The Longterm Effects of Political Propaganda on Stock Market Participation

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MOTIVATION

Expectations and Risk-Taking

How do investors from expectations about stochastic variables?

- Long history of concerns about "rational beliefs" (Bayesian updating) in Microeconomics.
  - Allais paradox, Ellsberg paradox
  - Loss aversion, ….
- Increasing concerns about rational expectations (RE) assumption in macro economics and finance
  - Bubbles in stock prices, housing, and other assets
  - Momentum, Investors chasing past performances
- What instead? Candidates include
  - Over-extrapolation: Overweighting recent realizations, neglect of realizations further in the past
  - **Experience effects**: Overweighting personal experiences ("Depression babies")

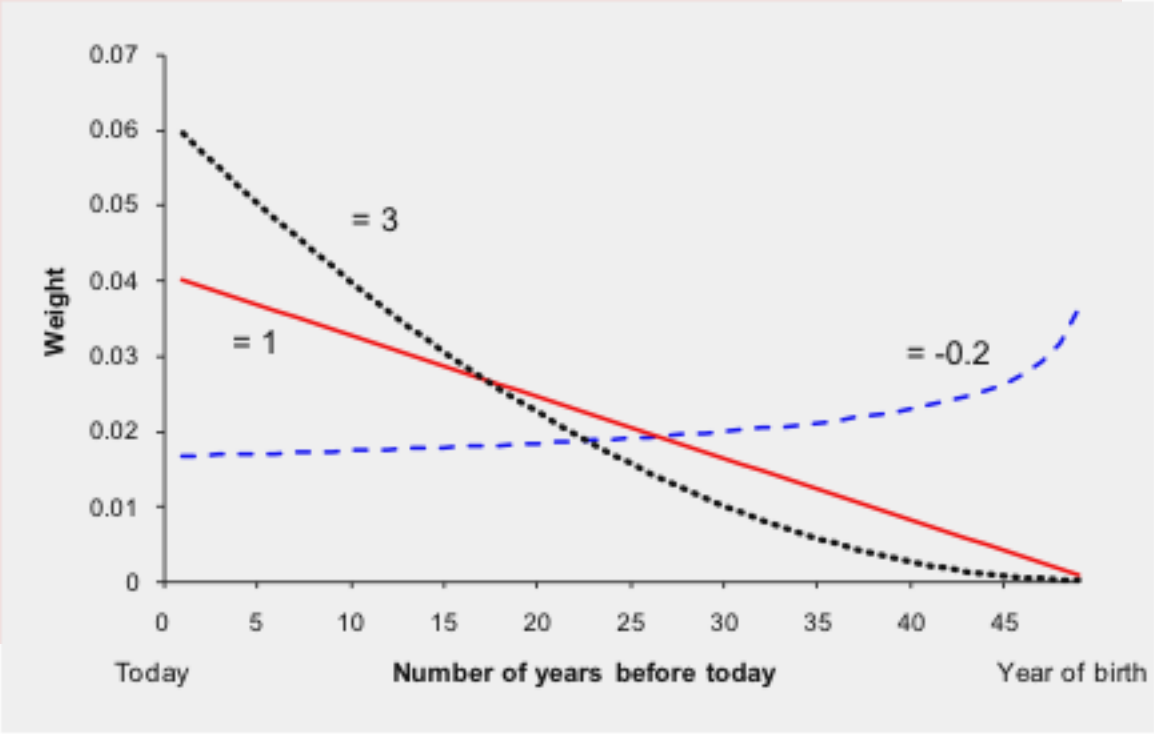
A Famous Example

"I don't know about you, but my parents were depression babies, and as a result, avoided the stock market and all things risky like the plague."

"Depression Babies"
(Malmendier and Nagel, QJE 2011)

- Individual investors' "**stock market experience**" over their lives so far predicts **stock market investment**.
- Individual investors' "**bond market experience**" over their lives so far predicts **bond investment**.

- Weighting fcn.:



Findings

Weights on the past: roughly linearly declining

Cf. unconditional probability of being in lowest risk-tolerance category = 36.3%

- **Elicited risk tolerance**
  - 1 = "not willing to take any financial risk"
  - 2 = "willing to take average financial risks expecting to earn average returns"
  - 3 = "… above av. financial risks .. above av. ret."
  - 4 = "… substantial financial risks … substantial returns"

  Effect of moving from a bad to a good lifetime experience (10th to 90th percentile): – 10 pp!
- **Stock-market participation** (Stock holdings > $0)

  Effect of moving from a bad to a good experience: +14 pp
- **Bond-market participation** (Bond holdings > $0)

  Effect of moving from a bad to a good experience: +15 pp

Experience Effects

- Generates cross-sectional differences (young versus old) and differences in differences over time.
- **Basic idea**: individuals are shaped by their lifetime experience, instead of being born with a fixed set of preferences and rationally updating beliefs.
  - Cf. ST effects **(lab experiments)** in the experience-weighted learning / reinforcement learning literature: subjects' actions depend on payoffs from same actions in the past even if circumstances have changed (Erev and Roth 1998; Camerer and Ho 1999).
  - LT effects **(decades later):** trauma, e.g., political detainees in Romania (Bichescu et al. 2005), soldiers in the Korean War (Kim and Lee 2014), living under communist regimes (Alesina and Fuchs-Schuendeln 2007).

