagging are somewhat different in nature. The second measure is the fraction of voluntary state-security collaborators in a county. It is well-documented that the dominant motivation for serving as a collaborator was political and ideological, rather than monetary or extortionary (Mueller-Enbergs, 1995). Hence, we hypothesize that, in counties with a

[29]Results on the fractions of stocks and bonds in Appendix Table A13 portray a similar, albeit weaker picture.

[30]The cities were selected by a central committee of politicians. For example, Chemnitz was renamed "Karl Marx Stadt" to celebrate the 135^{th} anniversary of Karl Marx. Originally, this name had been assigned to Eisenhüttenstadt; but after Stalin's death in 1953, Eisenhüttenstadt was spontaneously renamed Stalinstadt, and then Chemnitz was given the name "Karl Marx Stadt".

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

high number of voluntary STASI collaborators, particularly many citizens identified with the communist doctrine. Naturally, it is possible that this proxy is also correlated with negative experiences (for those who were policed). Lichter, Löffler, and Siegloch (2019) show, for example, that a higher spy density has negative long-term effects on trust, political participation and, ultimately, economic performance (income). The prediction is thus less clear ex ante.

Our third proxy exploits regional variation in contemporary perceptions about the GDR's political strengths. In 2014, the German polling institute "Infratest" conducted a survey asking: "If you compare today's social and political conditions to those in the former GDR, do you think the political system of the GDR had unique strengths?" (Options were "yes," "no," or "I do not know.") The fraction of respondents in a county who answered "yes" provides a revealed measure of positive past experiences associated with the GDR system.

Finally, we consider the experience of sports-related celebrations. For the GDR's political leadership, athletic prowess was an important tool to prove their system's superiority to Western liberalism and promote national pride. According to Wiese (2007), "the GDR and the FRG not only competed for medals, but also fought a battle of ideologies in the Olympic arena." The general strategy to concentrate on specific disciplines proved successful since East German athletes won a total of 192 gold medals between 1968 and 1989 compared to 67 for West Germany. We conjecture that people living in a place that produced an Olympic champion were particularly proud and positive about the GDR. Therefore, we collect zip-code level data on the place of birth of all GDR Olympic champions in the Wikipedia lists for Olympic summer and winter games. We define a dummy variable indicating if an investor is from the same birth place (i.e., municipality) as an Olympic champion of the GDR, and zero otherwise. We multiply the dummy variable with an inverse population rank, because we expect the pride effect to form more strongly in smaller communities, where being an Olympic champion stood out even more. In contrast, large cities such as Leipzig and Dresden produced a series of Olympic medal winners but we expect a weaker impact on national pride of people living in these cities. Therefore, the regression also controls for urban versus rural municipalities.

In Panel B of Table 7, columns (1) to (4), we include all four proxies separately in our regression, interacted with the East dummy. The estimates reveal that East Germans living in a renamed city show significantly lower stock-market participation (24.4 pp less) than other East Germans.

Moreover, stock market participation is also significantly lower for East Germans in counties with a higher fraction of STASI volunteers and those that exhibit a more positive perception of the GDR system today. We also find evidence that investors living in municipalities of Olympic champions participate significantly less in the stock market. Results are similar for stock and bond holdings (see Appendix Table A13).

Overall, results in this section are consistent with the emotional tagging hypothesis. Even though we can not explicitly measure memory or emotional tags, the proxies we use for positive and negative experiences with the Communist system do not provide any objective information that the stock market is good or bad and still have a strong impact on the extent to which individuals follow the communist ideology, even decades later. Thus, simple belief updating or habit formation with fixed costs (either mentally or logistically) in getting started with stock market investments can not explain the *within*-East differences that we document in this paper.

C Trigger points: Election years

In this section, we examine time-series variation in the stock-market participation gap between East and West Germans. As discussed in our theoretical framework in Appendix B, a resurgence in anti-stock market signals might increase the gap in beliefs between East and West. This prediction builds on memory research arguing an important predictor of decision-making is its "context:" If a decision is similar to a previous situation it will trigger recall of this previous experience and its context, and the corresponding behavior (Kahana (2012), Wachter and Kahana (2019)). In our context, we ask whether there are times in which East Germans' memories of the communist system (and retrieval of the communist doctrine) are particularly salient and trigger their reluctance to invest in the stock market more than at other times, when other topics dominate the public debate.

We hypothesize that years of federal elections fall into this category. They are a time when political attitudes are most salient and public attention is devoted to who should govern and run the country. Consistent with the framework and concepts of salience in Bordalo, Gennaioli, and Shleifer (2019), elections may provide cues that trigger automatic retrieval of past experiences with political systems. That is, East Germans may receive (or pay attention to) more signals from pro-

communist politicians, family, and friends, while West Germans retrieve their past experiences with the capitalist system of the FRG.

To test whether the stock-market participation gap between East and West Germans is larger in election years, we interact the East dummy with an indicator for federal election years in our sample (i.e., 2005 and 2009). We then estimate the same regression equation as in Table 2, but additionally include this interaction term. (Note that the level effect of election years is incorporated into the year fixed effects). Results are reported in Table 8. They show that our baseline effect is indeed amplified in election years, with the interaction term being statistically significant at the 1% level. We also tested and confirmed that the results hold if we consider the first election year, i.e. 2005, separately to mitigate concerns that effects in 2009 may be confounded by the financial crisis.

In unreported results, we also find that the effect of positive tagging on stock-market participation (see Table 7) is significantly amplified in election years. This result is in line with the view that elections trigger recall of the GDR's communist ideology, which is then followed by East Germans with positive experience. Following the doctrine by not investing in the stock market thus appears to happen because (i) communist ideology is now more salient (Bordalo, Gennaioli, and Shleifer (2012)), and (ii) because it is in line with the positive tagging of experiences with the GDR (Bordalo, Gennaioli, and Shleifer (2019)).[32]

IV Financial implications: Portfolio returns, fees, and diversification

Finally, we provide several pieces of evidence that East German investors' exposure to communist ideology and their resulting reluctance to invest in the stock market is costly. Lower life-time investment in the stock market should generally lead to lower financial wealth as investors forgo the equity risk premium. Thus, the differences in stock-market investment that we document on the micro level may partly explain why there are still such large wealth differences between East and

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

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

In our data, we are able to estimate several aspects of differences in returns and costs between East and West German investors. First, we compare monthly portfolio returns. We obtain monthly return data (including dividends) from Thomson Reuters Datastream. We calculate 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 calculate both equal- and value-weighted returns for all investors belonging to the "East German portfolio" or the "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 (1993) three-factor model and the Carhart (1997) four-factor model. In our regressions, we use the global risk factors obtained from Kenneth French's data library.[33] We observe that East Germans earn significantly lower returns than West Germans, irrespective of whether portfolios are equal- or value weighted (Panel A, Table 9). Monthly performance alphas vary between –0.07% and –0.11%.

In the next step, we examine other differences in portfolio characteristics between East and 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 (diversification). Third, we calculate the average fund fees an investor 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 B of Table 9.

Results in column (1) show that East German investors are significantly less likely to hold index funds or exchange traded funds. The economic magnitude is large: East German investors are

[33]The global risk factors are from `mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html`.

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.

V Discussion and Conclusion

Our analysis shows that East Germans, who have lived under the communist system, have a persistently lower willingness to take stock-market risk, even almost 30 years after Reunification. An exception are stocks of companies from communist countries and of other state-owned companies. The results are particularly strong for those East Germans whose experiences with the communist system of the GDR carry positive associations, and are significantly weaker if not reversed for those with negative experiences under the communist system. Experiences with a communist system are costly: East German investors earn lower returns, hold less diversified portfolios, more expensive equity funds, and fewer passively managed assets. These results provide a micro-level foundation for macroeconomic growth differentials between East and West Germany.

An interesting question that arises from our findings is how individuals in other transition economies responded to the introduction of a stock market. Does experience with a communist system always negatively affect people's willingness to participate in the stock market? What happens if the communist party reverses its own course and promotes (their version of) the stock market, as was the case in China?

In the GDR, the 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. For our empirical analysis, this is essential, as it rules out that weaker investor protection or governance standards drive lower stock market participation in East Germany.

In other communist countries, change happened more gradually and within the system. For example, in China, the communist regime remained in place and transformed the economy stepwise to "state capitalism", thus, the Party's doctrine changed over time. The Party itself established a stock market in 1990. About 60% of the average Chinese company's shares are nontradable shares held by the government itself (Pistor and Xu (2005)). In addition, the Chinese government created incentives for firms to raise equity capital via IPOs, thus signaling that it does not condemn stock markets or investing in shares of companies. As a result, Chinese people do not face a conflict between political ideology and investing in stocks. Indeed, 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 weak shareholder-rights protection and 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. Many firms were privatized in the 1990s, and the proceeds accrued to a small number 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."[34] Russia's stock market was established in 1992, but even in 2015, stock-market participation of the general population reached only 0.8% (Bank of Russia (2015)).

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, they seem reluctant to accept the new system and its rules for decades to come, with adverse effects on people's financial well-being. Establishing these differences systematically is a promising area of future research.

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

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Figure 1: Distribution of Investors across Germany

This figure shows the number of brokerage clients per zip-code area. The sample period is June 2004 to December 2012.