Emotional Coloring

- Emotions determine how strongly experiences are anchored in memory (Dolan *Science* 2002, LaBar and Cabeza *Nature* 2006)
  - "An emerging theme is … how emotion interacts with and influences other domains of cognition, in particular attention, memory, and reasoning."
  - "Emotional events attain privileged status in memory."


Santa Ana Register

FINAL EDITION

BILLIONS LOST AS STOCKS CRASH

Pantages In Jail Awaits Sentence To State Prison

GUILTY SAYS JURY AFTER MANY HOURS

SENATE "FARM BLOC" STARTS BATTLE FOR HIGHER TARIFFS

STATE PLANS TO RIVIND UP TAX DODGERS

BINGHAM TAKES EXCEPTION TO SENATE LOBBY

Alliance Of Two Factions May Win Out

JURY BELIEVES HER STORY

MAINSTAYS OF MARKET IN PLUNGE

THREE U. S. C. STUDENTS ARE CRASH VICTIMS

CHRISTIANITY MUST DESTROY WAR OR WAR WILL OVERTHROW CHURCH, SAYS PASTOR SCHOCK


London Herald

WALL STREET CRASH!

Black Thursday in America

What Went Wrong?


BROOKLYN DAILY EAGLE

And Complete Long Island News

WALL ST. IN PANIC AS STOCKS CRASH

Attempt Made to Kill Italy's Crown Prince

ASSASSIN CAUGHT IN BRUSSELS MOB; PRINCE UNHURT

Hollywood Fire Destroys Films Worth Millions

FEAR 57 PERISHED IN LAKE MICHIGAN FERRY IS MISSING

PIECE OF PLANE LIKE DITEMAN'S IS FOUND AT SEA

High Duty Group Gave $700,000 to Coolidge Drive

STOCKS CRASH IN RUSH TO SELL; BILLIONS LOST

CARNEGIE CHARGE OF PAID ATHLETES

HOOVER'S TRAIN HALTED BY AUTO

WARDER SOUGHT TO KEEP SEA TRIP

SOMERS NAMED AS HEAD OF NEW

"I don't know about you, but my parents were depression babies, and as a result, avoided the stock market and all things risky like the plague."

Emotional Coloring

- **Implication**: to influence financial-risk taking and the "beliefs" on which individuals act, influence "how" they experience the corresponding outcome (not only financial literacy training).
  - On the positive side: experiential education.
  - On the (possibly) negative side: **propaganda**.

- **Propaganda** is anti-rational, its essential aim is to secure assent before reason can intervene.

  → One of the propagandist's most useful techniques is the appeal to emotions and non-rational drives (Henderson, 1943)

This Paper

- Vary how (given) outcomes are experienced as primed by political propaganda to stock market participation.
  - Can ideological coloring of risky financial instruments have long-term effects on willingness to take risk in the stock market?
  - Holding constant today's experience, information, institutions …

- Application: formerly communist countries.
  - When a formerly communist country opens up and/or markets open up, are familiarity / literacy / wealth the only constraints preventing people from using financial instruments that are now available?

Testing Ground: East and West Germany

- Germany formerly divided into 2 parts, capitalist (West) and communist (East), reunified 26 years ago.
- Testing ground for political attitudes and attitudes towards welfare system (Alesina and Fuchs-Schuendeln 2007).

<u>Financial experience</u>

- West experience: German Exchange in Frankfurt reopened shortly after WWII under American protectorate in 1945
- East (GDR) experience: socialist system, no stock market.

Communist propaganda and the stock market

The power of capital is everything, the stock exchange is everything, while parliament and elections are marionettes, puppets.... But the eyes of the workers are being opened more and more, and the idea of Soviet government is spreading farther and farther afield, especially after the bloody carnage we have just experienced. **The necessity for a relentless war on the capitalists** is becoming clearer and clearer to the working class and that the **stock exchange becomes the most prominent representative of capitalist production** itself.

Lenin (The State, 1919)

Financial decision making in the GDR

In the former communist system of the GDR, there were only three types of financial products available:

Product	Market share
Savings account	85.00 %
Mortgage Pfandbrief	6.00 %
Versicherungssparen	9.00 %

Research Question: Do (affective) attitudes formed by political propaganda of a communist system shape financial decision-making decades later?