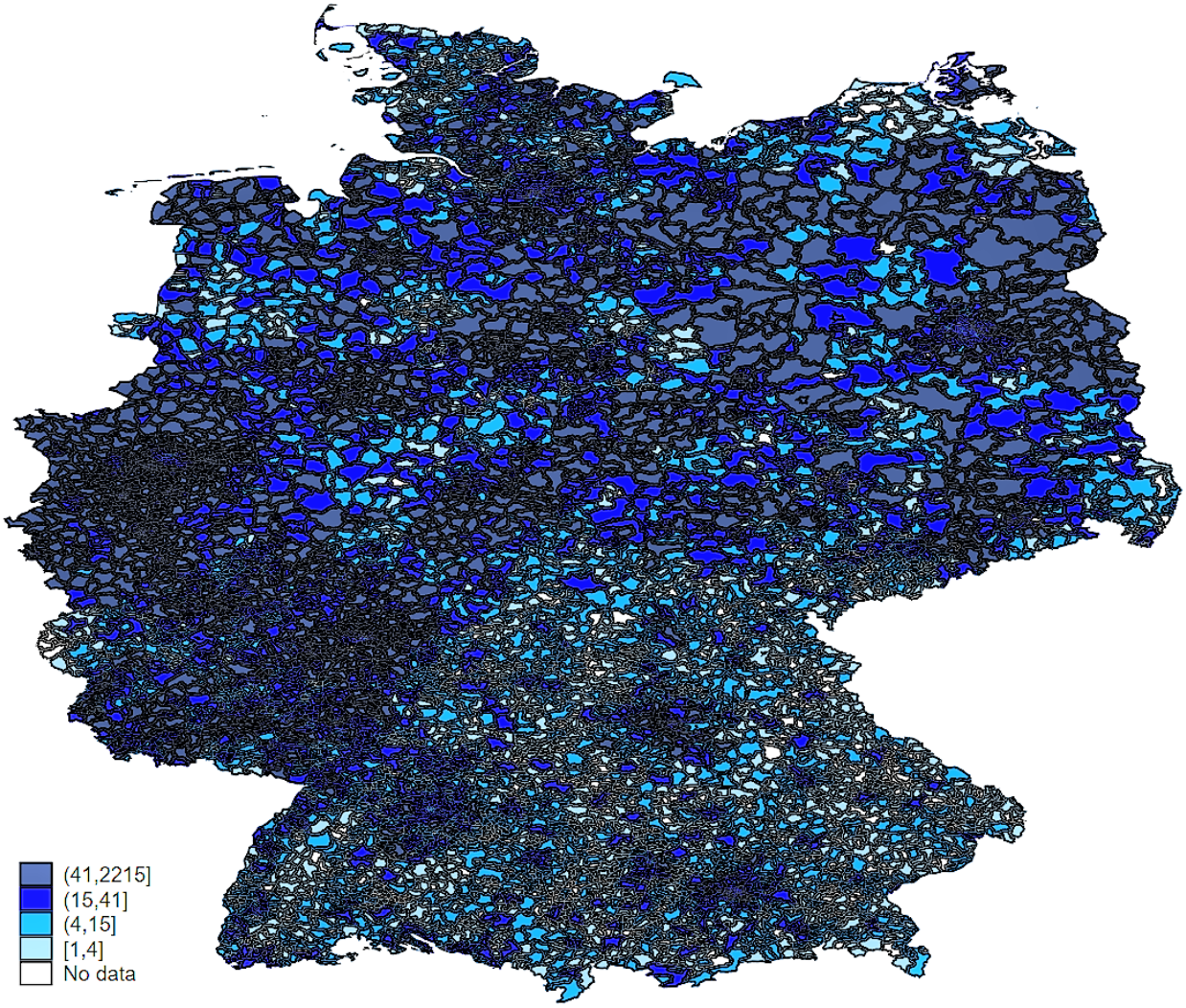
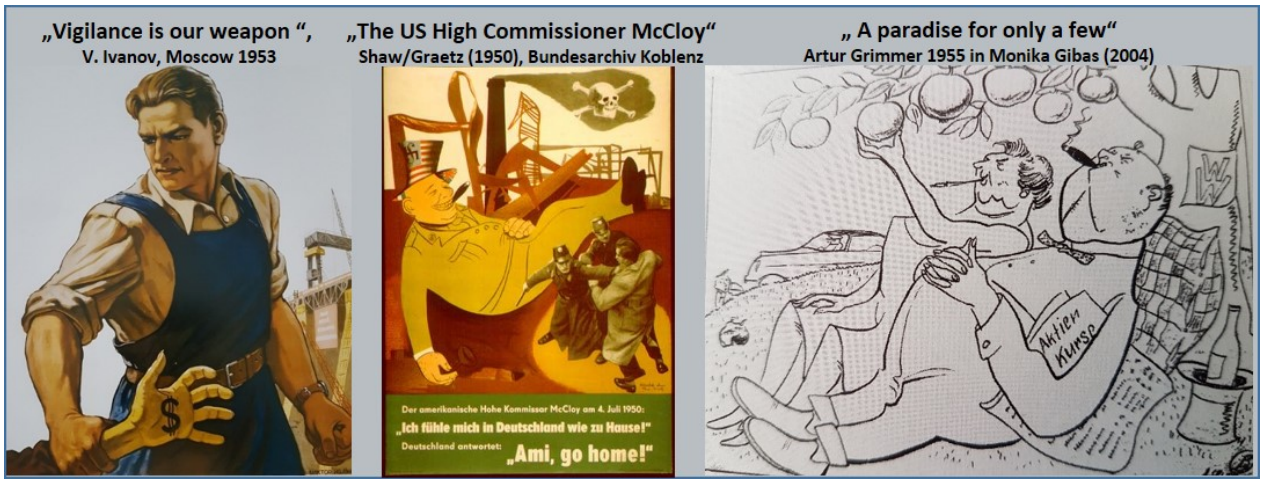


Figure 2: The Art of Propaganda

This figure shows propaganda posters that were used by the communist regimes to promote anti-capitalist, anti-American, pro-Russian, and pro-Vietnamese attitudes.

Panel A: Communist Propaganda against the Stock Market



Panel B: Communist Propaganda pro Allies

Source: Landesarchiv Baden-Württemberg, Deutsches Historisches Museum, Stadtgeschichtliches Museum Leipzig

Figure 3: Selection: Market Shares (Brokerage Bank)

This figure shows survey results provided by the international data and analytics group YouGov regarding the bank to which the sample brokerage belongs. Respondents state whether (a) they are customers of the bank, (b) they are former customers of the 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, and (f) they generally like this bank. Answers to (f) reflect the share of respondents with a answer higher than 3 on a scale from 1 ("I hate it") to 5 ("I love it"). In this figure, answers are shown separately for respondents in East and West Germany. None of the answers differ significantly between East and West Germans.

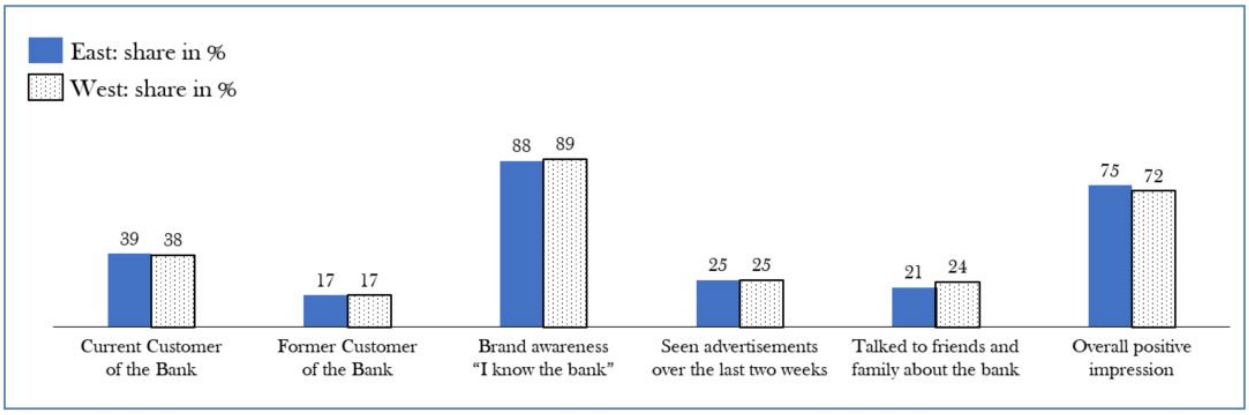


Figure 4: Stock-Market Return Expectations

The figure shows average German Stock Index (DAX) return expectations over the next six months, separately for East (N=148) and West German (N=1,724) respondents, based on answers to a survey conducted by the market research firm Sentix Behavioral Indices GbR. Respondents are asked about their midterm (6 months) return expectations about the DAX being bullish (-1), neutral (0), or bearish (1). Places of residence for respondents are available since September 2016. Monthly averages are constructed for East and West Germany separately based on all responses (four waves) within a given month.

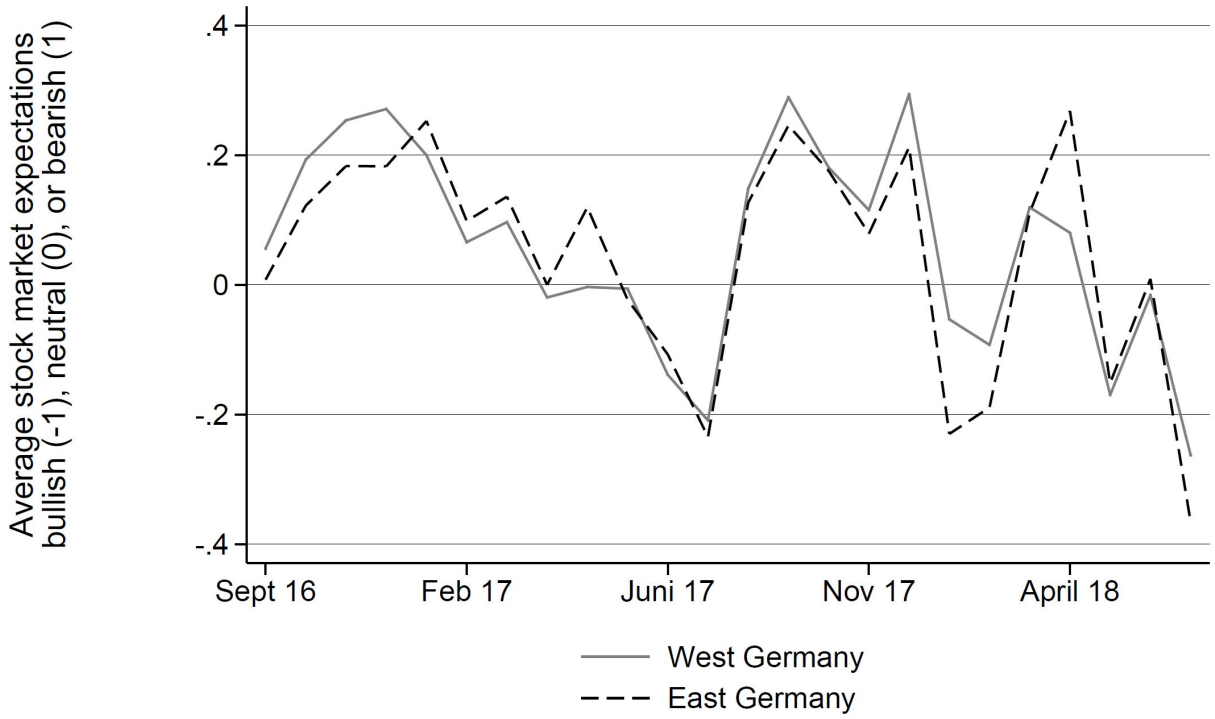


Figure 5: Attitudes towards Economic Systems and Stock-Market Participation

Panel A indicates attitudes towards economic systems in a survey of 1,529 Germans (1,283 West Germans and 246 East Germans) conducted by the opinion-poll institute Norstat in July 2018. The figure shows the fraction of people agreeing to the statements listed on the horizontal axis. Appendix Table A9 presents differences between East and West Germans as well as the corresponding t-statistics. Panel B shows average marginal effects on pro-communist attitudes in logit regressions with stock market participation as the dependent variable. The sample includes 1,600 East Germans surveyed by Norstat in December 2018. The independent variables are standardized survey responses capturing attitudes towards communism. Survey responses were elicited on a 4-point or 5-point Likert scale. The controls are gender, a categorical variable for age (6 groups), a categorical variable for income bracket (10 groups), a categorical variable for education (7 groups), a categorical variable for employment status (9 groups), and state fixed effects. The precise wording of the questions for both panels is provided in Appendix Table A8.

Panel A: Agreement to statements on socialism, capitalism and stock markets

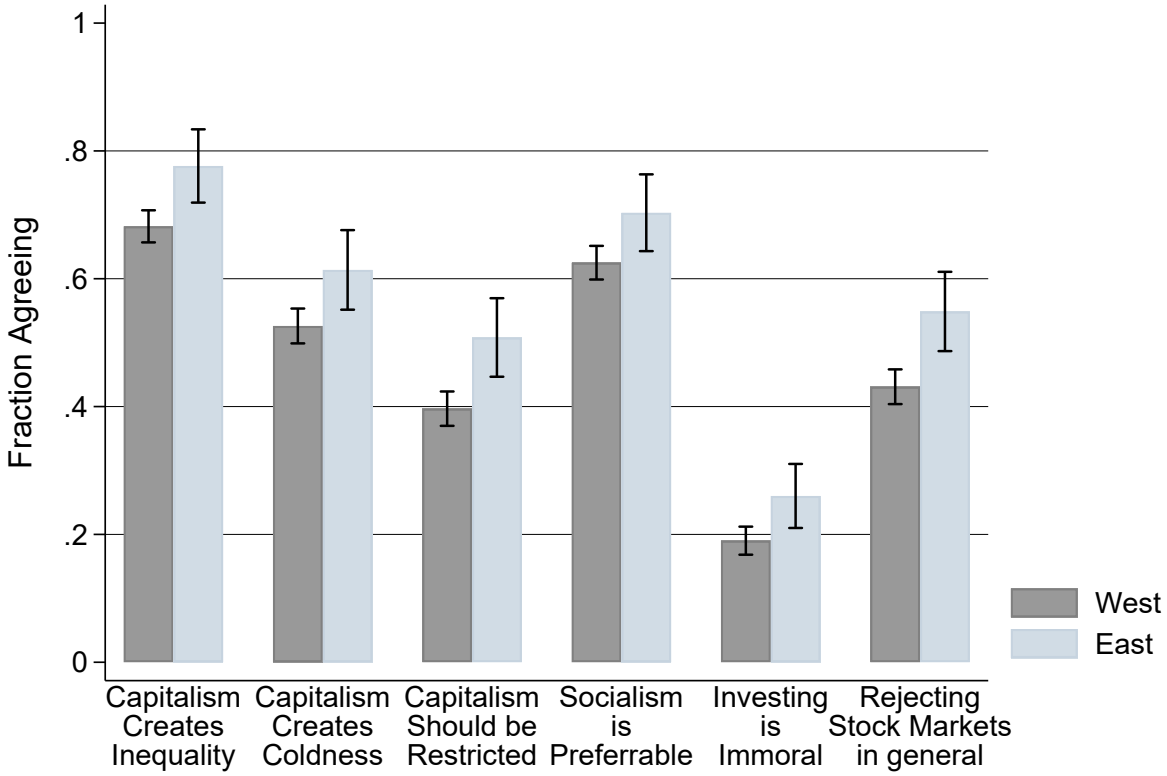


Figure 5: cont'd

Panel B: Stock-market participation and pro-communist attitudes within East Germany

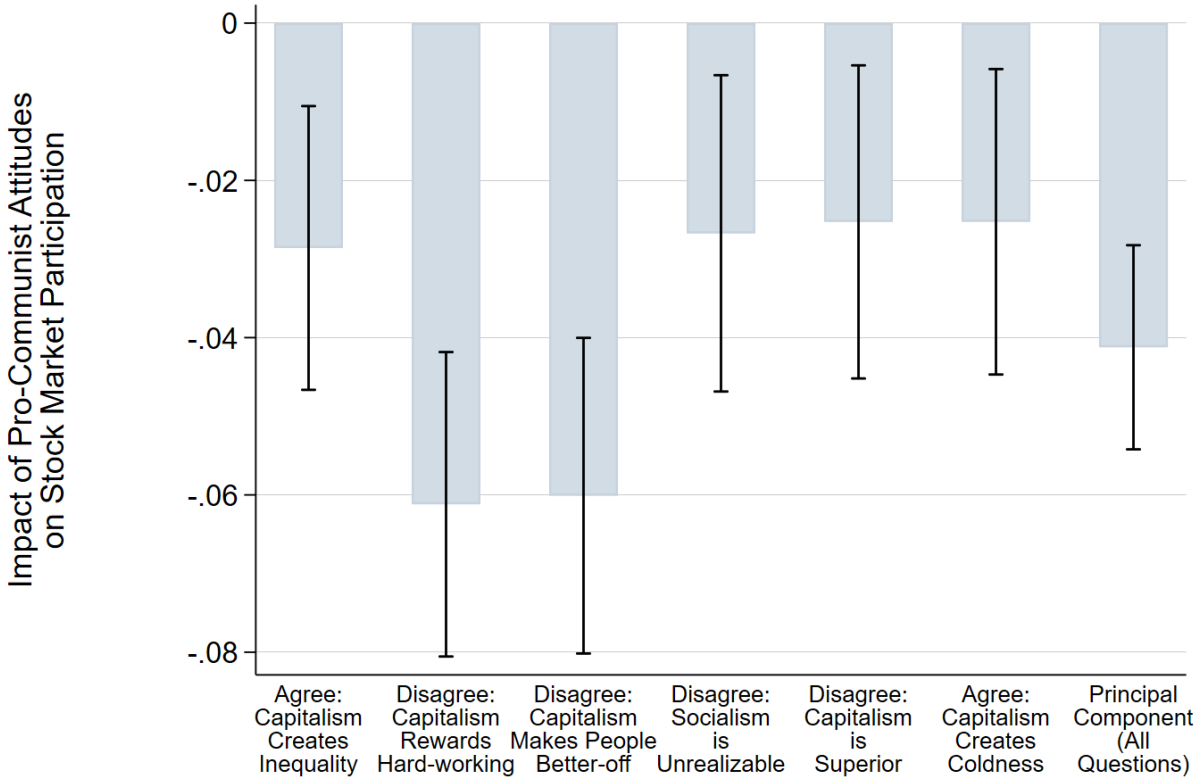
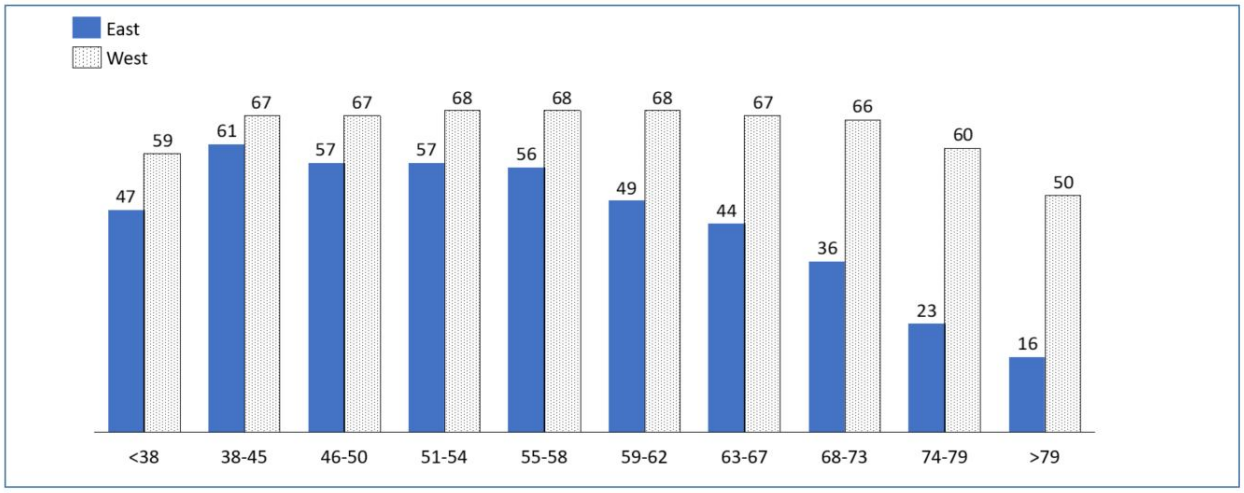


Figure 6: Stock-market participation by age

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

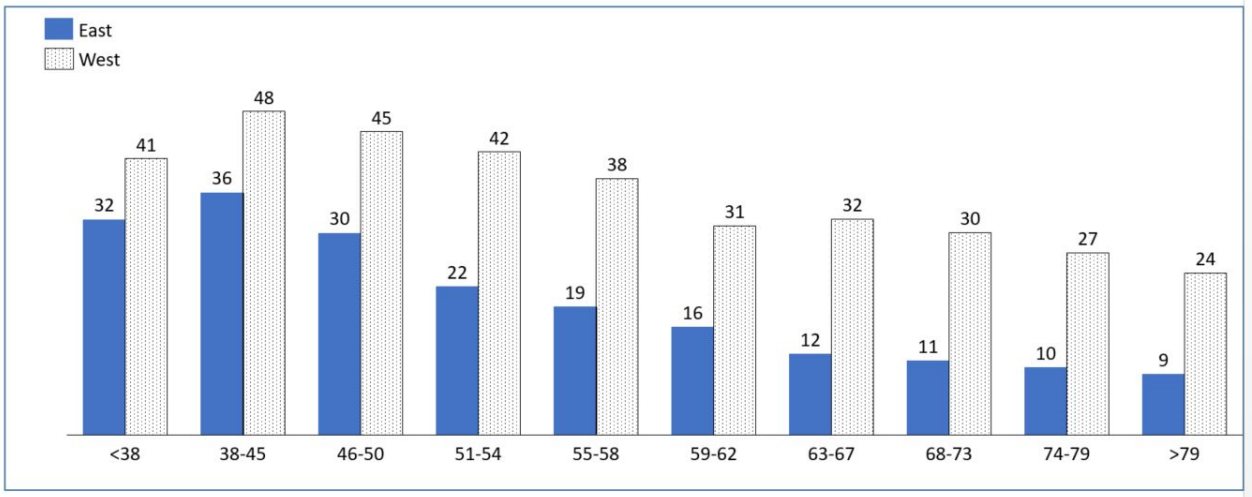


Figure 7: Small Border Traffic Zone

This figure shows the areas of East and West Germany that belonged to the "Kleiner Grenzverkehr", i.e., the "small border traffic" zone. FRG residents living in cities and districts listed as "close to the border" could visit areas listed as part of the "border circle of the GDR". Source: Ministry of Intra-German Relations (Bundesministerium für innerdeutsche Beziehungen).

Table 1: Summary Statistics (Brokerage Sample)

Panel A shows the number of observations, mean, standard deviation (sd), median (p50), 1^{st} percentile (p1), and 99^{th} percentile (p99) of all variables in the brokerage sample. The sample period is 2004-2012. Panel B shows East and West averages, the differences, and the corresponding p-values. All variables are defined in Appendix Table A1. The summary statistics for the **Bank Sample** are in Appendix Table A4.

Panel A: Summary statistics						
	Obs. (1)	Mean (2)	sd (3)	p50 (4)	p1 (5)	p99 (6)
1. Brokerage account data (individual-level)						
East	839,680	0.204	0.403	0.000	0.000	1.000
Gender (1=male)	839,680	0.526	0.499	1.000	0.000	1.000
Investor age (in years)	839,680	59.56	15.64	59.00	23.00	94.00
Married (1=yes)	839,680	0.582	0.493	1.000	0.000	1.000
Time account is open (in months)	839,680	74.223	32.576	74.000	7.000	137.00
Portfolio value (in Euro)	839,680	25,965	132,268	4,923.47	0.000	304,837
Stock-market participation (1=yes)	839,680	0.819	0.385	1.000	0.000	1.000
Fraction of stocks if participant	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
N. 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. Geographic 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
Total population	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
Financial literacy (0=low, 3=high)	698,373	2.679	0.327	2.750	1.000	3.000

Table 1: cont'd

Panel B: Differences	East German (1)	West German (2)	Difference (3)	p-value (4)
1. Brokerage account data				
Gender (1=male)	0.395	0.587	-0.191	0.000
Investor age (in years)	62.532	56.348	6.184	0.000
Married (1=yes)	0.601	0.577	0.024	0.000
Time account is open (in months)	69.124	75.531	-6.407	0.000
Income (1=low, 4=high)	2.109	2.516	-.407	0.000
Risk tolerance (1=low, 3=high)	1.494	1.744	-.249	0.000
Portfolio value (in Euro)	20,248.83	27,431.85	-7,183.02	0.000
Stock-market participation (1=yes)	0.609	0.873	-0.264	0.000
Fraction of stocks if participant	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
N. of assets in portfolio	3.185	4.764	-1.579	0.000
Fund fees (in %)	1.450	1.363	0.087	0.000
Portfolio concentration (Herfindahl)	0.738	0.681	0.057	0.000
Fraction of bank-owned products	0.440	0.412	0.028	0.009
2. Geographic 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
Number of local firms	949.47	893.18	56.29	0.480
High-school degree	0.137	0.165	-0.028	0.000
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
Financial literacy (0=low, 3=high)	2.609	2.692	-0.083	0.237

Table 2: Differences in Investment Behavior (Brokerage Sample)

All estimations use the brokerage data from June 2004 to December 2012. The coefficients are average marginal effects from a logit regression in column 1, and OLS estimates in columns 2 and 3. Stock-market participation (in column 1) is an indicator equal to one if an investor holds stocks or equity funds in her portfolio in a given year. Fraction of stocks (in column 2) is conditional on stock-market participation. In column (3), the sample is restricted to accounts with bond holding information. East is an indicator equal to one if an investor lives in East Germany. All variables are described in detail in Appendix Table A1. The z-statistics (in column 1) and the t-statistics (in columns 2 and 3) are based on robust standard errors clustered by municipality.