Steps:

1. **Baseline**: Compare investors with and without exposure (East/West).
   - Do East Germans invest less in the stock market?
   - Robust to controlling for risk aversion, income, financial literacy, trust, familiarity?
   - Robust to endogenous moving from East to West?
2. **Variation in intensity**: temporal (length) and geographic (distance to border)
3. **Direction**: capitalist countries (US) / financial-industry versus communist countries (Vietnam, Russia, China)
4. **Consistency with reality** ("Effects are the greatest where the message is in line with the existing opinions, beliefs, and dispositions of the receivers." (Jowett and O'Donnell 1992)): satisfied (showcase cities, Olympic medals, TV entertainment) versus not satisfied (religious, pollution).
5. **Check**: consistency with attitudes towards East Germany/communism.
6. **Trigger points**: stronger effects (today) during election years

Research Implication: Wealth, diversification, fees.

1. **Abnormal returns**
2. **Diversification / passive investment**
3. **Fees**

→ Long term effects of communist propaganda may contribute lower wealth levels in East Germany, and may lead to lower retirement savings in the East.

DATA & DESCRIPTIVES

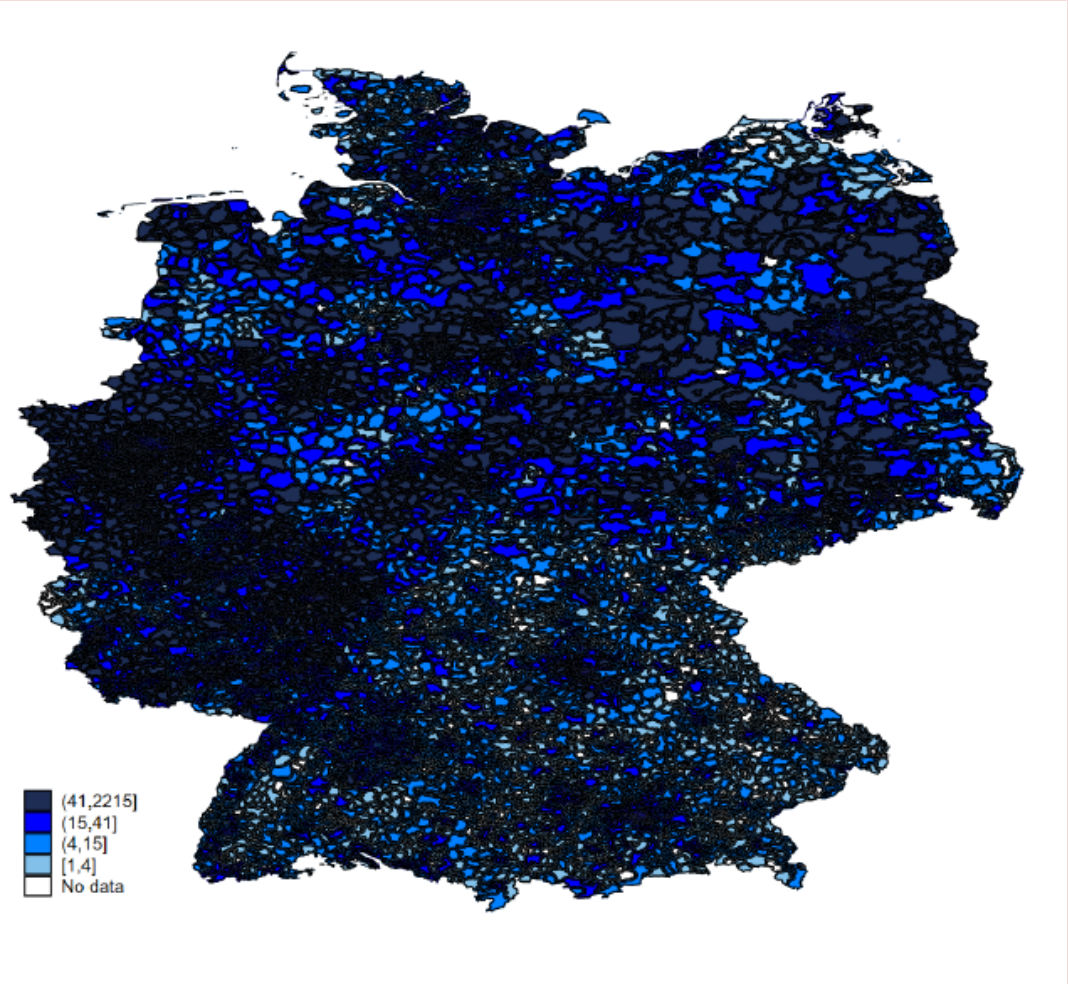
Main Data

- We obtain data from a large brokerage firm present in almost all counties of Germany.
- Sample period 2004-2012.
- 3 components: Account data, portfolio holdings, transaction data
  - For a subset of individuals, we also observe their income (5 income brackets) and their risk tolerance (ranging from 1 (low) to 3 (high)).

Supplemental Data Sets

1. Data of **bank customers** to refine stock market participation variable
2. Hand-collected data on **East experience** (sports, renamed cities, environment, political attitudes) and survey on retirement savings.
3. **SAVE** data (real estate, wealth control)
4. **ECB** data on voluntary STASI collaborators
5. German **Census** 2011 (religiosity)
6. **German Statistical Office** (unemployment, GDP)
7. Morningstar, DataStream (return data)
8. Center for Financial Research in Cologne ("German" Fama-French factors)
9. **Bundesbank** (Number of banks in German regions)
10. **Infratest dimap** (Survey on views on GDR politics)

Distribution of investors in main data



Summary statistics

Panel A: Summary statistics	Obs.	Mean	sd	p50	p1	p99
Brokerage account data						
East	839,680	0.204	0.403	0.000	0.000	1.000
Investor age (in years)	839,680	59.562	15.644	59.000	23.000	94.000
Gender (1=male)	839,680	0.526	0.499	1.000	0.000	1.000
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	137.000
Stock market participation (dummy)	839,680	0.819	0.385	1.000	0.000	1.000
Stocks (dummy)	839,680	0.728	0.445	1.000	0.000	1.000
Fraction of stocks if participating	687,464	0.725	0.391	1.000	0.000	1.000
Fraction of bonds	839,272	0.147	0.328	0.000	1.000	0.000
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
Portfolio value (in Euro)	839,643	25,965	132,268	4,923.47	0.000	304,837
Passive investments	515,856	0.038	0.192	0.000	0.000	1.000
# of assets in portfolio	839,680	4.442	6.921	2.000	1.000	31.000
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

Baseline estimation

Baseline Estimation

Are East Germans less willing to participate in the stock market, even decades after reunification?

- According to GDR propaganda, stock markets represent the capitalist system and should be avoided.

Brokerage data: very large sample; analysis conditional on online brokerage account.

Bank data: representative but smaller, cross-sectional sample (June 2016).

Baseline Estimation

Stock market participation y_{it}= 1 if investor holds stocks and/or equity funds in her portfolio, and zero otherwise.

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

Alternatively, we estimate OLS regressions where there dependent variable is the fraction of stocks held conditional on stock market participation.

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

Baseline estimation (brokerage data)

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

- Even decades after being exposed to GDR propaganda, East Germans participate less in the stock market and hold less stocks (more bonds) conditional on participating at all.
- Magnitude: Given conditional stock-mkt. participation of 72.8% → 27% reduction.

Summary Statistics (bank)

Panel A: Summary statistics	Obs.	Mean	sd	p50	p1	p99
Bank data						
Stocks (dummy)	6,903	0.125	0.331	0	0	1
Stock market participation (dummy)	6,903	0.184	0.388	0	0	1
Portfolio (dummy)	6,903	0.209	0.407	0	0	1
Fraction of stocks if participating	1,340	0.468	0.444	0.360	0	1
Male (dummy)	6,903	0.556	0.497	0	1	1
Investor age	6,903	47,259	15,921	47	11	87
Married (dummy)	6,903	0.420	0.494	0	0	1
Employed (dummy)	6,903	0.411	0.492	0	0	1
Trainee (dummy)	6,903	0.094	0.292	0	0	1
Retiree (dummy)	6,903	0.061	0.239	0	0	1
Online Banking (dummy)	6,903	0.675	0.468	0	0	1
Mortgage (dummy)	6,903	0.078	0.269	0	0	1
Relationship (years)	6,903	15,280	10,564	13	1	46
Credit Score (Default Probability)	6,903	0.006	0.021	0.001	0	0.070
Income	6,903	6,811	83,169	1,326	0	77,489
Savings	6,903	11,789	71,527	1,630	0	141,956
Conditional Portfolio Value	1,445	69,532	189,483	13,294	0	1
Risk Attitude (1-7)	276	3,333	1,999	3	1	7
Financial Literacy (0-3)	2,646	274	0.676	3	0	3
Real Estate (dummy)	276	0.496	0.501	0	0	1

Baseline estimation (bank data)