Sample:	Brokerage Sample		
Dependent Variable:	Stock-market participation	Fraction of stocks if participant	Fraction of bonds
	(1)	(2)	(3)
East	–0.156***	–0.072***	0.160***
	(–13.47)	(–7.80)	(9.77)
Gender (1=male)	0.073***	0.051***	–0.081***
	(22.76)	(16.08)	(–22.14)
Investor age	–0.110***	0.029***	0.141***
	(–19.05)	(3.25)	(15.71)
Married (1=yes)	0.042***	0.026***	–0.041***
	(19.26)	(8.14)	(–12.79)
Ln(Portfolio value)	–0.011***	0.042***	0.034***
	(–8.37)	(33.83)	(21.92)
Ln(Number of local banks)	0.007	–0.019**	0.020**
	(0.81)	(–2.56)	(2.43)
Ln(Total population)	0.008	0.005	–0.010***
	(1.63)	(1.64)	(–2.85)
Time account is open	0.124***	–0.021***	–0.096***
	(38.70)	(–6.84)	(–19.01)
Ln(Real estate wealth)	–0.009***	–0.002	0.003***
	(–6.65)	(–1.47)	(3.55)
High-school degree	0.133	0.013	–0.232***
	(1.23)	(0.22)	(–2.61)
Ln(GDP per capita)	0.029*	–0.014	0.023
	(1.90)	(–1.08)	(1.62)
Ln(Number of local firms)	0.004	–0.006*	–0.004
	(0.83)	(–1.74)	(–0.79)
Year FE	yes	yes	yes
Pseudo/Adj. R^2	0.19	0.09	0.25
West mean	0.873	0.735	0.107
Observations	839,680	687,464	839,272

Table 3: Differences in Investment Behavior (Bank Sample)

Results in this table are based on cross-sectional bank data from June 2017. We report average marginal effects from logit regressions in columns (1) and (2), and OLS estimates in column (3). Stock-market participation is an indicator equal to one if an investor holds stocks in her portfolio in a given year. Stock-market participation in column (2) is conditional on having a portfolio, and fraction of stocks in column (3) is further conditional on stock-market participation. Information on bond holdings are not available in the bank sample. East is an indicator equal to one if an investor lives in East Germany. All variables are described in detail in Appendix Table A1. z-statistics (columns (1)&(2)) and t-statistics (column (3)) are based on robust standard errors clustered by county.

Sample:	Bank Sample		
Dependent Variable:	Stock-market participation (1)	Participation if portfolio (2)	Fraction stocks if participant (3)
East	-0.055***	-0.145***	-0.154***
	(-4.08)	(-4.23)	(-4.80)
Gender (1=male)	0.075***	0.126***	0.154***
	(9.11)	(4.52)	(6.10)
Investor age	0.007***	0.017***	0.010**
	(3.39)	(3.75)	(2.59)
Investor age squared	-0.000**	-0.000***	-0.000***
	(-2.55)	(-3.44)	(-2.44)
Married (1=yes)	-0.003	-0.016	-0.010
	(-0.46)	(-0.61)	(-0.39)
Employed (1=yes)	0.013*	-0.017	-0.030
	(1.69)	(-0.62)	(-1.15)
Trainee (1=yes)	-0.055**	-0.028	-0.090*
	(-2.47)	(-0.49)	(-1.75)
Retiree (1=yes)	-0.024	0.058	-0.039
	(-1.15)	(-0.97)	(-0.70)
Online banking (1=yes)	0.145***	0.180***	0.211***
	(10.82)	(5.34)	(6.54)
Mortgage (1=yes)	-0.033**	-0.103**	-0.111**
	(-2.08)	(-2.27)	(-2.49)
Relationship with bank	-0.001	-0.004***	-0.005***
	(-1.64)	(-2.89)	(-4.50)
Credit score	-2.519***	-1.733	-0.884
	(-3.27)	(-2.01)	(-1.04)
Ln(Income)	-0.013***	-0.000	-0.011***
	(-9.93)	(0.919)	(-3.05)
Ln(Savings)	0.026***	0.004	-0.001
	(15.07)	(0.76)	(-0.25)
Ln(Portfolio value)		0.039***	0.013***
		(9.07)	(3.54)
Pseudo/Adj. R^2	0.157	0.143	0.148
Observations	6,903	1,445	1,340

Table 4: Movers

All estimations use the bank data and survey results obtained from the same bank. The coefficients are average marginal effects from logit regressions, with stock-market participation as the dependent variable. Stock-market participation is an indicator equal to one if an investor holds stocks in her portfolio in a given year. East is an indicator equal to one if an investor lives in East Germany. Mover is an indicator equal to one if an investor has moved from East to West Germany. Moved 20 years ago is an indicator equal to one if an investor has moved from East to West Germany at least 20 years ago. In column (2), we exclude all East Germans and only compare West Germans to former East German investors who have moved to and now live in West Germany. In column (3), we additionally exclude all East Germans who moved to West Germany later than 20 years ago. We include the same set of control variables as in Table 3. All variables are described in detail in Appendix Table A1. The z-statistics are based on robust standard errors clustered by county.

Dependent Variable:	Stock-market participation		
Sample:	Bank Sample	Bank Sample: West Germans Only	
	(1)	(2)	(3)
East	-0.169***		
	(-4.00)		
Mover	-0.098**	-0.115**	
	(-2.01)	(-2.03)	
Moved 20 years ago			-0.176***
			(-3.20)
Control variables	yes	yes	yes
Pseudo R^2	0.354	0.333	0.335
Observations	241	198	175

Table 5: Capitalist versus Communist Stocks

All estimations use the brokerage data from June 2004 to December 2012. The coefficient estimates are from tobit regressions where the dependent variable is the fraction of financial companies (column 1), the fraction of US companies (column 2), the fraction of Chinese, Russian, or Vietnamese companies (column 3), and the fraction of (formerly) state-owned companies (column 4) in an investor's portfolio. East is an indicator equal to one if an investor lives in East Germany. We include the same control variables as in Table 2. All variables are described in detail in Appendix Table A1. The t-statistics are based on robust standard errors clustered by municipality.

	Financial firms	US firms	Chinese, Russian, or Vietn. firms	State-owned firms
	(1)	(2)	(3)	(4)
East	–0.076***	–0.048***	0.104***	0.041***
	(–4.74)	(–2.71)	(4.21)	(3.11)
Gender (1=male)	0.083***	0.125***	0.143***	–0.047***
	(14.47)	(18.56)	(9.40)	(–14.37)
Investor age	–0.279***	–0.265***	–0.190***	0.066***
	(–22.49)	(–15.93)	(–6.52)	(8.08)
Married (1=yes)	0.024***	–0.002	–0.003	–0.001
	(4.11)	(–0.31)	(–0.21)	(–0.34)
Portfolio value	0.119***	0.066***	0.137***	0.002**
	(59.71)	(27.16)	(35.63)	(1.96)
Ln(N. 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)	–0.003	–0.005***	–0.005*	0.003*
	(–1.10)	(–2.69)	(–1.65)	(1.84)
High-school degree	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(N. of local firms)	0.023***	0.012*	0.002	–0.001
	(4.15)	(1.85)	(0.18)	(–0.39)
Year FE	yes	yes	yes	yes
Pseudo R^2	0.096	0.036	0.088	0.019
West Mean	0.102	0.061	0.005	0.188
Observations	622,777	622,777	622,777	551,624

Table 6: Intensity of Exposure

All estimations use the brokerage data from June 2004 to December 2012. The coefficients are linear probability regressions, with stock-market participation as the dependent variable. The corresponding results for the fractions of stocks and bonds are reported in Appendix Table A12. Stock-market participation is an indicator equal to one if an investor holds stocks or equity funds in her portfolio in a given year. East is an indicator equal to one if an investor lives in East Germany. In addition to the full set of control variables from Table 2, we include interactions of the East dummy with an indicator for being 50 years of age or older (in column 1), with an indicator for locations outside the "Small Border Traffic" zone (Kleiner Grenzverkehr) (in column 2). In column 3, we include both interactions. In columns 2 and 3, we also add the baseline indicator for being age 50 and above. z-stats based on robust standard errors clustered by municipality are presented in parentheses.

Dependent Variable:	Stock-market participation		
	Age interaction (1)	Distance interaction (2)	All interactions (3)
East	–0.101***	–0.143***	–0.041*
	(–6.78)	(–4.92)	(–1.67)
East × Above 50	–0.144***		–0.136***
	(–11.15)		(–10.55)
East × Distance		–0.113***	–0.106***
		(–2.91)	(–2.85)
Above 50	0.038***		0.036***
	(7.68)		(7.49)
Control variables	yes	yes	yes
Year FE	yes	yes	yes
Adj. R^2	0.19	0.19	0.19
West Mean	0.873	0.873	0.873
Observations	839,680	837,121	837,121

Table 7: Negative and Positive Experiences

All estimations use the brokerage data from June 2004 to December 2012. The coefficients are from linear probability regressions, with stock-market participation as the dependent variable. The corresponding results for the fractions of stocks and bonds are reported in Appendix Table A13. Stock-market participation is an indicator equal to one if an investor holds stocks or equity funds in her portfolio in a given year. East is an indicator equal to one if an investor lives in East Germany. In addition to the full set of control variables from Table 2, we include interactions of the East dummy with different proxies for negative (Panel A) or positive (Panel B) tags. In Panel A, these proxies are: an indicator for heavily polluted GDR counties according to the 1990 report of the German ministry of environmental affairs (in column 1), the fraction of Catholics and Protestants in a county according to the 2011 census (in column 2), and an indicator for counties in the former GDR that did not receive West German TV signals (in column 3). In Panel B, the proxies are: an indicator for cities that were renamed during the GDR regime (in column 1), namely, Chemnitz (Karl-Marx-Stadt), Kriegsdorf (Friedensdorf), Neuhardenberg (Marxwalde), Werminghoff (Knappenrode), and Eisenhüttenstadt (Stalinstadt); the fraction of voluntary STASI participation in county during the GDR regime (column 2), the fraction of survey respondents in a county who state that the former political system of the GDR had many positive aspects (column 3), and an indicator equal to one if an Olympic medal winner as of the Wikipedia list of the GDR's Olympic champions was born in the same municipality than an East German investor (column 4). We multiply the Olympic medal indicator with the inverse population ratio to account for higher visibility in smaller areas. All variables are described in detail in Appendix Table A1. z-stats based on robust standard errors clustered by municipality are presented in parentheses.

Panel A: Negative Tagging

Dependent Variable:	Stock-market participation		
	Pollution (1)	Religion (2)	No West-TV (3)
East	–0.226***	–0.361***	–0.221***
	(–10.78)	(–7.31)	(–10.68)
East × Pollution	0.126**		
	(2.12)		
East × Religion		0.007***	
		(4.10)	
East × No West TV			0.167***
			(5.92)
Control variables	yes	yes	yes
Year FE	yes	yes	yes
Adj. R^2	0.18	0.19	0.18
West Mean	0.873	0.873	0.873
Observations	839,680	839,680	839,680

Table 7: cont'd

Panel B: Positive Tagging

Dependent Variable:	Stock-market participation			
	Renamed city	Voluntary STASI	Liked GDR	Olympic champion
	(1)	(2)	(3)	(4)
East	–0.204***	–0.140***	–0.104***	–0.216***
	(–11.02)	(–5.11)	(–4.55)	(–13.27)
East × Renamed city	–0.244***			
	(–3.17)			
East × STASI		–0.188***		
		(–3.03)		
East × Liked GDR politics			–0.468***	
			(–5.94)	
East × Olympic champion				–0.231**
				(–2.10)
Urban				–0.017
				(-1.55)
Control variables	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Pseudo R^2	0.19	0.19	0.19	0.20
West Mean	0.873	0.873	0.873	0.873
Observations	839,680	839,680	839,461	586,585

Table 8: Trigger Points: Election Years

All estimations use the brokerage data from June 2004 to December 2012. The coefficients are from a linear probability model in column (1), and OLS regressions in columns (2) and (3). Stock-market participation (in column 1) is an indicator equal to one if an investor holds stocks or equity funds in her portfolio in a given year. Fraction of stocks (in column 2) is conditional on stock-market participation. East is an indicator equal to one if an investor lives in East Germany. In addition to the full set of control variables from Table 2, we include interactions of the East dummy with an indicator for federal election years (2005 and 2009 in our sample). All variables are described in detail in Appendix Table A1. The z-statistics (in column 1) and t-statistics (in columns 2 and 3) are based on robust standard errors clustered by municipality.