	Stock market participation (1)	Participation if portfolio (2)	% Stocks in portfolio (3)
East	-0.035***	-0.181***	-0.171***
	(-4.92)	(-3.97)	(-5.06)
Male	0.054***	0.155***	0.163***
	(8.85)	(4.35)	(5.99)
Age	0.005***	0.020***	0.016***
	(3.36)	(3.70)	(3.58)
Age2	-0.000**	-0.000***	-0.000***
	(-2.54)	(-4.51)	(-3.12)
Married	-0.003	-0.020	-0.012
	(-0.46)	(-0.61)	(-0.45)
Employed	0.010*	-0.021	-0.013
	(1.68)	(-0.62)	(-0.51)
Trainee	-0.033***	-0.035	-0.044
	(-3.07)	(-0.71)	(-0.82)
Retiree	-0.016	0.072***	-0.055
	(-1.26)	(-0.96)	(-1.04)
Online banking	0.090***	0.223	0.171***
	(12.96)	(0.043)	(4.60)
Mortgage	-0.022**	-0.129**	-0.113**
	(-2.35)	(-2.23)	(-2.52)
Relationship (Years)	-0.000	-0.005***	-0.005***
	(-1.63)	(-2.86)	(-4.21)
Credit Score	-1.849***	-2.10	-2.73
	(-3.45)	(-2.01)	(-1.48)
Ln(Income)	-0.010***	-0.000	-0.008**
	(-9.51)	(0.919)	(-2.27)
Ln(Savings)	0.019***	0.005	-0.000
	(15.09)	(0.76)	(-0.05)
Ln(Portfolio Value)		0.047***	-0.039***
		(8.51)	(-6.77)
Pseudo/Adj. R^2	0.157	0.143	0.148
Observations	6,903	1,445	1,340

Results confirm findings from main data: Significantly lower stock market participation in East Germany.

Very comparable magnitude: av. st.-m. participation 12.5% → 28% reduction.

Movers

Mover result (bank data)

	All observations	Only West Germans		
	(1)	(2)	(3)	(4)
East	-0.080***			
	(-3.27)			
Mover	-0.046*	-0.072**		
	(-1.94)	(-2.14)		
Mover 10Y			-0.071*	
			(-1.76)	
Mover 20Y				-0.106***
				(-3.01)
Risk Attitude (1-7)	0.034***	0.053***	0.058***	0.059***
	(3.30)	(4.08)	(4.09)	(3.90)
Male	0.076**	0.111***	0.123***	0.132***
	(2.41)	(2.76)	(2.70)	(2.70)
Age	-0.04	-0.006	-0.007	-0.005
	(-0.65)	(-0.78)	(-0.73)	(-0.44)
Age2	0.000	0.000	0.000	0.000
	(0.91)	(1.05)	(1.06)	(0.88)
Married	0.002	-0.007	-0.020	-0.058
	(0.07)	(-0.15)	(-0.39)	(-1.24)
Employed	-0.004	-0.014	-0.013	-0.037
	(-0.16)	(-0.40)	(-0.34)	(-0.94)
Trainee	-0.013	-0.027	-0.026	-0.025
	(-0.26)	(-0.37)	(-0.31)	(-0.28)
Retiree	-0.044	-0.075*	-0.082*	-0.085
	(-1.54)	(-1.95)	(-1.90)	(-2.17)
Mortgage	0.003**	-0.029	-0.042	-0.051
	(0.07)	(-0.65)	(-0.85)	(-1.02)
Financial Literacy (0-3)	0.040	0.058	0.063	0.050
	(1.30)	(1.36)	(1.37)	(0.95)
Relationship (Years)	0.002	0.002	0.002	0.002
	(1.12)	(1.17)	(0.93)	(0.83)
Credit Score	-0.732	-1.72	-1.39	-1.14
	(-0.57)	(-0.77)	(-0.43)	(-0.36)
Ln(Income)	-0.000	0.001	0.002	0.003
	(-0.05)	(0.14)	(0.20)	(0.30)
Ln(Savings)	0.003	0.010	0.012	0.008
	(0.32)	(0.68)	(0.71)	(0.46)
Real Estate (dummy)	0.007	0.012	0.014	0.026
	(0.19)	(0.21)	(0.23)	(0.39)
Pseudo R^2	0.354	0.333	0.329	0.327
Observations	241	198	187	175

Results show that people who moved from the former GDR to West Germany after Reunification still participate less in the stock market compared to their West German counterparts.

The case of Berlin

Differences between East and West Berlin

"More than 20 years since the Berlin Wall was dismantled the effects of separating the city can still be seen from space. The yellow lights correspond to eastern Berlin and the greener tones show western Berlin."
(Source: *Chris Hadfield /* ESA/NASA)

Differences between East and West Berlin

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

Alternative Explanations

Alternative explanations

- Potential cofounds include
  - Differences in **risk attitudes** (which exist; see first table)
  - Differences in **income** (which have also been shown to exist; people in East Germany earn less and have lower wealth levels)
  - **Trust** is lower in Eastern compared to Western Germany and trust determines stock market participation (Rainer and Siedler 2009; Heineck and Suessmuth 2013; Sapienza and Zingales (2008)).
  - Differences in **familiarity** (Fuchs Schündeln and Halliassos 2016)
  - Differences in **financial literacy** (Bucher-Koenen and Lamla 2014).

Proxies

- **Risk attitudes** (Bank account data, indicated by client when account was opened)
- **Income** (Bank account data, 4 categories from 1 low to 4 high)
- **Trust** (survey measure from ClickWorker in D'Acunto and Weber 2016)
- **Familiarity** (SAVE survey measure: "The stock market is a closed and sealed book for me.")
- **Financial literacy** (SAVE survey measure: three questions on inflation, interest rates, and diversification from Rooij, Lusardi, Alessie 2011)

Results

	Risk tolerance (1)	Income (2)	Trust (3)	Familiarity (4)	Financial literacy (5)	All variables (6)
East	–0.227***	–0.264***	–0.466***	–0.270***	–0.259***	–0.403***
	(–9.21)	(–9.64)	(–10.52)	(–9.29)	(–9.12)	(–9.48)
Risk tolerance	0.408***					0.417***
	(40.64)					(28.53)
Income		0.084***				0.062***
		(19.46)				(8.76)
Trust			0.022***			–0.010
			(4.73)			(–0.42)
Familiarity (1=high, 7=low)				–0.008		–0.041**
				(–1.54)		(–2.53)
Financial literacy					0.049***	0.033
					(4.04)	(0.70)
Year FE	yes	yes	yes	yes	yes	yes
Pseudo R^2	0.20	0.10	0.22	0.20	0.21	0.24
Observations	176,270	170,824	520,555	699,126	698,373	64,553

Intensity of Exposure

Age and distance

(i) **Temporal:** older investors experienced GDR longer times.

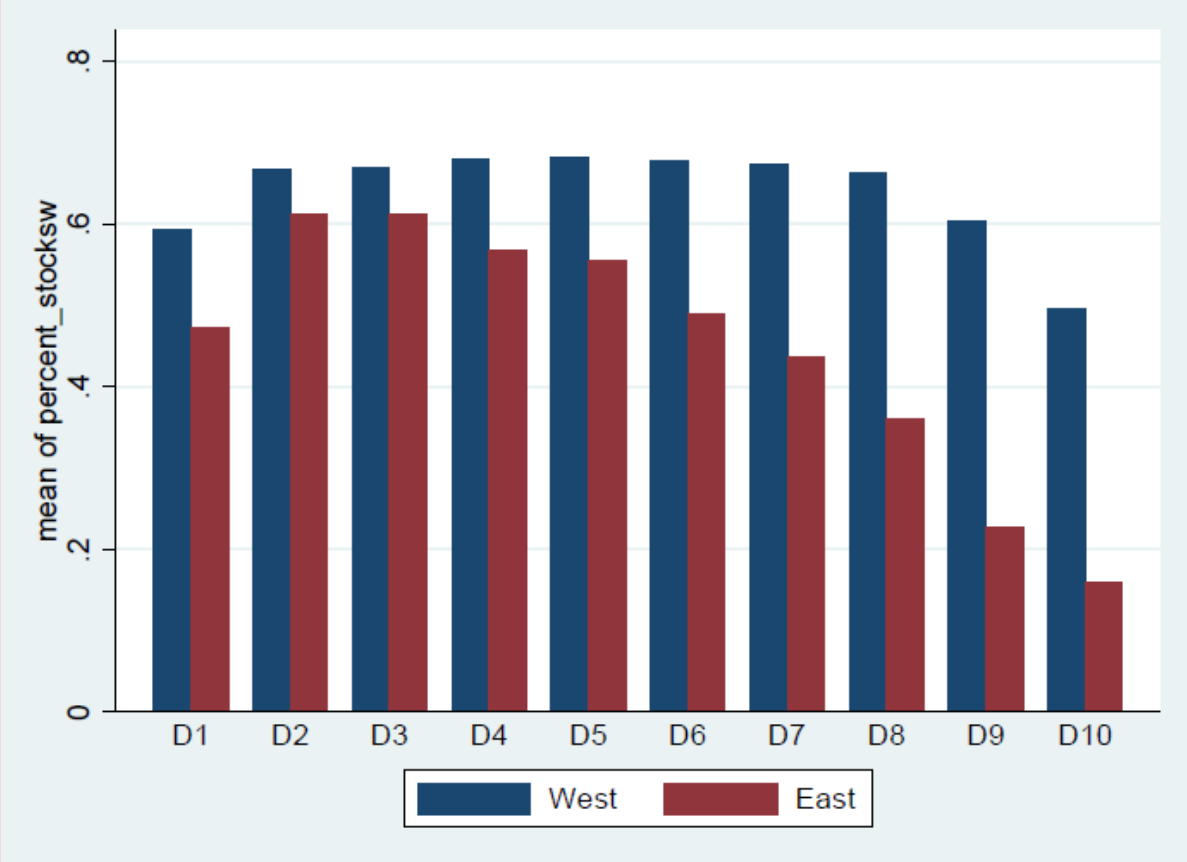
- It could still exist among younger investors, too, if they took over attitudes from their parents.