Dependent Variable:	Stock-market participation (1)	Fraction of stocks if participant (2)	Fraction of bonds (3)
East	–0.208***	–0.073***	0.153***
	(–10.47)	(–8.00)	(9.47)
East × Election year	–0.020***	0.004	0.025***
	(–6.17)	(0.92)	(4.96)
Control variables	yes	yes	yes
Year FE	yes	yes	yes
Pseudo/Adj. R^2	0.18	0.09	0.25
West Mean	0.873	0.735	0.107
Observations	839,680	687,464	839,272

Table 9: Are Anti-Capitalist Attitudes Costly?

All estimations use the brokerage data from June 2004 to December 2012. In Panel A, we use equal- or value-weighted returns, respectively, of a difference portfolio that is long in East German investors' stock holdings and short in West German investors' stock holdings as dependent variables. Performance alphas are calculated using the Global CAPM market factor in columns (1) and (4), the Global Fama and French (1993) factors in columns (2) and (5), and the Global Carhart (1997) four-factor model in columns (3) and (6). Global risk factors are from Kenneth French's website. Panel B shows average marginal effects from a logit regression in column (1), and OLS estimates in columns (2) to (5). The dependent variables are: an indicator equal to one if an investor holds index funds or ETFs (in column 1), the number of assets in an investor's portfolio (in column 2), the average fund fees an investor pays her all-equity funds (in column 3), the Herfindahl index of an investor's stock holdings (in column 4), and the fraction of bank-owned products an investor holds in her portfolio (in column 5). We regress the dependent variables on the East German dummy variable and the same set of control variables as in Table 2. The t-stats are based on robust standard errors clustered by municipality.

Panel A: Monthly performance alphas

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

Table 9: cont'd

Panel B: Other costs					
	Passive investments (1)	# of assets (2)	Fund fees (3)	Herfindahl index (4)	Bank owned products (5)
East	–0.017***	–1.509***	0.051***	0.038***	0.031*
	(–4.47)	(–4.74)	(4.71)	(2.72)	(1.73)
Gender (1=male)	0.014***	1.023***	–0.002	–0.036***	–0.060***
	(13.99)	(15.61)	(–0.38)	(–14.28)	(–12.93)
Investor age	–0.044***	–0.196	0.059***	0.043***	0.045***
	(–23.50)	(–1.01)	(4.13)	(4.77)	(4.35)
Married (1=yes)	0.007***	0.314***	–0.002	–0.003	–0.025***
	(6.08)	(5.41)	(–0.28)	(–1.33)	(–5.65)
Ln(Portfolio value)	0.010***	1.137***	–0.011***	–0.075***	–0.090***
	(24.63)	(31.79)	(–6.44)	(–80.25)	(–72.80)
Ln(N. of local banks)	0.004**	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	0.008***	1.798***	–0.000	–0.050***	–0.122***
	(6.33)	(17.41)	(–0.03)	(–13.20)	(–16.91)
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	0.061***	2.149	–0.207**	–0.019	–0.087
	(2.81)	(1.16)	(–2.54)	(–0.31)	(–0.86)
Ln(GDP per capita)	0.012***	0.524**	–0.011	–0.010	–0.012
	(2.85)	(2.22)	(–0.68)	(–0.90)	(–0.53)
Ln(N. of local firms)	0.003***	0.157*	–0.012***	–0.005	0.002
	(3.01)	(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 (For Online Publication)

This Online Appendix contains additional empirical results in Section A and a theoretical framework for our analyses in Section B.

A Additional Results

In Table A1 of this section, we provide an overview of all data sources used in the empirical analysis as well as a detailed variable description. Table A2 repeats the analysis from Table 2, column (2), and from Table 3, column (3), of the main paper, but we do not condition on investors participating in the stock market. Instead, we set the fraction of stocks to zero if an investor does not participate in the stock market. Results are robust. Table A3 shows that East Germans participate less in the stock market than West Germans for a subsample of investors living in the city of Berlin. Table A4 shows summary statistics for the bank data, and Table A5 repeats the analysis of Table 3 in the main paper but includes additional (non-)linear wealth controls.

In Appendix Table A6, we investigate whether differences in trust, risk tolerance, familiarity, and financial literacy explain the significant differences between East and West Germans' investment behavior. Risk tolerance and trust are known to exert significant influence on investment behavior (Guiso, Sapienza, and Zingales (2006)), and prior research has found East Germans to be more risk averse and to trust others less than West Germans (Heineck and Süssmuth (2013); Fuchs-Schuendeln and Haliassos (2015)). To test whether risk tolerance and trust drive the stock-market participation gap between East and West Germans, we consider the following two proxies: First, the brokerage firm assesses the risk attitude of their clients when they open their account, on a scale ranging from 1 (conservative) to 3 (speculative). We obtain these data for a sub-sample of 48,123 investors.[35] Second, we use a measure of trust in the stock market, measured on a 7-point Likert scale, in a survey obtained from the bank data (see Table A1, Panel B).

In columns (1) and (2) of Panel A, we add controls for risk tolerance and trust to our baseline specification. Risk tolerance has the expected positive influence on stock-market participation, but we still observe a significant stock-market participation gap between East and West German investors of 17.2 pp. Similarly, trust positively predicts stock-market participation, but the estimated gap between East and West Germans still amounts to 20.2 pp after including the corresponding control. Panels B and C show that, conditional on these controls, East German investors also hold a lower fraction of stocks in their portfolios, while they hold a higher fraction of bonds.

Next we address whether differences in familiarity or financial literacy might explain the results. 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)). We investigate whether differences in familiarity with stocks as well as differences in financial literacy between East and West Germans potentially account for the stock market participation gap. In columns (3) and (4) of Appendix Table A6, we include survey-based measures of familiarity ("The stock market is a closed book to me") and the basic financial literacy score of van Rooij, Lusardi, and Alessie (2011) as additional control variables. Both variables are aggregated at the county level. We still observe a stock-market participation gap of 18.6 to 19.2 pp between East and West German investors that is not explained by the addition of these variables (Panel A). On the intensive margin, East German investors hold about 9 pp fewer

[35] Univariate statistics in Panel B of Table 1 show that West Germans are significantly more risk tolerant than East Germans (1.74 versus 1.49 on average), confirming our survey results reported below.

stocks (Panel B) and about 20 pp more bonds in their portfolios conditional on these controls (Panel C).[36]

Finally, we add data on net-income brackets, as assessed by the brokerage firm at account opening, as a further (complementary) control. Brackets range from 1 (below 1,000 Euro per month) to 4 (above 3,000 Euro per month), and are available for a sub-sample of 48,123 investors. For comparison, in our bank data the median income is 1,326 Euro; so the lower three income bins should capture typical income levels. As shown in column (5) of Panel A in Appendix Table A6, East German investors are estimated to be 23.2 pp less likely to participate in the stock market than West German investors even after controlling for income differentials. They also hold 15.2 pp fewer stocks in their portfolios (Panel B), and 20.6 pp more bonds conditional on this additional control (Panel C).

In column (6) of Appendix Table A6, we include all additional controls at the same time. Even though the resulting intersection of observations drops to 117,288, we still estimate a significant stock-market participation gap of 12.8 pp between East and West German investors (Panel A), which amounts to 24.5% relative to the mean stock-market participation in this sample. Thus, in relative terms, the effect is almost unchanged. Similarly, also the results on the intensive margin hold up when all additional variables are included (see Panels B and C). Note that the number of observations varies across columns since some variables are not available for all counties in the sample.

In Table A7, we use data from our first nationwide survey, conducted in July 2018, where we asked respondents (a) whether they believe the stock market will improve over the next months, (b) whether they believe the stock market is overvalued, and (c) what annual return they would expect when investing in the stock market over a time horizon of 30 years. We conduct OLS regressions and show that East and West Germans do not differ significantly with respect to these stock market expectations. Table A8 provides the statements used in our two field surveys conducted in July 2018 (all Germans) and December 2018 (only East Germans). Panel A of Table A9 shows univariate difference in survey responses between East and West Germans, while Panel B of Table A9 shows results from regressions of East Germans' stock market participation (dependent variable) on various attitudes regarding capitalism and communism.

Table A10 contains the Top 10 holdings of stocks belonging to the financial industry, the United States, and formerly communist countries. In Table A11 we show cross-correlations of all proxies for intensity and emotional tagging of experiencing communism. Tables A12 and A13 mirror the results presented in Tables 6 and 7 in the main paper for the fraction of stock and bond holdings as dependent variables.

[36] Relatedly, we have also considered differences in the access to the stock market, for example through employee stocks. While we do not have information on whether investors in our sample hold employee stocks, data from the German stock institute (DAI) suggest that the fraction of employee stock holders in East and West Germany does not differ much between 1997 and 2016 (22% vs. 20%).

Table A1: Data sources and variable definitions

(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) KFL: Kenneth French's data library,

(xii) DB: Deutsche Bundesbank,

(xiii) 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,

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

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

(xvi) YouGov: Panel Data provided by the international data and analytics group YouGov on brand perception of various companies in Germany,

(xvii) Sentix: Stock market expectations data based on a survey conducted by the German market research institute Sentix Behavioral Indices GbR on a weekly basis among 1,8999 respondents,

(xviii) DS: Datastream,

(xix) Norstat I: Data of a representative survey among 1,598 Germans in July 2018 conducted with the help of the German polling institute NorStat,

(xx) Norstat II: Data of a representative survey among 1,600 East Germans in December 2018 conducted with the help of the German polling institute NorStat.

Table A1: cont'd

Variable name	Description	Source
Above 50	Indicator equal to one if an investor is 50 years old, and zero otherwise.	BRO, BAC
Chinese, Russian, 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 security.	BRO, DS
Credit score	A client's default probability in the bank's internal scoring.	BAC
Distance	Indicator equal to one if the shortest distance between an East German county and the former border to West Germany exceeds 100 km, i. e., it is outside the "local border traffic" zone.	MC
East	Indicator equal to one if an individual lives in East Germany (i. e., Brandenburg, Mecklenburg-Western Pomerania, Saxony, Saxony-Anhalt, Thuringia).	GFSO
East Berlin	Indicator equal to one if an investor lives in East Berlin (GDR) before Reunification (i.e., Friedrichshain, Lichtenberg, Marzahn-Hellersdorf, Mitte, Pankow, Treptow-Köpenick).	MC
Election year	Indicator equal to one for federal election years (2005 and 2009 during our sample period).	MC
Employed (1=yes)	Indicator equal to one if a client is employed.	BAC
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 on a 7 point Likert scale (7=I fully agree).	BS
Financial literacy	County-level average of financial-literacy scores. The score uses the three questions of van Rooij, Lusardi, and Alessie (2011) on inflation, interest rates, and risk diversification. It counts the number of correct answers, from 0 (low) to 3 (high literacy).	BS
Financial firms	Fraction of financial-industry firms in an investor's portfolio. Single stock holdings were classified using ICBIC industry code "8000" for financials.	BRO, DS
Fraction of bank-owned products	Share of funds in mutual fund holdings that is issued by the bank's own investment company	BRO
Fraction of bonds	Fraction of bonds in an investor's portfolio.	BRO
Fraction of stocks if participant	Fraction of stocks in an investor's portfolio conditional on participating in the stock market.	BRO, BAC
Fund fees	Average fund fee (total expense ratio) 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 (1=male)	Indicator equal to one if a client is male, and zero otherwise.	BRO, BAC

Table A1: cont'd

Variable name	Description	Source
High-school degree	Share of high-school graduates in a county acc. to the 2011 census.	GFSO
HML^{Global}	Monthly Fama-French value factor for the global stock market.	KFL
Income	Self-reported monthly income of an investor ranging from 1 (below 1,000 Euro) to 4 (above 3,000 Euro).	BRO
Income (in Euro)	Client's income as proxied by the bank based on regular monthly inflows to the current account.	BAC
Investor age	Age of a client in years.	BRO, BAC
Investor age squared	Squared age of a client in years.	BRO, BAC
Liked GDR politics	Fraction of survey respondents in a county who agree that the political system of the GDR had its strengths. The exact wording is: *"If you compare today's social and political conditions to those in the former GDR - Do you think the the GDR had particular strengths with regard to the political system?"*. Respondents could agree, not agree, or choose "don't know."	ID
Ln(GDP per capita)	Natural logarithm of GDP per capita on the county level.	GFSO
Ln(Income)	Natural logarithm of 'Income (in Euro)'.	BAC
Ln(Number of local banks)	Natural logarithm of ('Number of local banks' plus one).	DB
Ln(Number of local firms)	Natural logarithm of ('Number of local firms' plus one).	GFSO
Ln(Portfolio value)	Natural logarithm of total end-of-year value of a client's portfolio (in Euro). End-of-year values are first winsorized at the top and bottom 1%.	BRO, BAC
Ln(Real-estate wealth)	Natural logarithm of ('Real estate wealth' plus one)	SAVE
Ln(Savings)	Natural logarithm of 'Savings (in Euro)'.	BAC
Ln(Total population)	Natural logarithm of 'Total population'.	GFSO
Married (1=yes)	Indicator equal to one if the client is married, and zero otherwise.	BRO, BAC
$MKTRF^{Global}$	Monthly Fama-French global market factor.	KFL
Mortgage (1=yes)	Indicator equal to one if the client holds a mortgage with the bank, and zero otherwise.	BAC
Mover	Indicator equal to one if the client has moved from East to West Germany after the fall of the Berlin Wall in 1989, and zero otherwise. Clients were asked whether and when they have lived in East Germany.	BS
Moved 20 years ago	Indicator equal to one if an investor has moved from East to West Germany at least 20 years ago, and zero otherwise.	BS

Table A1: cont'd

Variable name	Description	Source
No West TV	Indicator equal to one for the GDR municipalities that did not receive West German TV signals: 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
N. of assets in portfolio	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
Number of local firms	Number of registered firms in a given municipality and year.	GFSO
Olympic champion	Indicator equal to one if there is an Olympic champion in the same municipality than an East German investor. Olympic champions are defined according to Wikipedia's lists for East German athletes at both summer games (`https://de.wikipedia.org/wiki/Liste_der_erfolgreichsten_Sommerolympioniken`) and winter games (`https://de.wikipedia.org/wiki/Liste_der_erfolgreichsten_Winterolympioniken`). We only consider athletes who started for the GDR, not the united German team. The indicator is multiplied by 1-(total population/max(total population)) to account for the fact that Olympic champions are more visible in smaller municipalities.	MC, Wiki
Online banking (1=yes)	Indicator equal to one if the client has access to online banking, and zero otherwise.	BAC
Passive investments	Indicator equal to one if an investor holds index funds or ETFs in her portfolio in a given year.	Broker, MS
Pollution	Indicator equal to one for the most polluted municipalities in the GDR. According to a press release of the German Ministry of Environmental Affairs (1990), these are: Bad Blankenburg, Bad Dürrenberg, Bitterfeld, Buna, Dessau, Dresden, Dresden-Kaditz, Erfurt-Kühnhausen, Freiberg, Leuna, Magdeburg, Röblingen, Schmilka, Thierbach, Wittenberg/Piesteritz, Zehren.	GMEA
Portfolio concentration	Herfindahl index of an investor's stock holdings in a given year.	BRO
Portfolio value	Total end-of-year value of a client's portfolio (in Euro).	BRO, BAC
Real estate (1=yes)	Indicator equal to one if the client owns a house, and zero otherwise.	BS
Real-estate wealth	Average self-reported real-estate wealth in a county, elicited by the SAVE household survey.	SAVE

Table A1: cont'd

Variable name	Description	Source
Relationship with bank	Number of years the client has a business relation with the bank.	BAC
Religion	Fraction of Catholics and Protestants in an investor's county according to the 2011 census.	GFSO
Renamed city	Indicator equal to one if an investor lives in one of the cities renamed during the GDR regime: Chemnitz (Karl-Marx-Stadt), Kriegsdorf (Friedensdorf), Neuhardenberg (Marxwalde), Werminghof (Knappenrode), and Eisenhuettenstadt (Stalinstadt).	Wiki
Retiree (1=yes)	Indicator equal to one if the client is retired, and zero otherwise.	BAC
Risk attitude	Client's answer to the question how much she agrees with the statement "I do not mind taking risk regarding investments" on a 1 to 7 scale (7="I fully agree").	BS
Risk tolerance	Client's self-reported individual risk tolerance on a scale from 1 (low) to 3 (high) assessed when her brokerage account is opened.	BRO
Savings (in Euro)	Client's average positive balance on her savings account.	BAC
SMB^{Global}	Monthly Fama-French size factor for the global stock market.	KFL
STASI	Fraction of voluntary collaborators (Informelle Mitarbeiter, IM) of the secret police (Staatssicherheit, STASI) in an investor's county during the GDR regime.	ECB
State-owned firms	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 stocks or equity funds in her portfolio. For the bank data set (BAC), we use a dummy variable equal to one if an investor holds stocks since we can not distinguish equity and bond funds in the data set.)	BRO, BAC
Time account is open	Number of months since a brokerage account was opened.	BRO
Total population	The number of inhabitants per municipality.	GFSO
Trainee (1=yes)	Indicator equal to one if the client is a trainee, and zero otherwise.	BAC
Trust	County-level average of responses to the statement "I have confidence in securities markets." on a 1-7 scale (7 = I fully agree).	BS
Urban	Degree of a municipality's urbanization according to the Federal Statistical Office, ranging from 1 (low) to 3 (high).	GFSO
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 security.	BRO, DS
WML^{Global}	The monthly momentum factor for the global stock-market.	KFL

Table A2: Fraction of Stocks in Portfolio (not conditional on participation)

All estimates are from pooled OLS regressions. The dependent variable is the fraction of stocks in an investor's portfolio. In column (1), we use the brokerage data from June 2004 to December 2012 and the same set of control variables as in column (2) of Table 2. In column (2), we use the cross-sectional bank data from June 2017 and the same set of control variables as in column (3) of Table 3. However, in both cases, we do not condition on investors participating in the stock market. Instead, we set the fraction of stocks to zero if an investor does not participate in the stock market. The main independent variable, East, is equal to one if an investor lives in East Germany. All variables are described in detail in Appendix A1. t-statistics are based on robust standard errors clustered by municipality in column (1) and by county in column (2).

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

Table A3: Differences between East and West Berlin

All estimations use the brokerage data from June 2004 to December 2012. The coefficients are average marginal effects from a logit regression in column (1), and OLS estimates in columns (2) and (3). Stock-market participation (in column 1) is an indicator equal to one if an investor holds stocks or equity funds in her portfolio in a given year. Fraction of stocks (in column 2) is conditional on stock-market participation. 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 A1. The z-statistics (in column 1) and the t-statistics (in columns 2 and 3) are based on robust standard errors clustered by municipality.

Sample:	Brokerage Sample		
Dependent Variable:	Stock-market participation	Fraction of stocks if participant	Fraction of bonds
	(1)	(2)	(3)
East Berlin	–0.054***	0.006	0.023***
	(–5.73)	(0.45)	(3.27)
Gender (1=male)	0.035***	0.012	–0.059***
	(3.74)	(0.92)	(–7.80)
Investor age	–0.042*	0.044	0.047**
	(–1.90)	(1.42)	(2.11)
Married (1=yes)	0.030***	0.011	–0.013*
	(3.16)	(0.80)	(–1.88)
Ln(Portfolio value)	–0.007***	–0.036***	0.019***
	(–3.61)	(–16.59)	(15.59)
Time account is open	0.092***	0.012	–0.069***
	(14.67)	(0.94)	(–9.39)
Ln(Number of local firms)	0.003	–0.024*	–0.008
	(0.36)	(–1.82)	(–1.08)
Year FE	yes	yes	yes
Pseudo/Adj. R^2	0.14	0.13	0.14
West mean	0.935	0.784	0.046
Observations	16,207	14,595	16,204

Table A4: Summary Statistics (Bank Sample)

Panel A shows the number of observations, mean, standard deviation (sd), median (p50), 1^{st} percentile (p1), and 99^{th} percentile (p99) of all variables in the bank sample. Bank data are from 2016 to 2017. Panel B shows East and West averages, the differences, and the corresponding p-values. All variables are defined in Appendix A1.

Panel A. Summary statistics

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

Table A4: cont'd

Panel B. Differences

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

Table A5: Non-linear Income and Wealth Controls

All estimations use the cross-sectional bank data from June 2017. The table reports average marginal effects from logit regressions in columns (1) to (4), and OLS estimates in column (5). Stock-market participation (in columns 1 to 4) is an indicator equal to one if an investor holds stocks in her portfolio in a given year. Stock-market participation in column (4) is conditional on having a portfolio, and fraction of stocks in column (5) is further conditional on stock-market participation. East is an indicator equal to one if an investor lives in East Germany. We include the same set of control variables as in Table 3. 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 A1. The z-statistics (in columns 1 to 4) and the t-statistics (in column 5) are based on robust standard errors clustered by county.

Sample:	Bank Sample				
Dependent Variable:	Stock-market participation			Participation if portfolio	Fraction stocks if participant
	(1)	(2)	(3)	(4)	(5)
East	-0.055***	-0.052***	-0.049***	-0.133***	-0.142***
	(-4.23)	(-3.96)	(-3.80)	(-3.93)	(-4.76)
Ln(Income)	-0.013***	-0.036***	0.010	-0.014	-0.059*
	(-9.93)	(-7.53)	(0.54)	(-0.42)	(-1.87)
Ln(Income)^2		0.002***	-0.007*	0.001	0.008
		(5.11)	(-1.82)	(0.08)	(1.23)
Ln(Income)^3			0.001**	0.000	-0.000
			(2.34)	(0.25)	(-0.97)
Ln(Savings)	0.026***	0.029***	0.073***	0.197***	0.090***
	(15.07)	(5.41)	(4.15)	(3.81)	(2.88)
Ln(Savings)^2		-0.000	-0.009***	-0.032***	-0.013**
		(-0.87)	(-2.84)	(-3.49)	(-2.30)
Ln(Savings)^3			0.000***	0.001***	0.001*
			(2.74)	(3.13)	(1.72)
Ln(Portfolio Value)				0.293***	0.272***
				(8.32)	(9.00)
Ln(Portfolio Value)^2				-0.046***	-0.041***
				(-7.14)	(-7.48)
Ln(Portfolio Value)^3				0.002***	0.002***
				(6.92)	(6.61)
Control variables	yes	yes	yes	yes	yes
Pseudo /Adj. R^2	0.157	0.164	0.171	0.186	0.210
Observations	6,903	6,903	6,903	1,445	1,340

Table A6: Alternative Explanations

All estimations use the brokerage data from June 2004 to December 2012. The coefficients are average marginal effects from logit regressions with stock-market participation as the dependent variable in Panel A; OLS estimates where the dependent variable is the fraction of stocks conditional on stock-market participation in Panel B; and OLS estimates where the dependent variable is the fraction of bonds in Panel C. Stock-market participation is an indicator equal to one if an investor holds stocks or equity funds in her portfolio in a given year. East is an indicator equal to one if an investor lives in East Germany. We include the same set of control variables as in Table 2, and in addition risk tolerance, ranging from 1 (conservative) to 3 (speculative), in column 1; trust, ranging from 1 (low) to 7 (high), in column 2; familiarity with the stock market, ranging from 1 (high) to 7 (low), in column 3; financial literacy ranging from 0 (low) to 3 (high) in column 4; or income ranging from 1 (below 1,000 Euro per month) to 4 (above 3,000 Euro per month) in column 5, as well as all additional variables jointly in column 6. Risk tolerance and income are measured at the investor level, and trust, familiarity, and financial literacy at the county level. All variables are described in detail in Appendix A1. The z-statistics in Panel A and t-statistics in Panels B and C are based on standard errors clustered by municipality.