(ii) **Geographic:** counties further away from "West influences" (border)

(*our brokerage data*)

Age and distance

- Stock market participation by age deciles (1 youngest, 10 oldest)



Age and distance

	Age interaction (1)	Distance interaction (2)	All variables (3)
East	–0.103***	–0.048	0.010
	(–6.66)	(–1.50)	(0.40)
East × above 50	–0.089***		–0.084***
	(–9.45)		(–9.50)
East × distance		–0.023***	–0.023***
		(–3.76)	(–3.78)
Above 50	0.036***		0.035***
	(7.38)		(7.49)
Control variables	yes	yes	yes
Year FE	yes	yes	yes
Pseudo R^2	0.19	0.20	0.20
Observations	839,680	839,680	839,680

Direction

Stock holdings

Propaganda in GDR was anti-capitalism and …

Anti-American Pro-Russian Pro-Vietnamese

Stock holdings

Top 10 „Capitalist“ stocks in the data

Financial industry	US stocks
DEUTSCHE BANK	CISCO SYSTEMS
COMMERZBANK	MICROSOFT
ALLIANZ	GENERAL ELECTRIC
MUENCHENER RUCK.	INTEL
DEUTSCHE POSTBANK	EMC
WCM BETEILIGUNG UND GRUNDBESITZ	PFIZER
MLP	WORLDCOM (delisted)
COMDIRECT BANK	YAHOO
HYPO REAL ESTATE HLDG. (delisted)	COMMERCE ONE (delisted)
DEUTSCHE BOERSE	DELL

Stock holdings

Formerly „communist“ stocks in the data

Russia
OAO GAZPROM
LUKOIL OAO
ROSNEFT
ROSTELECOM
NORILSK NICKEL

China
PETROCHINA
BYD
CHINA LIFE INSURANCE
CHINA PETROLEUM CHEMCIAL
ICBC
CHINA TELECOM
TSINGTAO BREWERY

Vietnam
Vietnam Holding

Stock holdings

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

Even today, East Germans hold fewer stocks from financial industry and the US, and more stocks from other (formerly) communist regimes

Consistency with Personal Experience: Positive Emotions

Political propaganda via positive emotions

- Strengthen propaganda effects via positive emotions and a feeling of “national pride”
  1. **Showcase cities**: Renamed cities (communist names) = objects of political propaganda. Renaming cities was a Bureaucratic decision (with last minute changes) and associated with attention, celebrations, and extra spending (reconstruction, welfare, job quality.)
  2. Sports as a propaganda tool: Cities with **Olympic medal** winners.

Political propaganda via positive emotions

The GDR's political leadership regarded athletic prowess as an important propaganda tool in their efforts to prove their system's superiority to western liberalism.

"Sport is not an end in itself, but the means to an end" – Erich Honecker

Political propaganda via positive emotions

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

Inconsistency with Personal Experience: Negative Emotions

Resistance to Propaganda

McGuire (1964) investigated factors that induced resistance to propaganda/persuasion effects:

- People are more likely to defend themselves against persuasion, if they hold "cultural truisms," that is, beliefs one holds that are so ingrained within the cultural milieu that they had never been attacked before.

-> **Religion, which was attacked by communist party ("Opium für's Volk.")**

Propaganda may also be less effective if it contradicts peoples' everyday experiences:

- „In the interest of peoples' well-being, the GDR takes care of protecting the environment" (GDR constitution)