Panel A. Stock-market participation

	(1)	(2)	(3)	(4)	(5)	(6)
East	–0.172***	–0.202***	–0.192***	–0.186***	–0.232***	–0.128***
	(–9.29)	(–14.24)	(–13.20)	(–12.88)	(–9.91)	(–5.46)
Risk tolerance	0.307***					0.296***
	(52.56)					(51.28)
Trust		0.016**				0.065***
		(2.13)				(3.60)
Familiarity			–0.008			0.045***
			(–1.53)			(4.52)
Financial literacy				0.052***		0.124***
				(4.08)		(5.25)
Income					0.072***	0.046***
					(20.43)	(12.05)
Control variables	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Pseudo R^2	0.20	0.21	0.20	0.21	0.10	0.22
West Mean	0.621	0.880	0.880	0.880	0.621	0.607
Observations	176,270	684,441	699,126	698,373	170,824	117,288

Table A6: cont'd

Panel B. Fraction of stocks in portfolio

	(1)	(2)	(3)	(4)	(5)	(6)
East	–0.145***	–0.093***	–0.094***	–0.091***	–0.152***	–0.164***
	(–8.53)	(–6.11)	(–6.51)	(–6.39)	(–8.30)	(–8.17)
Risk tolerance	0.164***					0.156***
	(23.02)					(17.68)
Trust		–0.001				0.037***
		(–0.15)				(3.17)
Familiarity			0.001			0.028***
			(0.21)			(3.93)
Financial literacy				0.021***		0.022
				(2.60)		(0.90)
Income					0.018***	0.009**
					(5.62)	(2.36)
Control variables	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Adj. R^2	0.34	0.09	0.09	0.09	0.32	0.35
West Mean	0.578	0.739	0.740	0.740	0.577	0.576
Observations	95,317	565,122	577,823	577,148	93,145	61,196

Panel C. Fraction of bonds in portfolio

	(1)	(2)	(3)	(4)	(5)	(6)
East	0.167***	0.217***	0.205***	0.201***	0.206***	0.178***
	(6.45)	(9.92)	(9.92)	(9.53)	(7.70)	(6.22)
Risk tolerance	–0.245***					–0.234***
	(–23.93)					(–30.24)
Trust		0.008*				–0.002
		(1.87)				(–0.16)
Familiarity			–0.008**			–0.064***
			(–2.09)			(–7.24)
Financial literacy				–0.034***		–0.081***
				(–3.00)		(–3.14)
Income					–0.056***	–0.031***
					(–14.50)	(–7.81)
Control variables	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Adj. R^2	0.27	0.24	0.24	0.24	0.20	0.28
West Mean	0.406	0.095	0.094	0.094	0.407	0.397
Observations	176,026	684,099	698,774	698,021	172,256	117,099

Table A7: Stock-market expectations of East and West Germans

All estimations use data from the first nation wide survey conducted in July 2018 among East and West Germans. Coefficients are OLS estimates. In Column 1, the dependent variable is an indicator equal to one if a respondent expects the stock market to improve over the next months. In Column 2, the dependent variable is an indicator equal to one if a respondent perceives the stock market to be overvalued. In Column 3, is dependent variable is the average annual return in percent that a respondent expects when investing in the stock market over a time horizon of 30 years. We include the same set of control variables in all regressions: East, an indicator equal to one if a respondent lives in East Germany; female, an indicator equal to one if a respondent is female; age groups ranging from 1 (between 18 and 29) to 5 (older than 60); education ranging from 1 (no degree) to 6 (university degree); income reflecting the net monthly income ranging from 1 (no income) to 10 (more than 4,000 euros); financial literacy ranging from 0 (low) to 3 (high). t-statistics based on robust standard errors are provided in parentheses.

	Will the stock market improve over the next months?	Is the stock market overvalued?	Average annual return generated at the stock market?
	(1)	(2)	(3)
East	–0.022	0.042	–1.567
	(–0.73)	(1.45)	(–0.96)
Female	–0.088***	–0.104***	–0.620
	(–3.65)	(–4.83)	(–0.57)
Age	0.001	0.001	–1.176***
	(0.07)	(0.20)	(–2.70)
Education	0.021**	0.004	–0.284
	(2.03)	(0.46)	(–0.54)
Income	0.014***	0.008*	–0.001
	(2.69)	(1.73)	(–0.00)
Financial literacy	0.020	0.040***	–1.317**
	(1.62)	(3.74)	(–2.08)
Adj. R^2	0.03	0.04	0.01
Observations	1,529	1,529	1,510

Table A8: Definition of Survey Questions in Figure 5

This table contains the survey items included in our July 2018 (Panel A) and December 2018 (Panel B) surveys conducted by Norstat and employed in Figure 5. Answers were given on a four point scale with 1="completely true"; 2="rather true"; 3="rather wrong"; 4="completely wrong".

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

Table A9: East and West Germans' attitudes towards capitalism

Panel A of this table presents the fraction of East Germans (column 1) and the fraction of West Germans (column 2) agreeing to various statements on capitalism and the stock market. Results are based on a survey of 1,529 Germans (1,293 West Germans and 246 East Germans) conducted by the opinion-poll institute Norstat in July 2018. Column (3) shows differences in opinions between West and Germans, and column (4) provides the corresponding t-statistics. Results in Panel B are average marginal effects from logit regressions based on a survey among 1,600 East Germans conducted by Norstat in December 2018. The dependent variable is an indicator equal to one if a survey respondent indicates that she participates in the stock market, and zero otherwise. The main independent variables are survey responses to questions on capitalism. They were elicited on a 4-point or 5-point Likert scale and their exact wording is provided in Appendix Table A8. The controls are gender, a categorical variable for age (6 groups), a categorical variable for income bracket (10 groups), a categorical variable for education (7 groups), a categorical variable for employment status (9 groups), and state fixed effects. t-statistics based on robust standard errors are provided in parentheses. Results from this Table are also presented as a graph in Figure 5.

Panel A: Agreement to statements on socialism, capitalism, and stock markets

	Fraction of East Germans who agree	Fraction of West Germans who agree	Difference (W-E)	t-statistic
	(1)	(2)	(3)	(4)
Capitalism creates inequality	0.776	0.682	–0.094	–2.96
Capitalism creates coldness	0.614	0.526	–0.088	–2.53
Capitalism should be restricted	0.508	0.397	–0.111	–3.26
Socialism is preferable	0.703	0.625	–0.078	–2.34
Investing is immoral	0.260	0.190	–0.070	–2.51
Rejecting stock markets in general	0.549	0.431	–0.118	–3.41

Table A9: cont'd

Panel B: Stock market participation and pro-communist attitudes within East Germany							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Agree: Capitalism creates inequality	-0.0295***						
	(-2.99)						
Disagree: Capitalism rewards hard-working		-0.0617***					
		(-6.33)					
Disagree: Capitalism makes people better off			-0.0589***				
			(-5.90)				
Disagree: Socialism is unrealizable				-0.0254**			
				(-2.58)			
Disagree: Capitalism is superior					-0.0252***		
					(-2.61)		
Agree: Capitalism creates coldness						-0.0241**	
						(-2.42)	
Principal Component (All Questions)							-0.0416***
							(-6.45)
Female	-0.128***	-0.123***	-0.123***	-0.129***	-0.129***	-0.129***	-0.125***
	(-6.43)	(-6.25)	(-6.20)	(-6.46)	(-6.46)	(-6.47)	(-6.33)
Constant	0.348***	0.386***	0.391***	0.391***	0.383***	0.366***	0.398***
	(2.67)	(2.99)	(3.03)	(2.99)	(2.94)	(2.81)	(3.08)
Age Groups	yes	yes	yes	yes	yes	yes	yes
Income Groups	yes	yes	yes	yes	yes	yes	yes
Educational and Working Status Groups	yes	yes	yes	yes	yes	yes	yes
State Fixed Effects	yes	yes	yes	yes	yes	yes	yes
Adj. R^2	0.12	0.14	0.13	0.12	0.12	0.12	0.14
Observations	1,600	1,600	1,600	1,600	1,600	1,600	1,600

Table A10: Top 10 Holdings of Finance, US, and Communist-Country Stocks

Panel A contains the Top 10 holdings of stocks belonging to the financial industry and of US companies in investors' portfolios. Panel B contains the Top 10 holdings of Russian and Chinese firms and the top holding of Vietnamese firms, as well as a description of the main business field and whether the firm is state-owned.

Panel A: Financial industry and US stocks

Financial industry	US stocks
Deutsche Bank	Cisco Systems
Commerzbank	Mircosoft
Allianz	General Electric
Munich Re	Intel
Deutsche Postbank	EMC
WCM Beteiligungs 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	Energy, Oil & Gas (state-owned)
Lukoil OAO	Energy, Oil & Gas
Rosneft	Energy, Oil and Gas (state-owned)
Rostelecom	Communication & Telecom Services
Norlisk Nickel	Basic Materials, Industrial Metal & Minerals
Yukos Oil (delisted)	Energy, Oil & Gas
Gazprom Neft	Energy, Oil & Gas (maj. shareh. Gazprom; state-owned)
Mosenergo	Utilities (maj. shareh. Gazprom; state-owned)
Trade House Gum	Consumer Cyclical
Surgutneftegaz	Energy, Oil & Gas

Table A10: cont'd

Panel B (cont'd): Stocks of formerly communist countries

China	Description
Petrochina	Energy, Oil & Gas
BYD	Consumer Cyclical, Auto Manufacturers
China Life Insurance	Financial Services, Insurance-Life (state-owned)
China Petroleum Chemical	Energy, Oil & Gas (maj. shareh. Sinopec; st.-owned)
ICBC	Financial Services, Banks Global
China Telecom	Communication & Telecom Services (maj. shareh. China Telecommunication Corp.; state-owned)
Tsingtao Brewery	Beverages Brewers (min. shareh. Chinese State)
China Construction Bank	Financial Services, Banks Global (maj. shareh. SH Central Huijin Investment; state-owned)
Bank of China	Financial Services, Banks Global (maj. shareh. SH Central Huijin Investment; state-owned)
China Cosco Shipping	Industrials, Shipping & Ports (state-owned)
Vietnam	**Description**
Vietnam Holding	Financials, Asset Management (operates a closed-end fund investing in former state-owned enterprises and private enterprises in Vietnam)

Table A11: Correlations between proxies for exposure to communist ideology

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

Variables	Investor age	Distance	Renamed city	Religion	Pollution	No West TV	STASI	Liked GDR politics	Employed	GDP p. cap.	Olym. champ.
Investor age	1.000										
Distance	0.104	1.000									
	(0.000)										
Renamed city	0.069	0.205	1.000								
	(0.000)	(0.000)									
Religion	-0.114	-0.251	-0.120	1.000							
	(0.000)	(0.000)	(0.000)								
Pollution	-0.064	-0.045	-0.064	-0.060	1.000						
	(0.000)	(0.000)	(0.000)	(0.000)							
No West TV	-0.089	0.093	-0.045	0.012	0.393	1.000					
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)						
STASI	0.187	0.214	0.051	-0.270	-0.243	-0.349	1.000				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)					
Liked GDR pol.	0.097	0.338	0.104	-0.276	-0.091	-0.079	0.092	1.000			
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				
Employed	-0.041	0.058	0.095	-0.002	-0.038	0.006	0.048	0.198	1.000		
	(0.000)	(0.000)	(0.000)	(0.461)	(0.000)	(0.016)	(0.000)	(0.000)			
GDP p. capita	-0.167	-0.109	0.034	-0.022	0.432	0.263	-0.169	-0.121	0.267	1.000	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		
Olympic champion	0.036	0.109	0.801	-0.098	-0.078	-0.027	0.083	0.049	0.155	0.094	1.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

Table A12: Intensity of Exposure: Fractions of stocks and bonds

All estimations use the brokerage data from June 2004 to December 2012. Coefficients are OLS estimates. The dependent variable is the fraction of stocks in an investor's portfolio conditional on stock market participation (Panel A) or the fraction of bonds in an investors' portfolio (Panel B). East is an indicator equal to one if an investor lives in East Germany. In addition to the full set of control variables from Table 2, we include interactions of the East dummy with an indicator for being 50 years of age or older (in column 1), and with an indicator for locations outside the "Small Border Traffic" zone (Kleiner Grenzverkehr) (in column 2). In column 3, we include both interactions. In columns 2 and 3, we also add the baseline indicator for being age 50 and above. t-statistics are based on robust standard errors clustered by municipality and presented in parentheses.

Panel A: Fraction of stocks	Age interaction (1)	Distance interaction (2)	All interactions (3)
East	–0.021**	–0.050***	–0.000
	(–2.39)	(–3.83)	(–0.04)
East × Above 50	–0.069***		–0.068***
	(–6.46)		(–6.48)
East × Distance		–0.036**	–0.033**
		(–2.23)	(–2.09)
Above 50	0.032***		0.031***
	(6.55)		(6.47)
Control variables and Year FE	yes	yes	yes
Adj.R^2	0.093	0.092	0.093
West Mean	0.735	0.735	0.735
Observations	687,464	685,630	685,630
Panel B: Fraction of bonds			
East	0.086***	0.112***	0.044***
	(7.92)	(5.83)	(2.70)
East × Above 50	0.094***		0.090***
	(8.03)		(8.14)
East × Distance		0.078***	0.073***
		(2.78)	(2.71)
Above 50	–0.024***		–0.023***
	(–5.58)		(–5.56)
Control variables and Year FE	yes	yes	yes
Adj.R^2	0.251	0.253	0.255
West Mean	0.107	0.107	0.107
Observations	839,272	836,714	836,714

Table A13: Negative and Positive Tagging: Fractions of stocks and bonds

All estimations use the brokerage data from June 2004 to December 2012. The coefficients are OLS estimates. The dependent variable in Panel A (Panel B) is the fraction of stocks in an investor's portfolio conditional on stock-market participation (the fraction of bonds in an investor's portfolio). The sample in Panel B is restricted to accounts with non-missing information on bond holdings. East is an indicator equal to one if an investor lives in East Germany. In addition to the full set of control variables from Table 2, we include interactions of the East dummy with different proxies for negative or positive tagging. The proxies for negative tagging are: an indicator for polluted GDR counties according to the 1990 report of the German ministry of environmental affairs (column 1), the fraction of Catholics and Protestants in a county according to the 2011 census (column 2), and an indicator for counties in the former GDR that did not receive West German TV signals (column 3). The proxies for positive tagging are: an indicator for cities that were renamed during the GDR regime (column 4), namely, Chemnitz (Karl-Marx-Stadt), Kriegsdorf (Friedensdorf), Neuhardenberg (Marxwalde), Werminghoff (Knappenrode), and Eisenhüttenstadt (Stalinstadt); the fraction of voluntary STASI participation in county during the GDR regime (column 5), the fraction of survey respondents in a county who state that the former political system of the GDR had many positive aspects (column 6), and an indicator for counties that had an Olympic medal winner as of the Wikipedia list of the GDR's Olympic champions (column 7). We multiply the Olympic medal indicator with the inverse population ratio to account for higher visibility in smaller areas. All variables are described in detail in Appendix A1. t-statistics are based on robust standard errors clustered by municipality.

Panel A: Fraction of stocks

	Neg. Tagging			Pos.Tagging			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
East	–0.079***	–0.088***	–0.070***	–0.069***	–0.056***	–0.029**	–0.071***
	(–8.43)	(–4.34)	(–7.31)	(–7.66)	(–4.65)	(–2.45)	(–7.66)
East×Pollution	0.059**						
	(2.09)						
East×Religion		0.001					
		(1.13)					
East×No West TV			–0.031				
			(–1.27)				
East×Renamed city				–0.112**			
				(–2.41)			
East×STASI					–0.044*		
					(–1.69)		
East×Liked GDR politics						–0.198***	
						(–4.46)	
East×Olympic champion							–0.077
							(–0.85)
Urban							–0.011*
							(–1.86)
Adj.R^2	0.092	0.092	0.092	0.092	0.092	0.093	0.101
Observations	687,464	687,464	687,464	687,464	687,464	687,291	459,394
West Mean	0.735	0.735	0.735	0.735	0.735	0.735	0.735

Table A13: cont'd

Panel B: Fraction of bonds

	Neg. Tagging				Pos. Tagging		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
East	0.163***	0.205***	0.163***	0.152***	0.128***	0.060***	0.161***
	(9.60)	(5.64)	(9.67)	(9.90)	(6.42)	(3.12)	(10.09)
East × Pollution	–0.030						
	(–0.49)						
East × Religion		–0.002*					
		(–1.79)					
East × No West TV			–0.088***				
			(–3.42)				
East × Renamed city				0.192***			
				(3.46)			
East × STASI					0.081*		
					(1.66)		
East × Liked GDR politics						0.426***	
						(5.72)	
East × Olympic champion							0.172**
							(1.98)
Urban							0.003
							(0.31)
Adj.R^2	0.092	0.092	0.092	0.252	0.092	0.093	0.266
Observations	839,272	839,272	839,272	839,272	839,272	839,053	586,293
West Mean	0.735	0.735	0.735	0.735	0.735	0.735	0.735

B Theoretical Framework

We propose a simple model of heterogeneous learning to organize the empirical analysis. The model uses a beliefs-based channel building on prior research on experience effects, which has provided evidence on a direct link between past experiences and beliefs. We note that experiences might also preferences, and in fact, the distinction is fluid: Agents act as if their beliefs were overly determined by personal experiences; but this is just one way to capture the (re-)wiring (synaptic tagging effects) generated by previous experiences.

In the model, citizens in both West and East Germany learn about the quality of investing in the stock market, where "quality" reflects either the monetary value of investing in the stock market (expected returns), or its ideologically shaped social value.[37] West Germans learn about the value of investing in the stock market from their observations of the market. East Germans, instead, do not have direct experience with the market. They may not update their prior, or may update in response to signals from the government. After Reunification, both (formerly) East and West Germans receive the same direct signals from the market.

Setup. Agents are learning about the value of investing in the stock market, which is either good (G) or bad (B). We can interpret these states of the world either in terms of monetary value (expected returns), or in terms of the ideologically shaped social value. Here, we do not differentiate between these dimensions, but we do so in our empirical analysis, where we analyze along which dimension East and West Germans hold systematically different beliefs.

We assume that the true state is G, and all agents start with a prior $P(G) = P(B) = 0.5$. Before Reunification, West Germans receive signals $\sigma_t \in \{g, b\}$ in each period t about the true state from their observation of the stock market, with $p(\sigma_t = g|G) = p(\sigma_t = b|B) = \theta$, $\theta \in (0.5, 1]$. East Germans, in contrast, have no access to the stock market. They receive government signals $s_t \in \{g, b\}$, which are distorted by the communist doctrine. For simplicity, we model the East German government as sending only b signals.

We assume that East Germans believe a fraction $q \in [0, 1]$ of government signals to be true, and a fraction $1 - q$ to have no information value. For example, $q = 0$ indicates that citizens do not update based on government signals. In the empirical analysis, we show that the inclination to subscribe to the government's messaging about the stock market is related to past lifetime experiences under the communist system: The more positive their experiences have been, the higher is the likelihood to endorse the government views and incorporate its signals, even though these experiences are unrelated to financial outcomes. In the theoretical analysis, we simply assume that a fraction q of signals are incorporated in East Germans' belief updating, and a fraction $1 - q$ is disregarded.

After Reunification, both formerly-East and West Germans have exposure to the stock market, and receive the true signals σ_t. When receiving a (trusted) signal σ_t at time t, individuals update beliefs applying Bayes' rule to their prior P_{t-1} to form the posterior:

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

East vs. West Germany. Given differences in observed signals, we can characterize the beliefs of East and West Germans at the time of Reunification. Assume there are n_1 periods pre-Reunification, in which East Germans receive only bad (government) signals, while West Germans receive g_1 good

[37] In our empirical analysis, we distinguish between these two dimensions and analyze over which dimension East and West Germans hold systematically different beliefs, cf. Section II.B.

and b_1 bad signals, with $n_1 = g_1 + b_1$ and $g_1 > b_1$. Then, beliefs of East Germans, $P_{R,\text{East}}$, and beliefs of West Germans, $P_{R,\text{West}}$, at Reunification are

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

Result 1 *At Reunification, there is a wedge in beliefs about the value of investing in the stock market, with West Germans having more favorable views than East Germans.*

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

$$P_{R+n_2,\text{East}}(B) = \frac{\theta^{qn_1+b_2-g_2}}{\theta^{qn_1+b_2-g_2} + (1-\theta)^{qn_1+b_2-g_2}}$$
$$P_{R+n_2,\text{West}}(B) = \frac{(1-\theta)^{(g_1+g_2)-(b_1+b_2)}}{\theta^{(g_1+g_2)-(b_1+b_2)} + (1-\theta)^{(g_1+g_2)-(b_1+b_2)}}$$

While the posteriors of both West Germans and East Germans become more positive ($P_{R+n_2,\text{West}}(B) < P_{R,\text{West}}(B)$ and $P_{R+n_2,\text{East}}(B) < P_{R,\text{East}}(B)$), it is also straightforward to show that $P_{R+n_2,\text{East}}(B) > P_{R+n_2,\text{West}}(B)$:

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

We establish this baseline result empirically in Section II.B.

We now extend the model to discuss heterogeneity in (i) the intensity of exposure to government signals, (ii) the inclination to believe government signals (determined by positive versus negative experiences with the system), and (iii) trigger points (resurgence of anti-capitalist signals after Reunification).

Intensity of Exposure. We can derive comparative statics for citizens with more or less exposure to signals prior to Reunification by varying the size of n_1. If we scale the number of signals prior to Reunification by a factor of $\alpha > 1$, West Germans receive on net $(\alpha - 1)(g_1 - b_1)$ additional positive signals and their beliefs move towards G:

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

East Germans instead receive $\alpha - 1$ additional b signals, and their beliefs move towards B:

$$\frac{\theta^{(\alpha qn_1+b_2)-g_2}}{\theta^{(\alpha qn_1+b_2)-g_2} + (1-\theta)^{(\alpha qn_1+b_2)-g_2}} \geq P_{R+n_2,\text{East}}(B).$$

Hence, more pre-unification signals result in a larger East-West gap after Reunification.

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

In Section III.A, we use variation in age as a proxy for exposure to pre-unification signals.

Positive versus negative experiences. Next, we analyze comparative statics with respect to East Germans' inclination q to believe government signals:

$$\frac{d}{dq}[P_{R+n_2,\text{East}}(B) - P_{R+n_2,\text{West}}(B)] = \frac{\log\left(\frac{(1-\theta)}{\theta}\right) n_1 \frac{1-\theta}{\theta}^{qn_1+b_2-g_2}}{\left(1+\frac{1-\theta}{\theta}^{qn_1+b_2-g_2}\right)^2} < 0$$

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

Whether an East German citizen subscribes to the government's messaging depends on several factors. Our main emphasis here is the role of prior lifetime experiences. In the empirical analysis (Section III.B), we exploit heterogeneity in good experiences (e.g., living in a renamed "showcase" city) and bad experiences (e.g., religious oppression, air pollution, no access to Western TV entertainment) to show that the post-Reunification gap in stock-market investment is indeed larger for East Germans whose experience under communism was likely tagged more positively, and smaller for those who likely had more negative experiences tagged to their experiences.

Trigger Points. So far, we have assumed that after Reunification all citizens receive true signals σ_t from their observations of the stock market in all periods t, and the (distorted) messaging of the communist government disappears.

We now consider the possibility that there may be times when anti-capital-markets messaging resurges. Specifically, during election years, media outlets give space to the messaging of all political parties including the successor of the former ruling party in the East, the Socialist Unity Party of Germany (SED). While both East and West Germans are exposed to those (say, via discussion rounds on TV), the communist party tends to target the East. Moreover, East Germans plausibly overweigh the communist doctrine, compared to West Germans, as it is part of their memory database (Bordalo, Gennaioli, and Shleifer (2012)). As a result, East Germans might incorporate such messaging, when it resurges, more than West Germans.

Consider the scenario that, after n_1 periods pre-reunification and n_2 periods post-reunification, there is an election year, in which the communist party sends an additional b signal. We assume that East Germans incorporate the signal with probability q, while West Germans disregard it:

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

Result 5 *In post-Reunification election years, when an additional $s_t = b$ signal is sent, the East-West gap in beliefs becomes larger than in a non-election year.*

In Section III.C, we find that the East-West gap becomes larger in federal election years.