-> **Living in polluted areas**

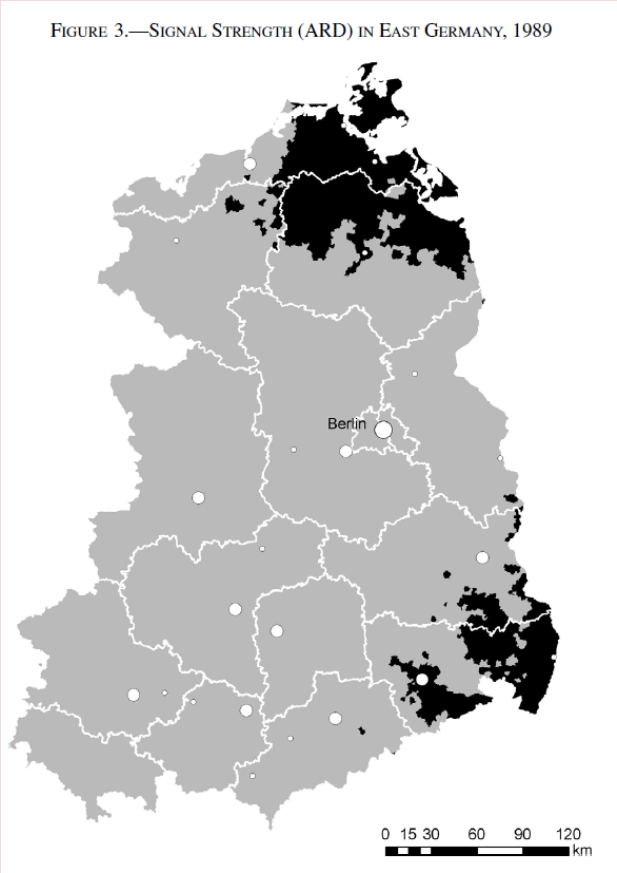
Resistance to Propaganda

Stock market participation	Catholic area in GDR (1)	% catholics 2011 census (2)	% protestants 2011 census (3)	% catholics & protestants (4)	Environmental pollution
East	–0.197***	–0.214***	–0.383***	–0.398***	–0.204***
	(–10.25)	(–10.27)	(–5.23)	(–5.75)	(–10.24)
East × catholic place GDR	0.065***				
	(3.13)				
East × Fraction of Catholics 2011		0.003***			
		(3.12)			
East × Fraction of Protestants 2011			0.006***		
			(3.31)		
East × Fraction of Cath & Prot 2011				0.005***	
				(3.68)	
East × Env. pollution					0.052**
					(2.51)
Year FE	yes	yes	yes	yes	
Pseudo R^2	0.19	0.19	0.19	0.20	0.19
Observations	839,680	839,680	839,680	839,680	839,680

A natural experiment

- Differential access to West German television broadcasting in East Germany
- Some regions were either too distant from the western border or West Berlin, or located in valleys behind mountains that blocked TV broadcasting signals.

→ An example is the large and important district of Dresden, situated in the Elbe valley, which became known as the "valley of the clueless" (Stiehler, 2001).



Source: Bursztyn and Cantoni (2016)

Access to West TV and resistance to propaganda

Inhabitants of areas without reception (of Western TV) were **less** satisfied with the political system of the GDR:

- "Escapism": Existence of Western television "*offered them a vicarious escape from the scarcities, the queues, and the ideological indoctrination, making life under communism more bearable and the East German regime more tolerable.*" (Kern/ Hainmueller 2009)
- "Salience of dark sides of Capitalism": Western TV by made East Germans aware of downsides of capitalistic society (crime, homelessness, unemployment) → deterrence effect (Hesse 1988; Meyen 2003).

→ Are our results <u>weaker</u> in regions with no access to West TV, i.e., regions where people were less satisified with the GDR?

Access to West TV (Entertainment)

Panel A: Full sample	Stock market participation (1)	% stocks in portfolio (2)	%bonds in portfolio (3)
East	–0.198***	–0.070***	0.163***
	(–10.19)	(–7.31)	(9.67)
East × No West TV	0.066***	0.013	–0.088***
	(4.67)	(0.08)	(–3.42)
Control variables	yes	yes	yes
Year FE	yes	yes	yes
Pseudo/Adj. R^2	0.19	0.09	0.25
Observations	839,680	687,464	839,272
Panel B: Within East Germany	**Stock market participation (1)**	**% stocks in portfolio (2)**	**%bonds in portfolio (3)**
No West TV	0.170***	–0.031	–0.156***
	(4.08)	(–0.89)	(–4.90)
Control variables	yes	yes	yes
Year FE	yes	yes	yes
Pseudo/Adj. R^2	0.21	0.10	0.31
Observations	13,185	10,062	13,178

Consistency with Attitudes towards Communism/GDR

Proxies for existing opinions and beliefs

1. Counties with many secret police (STASI) volunteers
2. Counties where people believe the political system of the GDR was very strong
3. Counties voting for the communist party (PDS) even nowadays

Political propaganda reflected by existing opinions and beliefs

	Stasi volunteers (1)	Liked GDR politics (2)	Votes for left party (3)
East	–0.143***	–0.116***	0.038
	(–6.05)	(–6.37)	(1.47)
East × Stasi	–0.081**		
	(–2.51)		
East × liked GDR politics		–0.219***	
		(–5.65)	
East × left party votes			–0.499***
			(–2.76)
Left party votes			–0.304*
			(–1.80)
Control variables	yes	yes	yes
Year FE	yes	yes	yes
Pseudo R^2	0.194	0.196	0.211
Observations	839,680	839,461	213,973

Trigger Points

Trigger of experienced propaganda: Election Years (2005, 2009)

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

Financial Implications:
Portfolio returns, fees, diversification

Financial Implications

- Long-term experience effects of communist propaganda may contribute to growth diff in financial wealth between East and West Germany.
- Lower lifetime **wealth accumulation** because people in East Germany shy away from the stock market. (Forgo equity premium.)
  - Worse financial outcomes.
  - Worse portfolio diversification.

Portfolio returns

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

Monthly alphas "long in E German investors', short in W German investors' portfolio"→ Annualized return difference between amounts to **0.8 - 1.3%.**

Other types of costs

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

Economic Magnitudes

East German investors:

1) Hold **less passive investments** (like ETFs), economic effect: relative to the mean (0.038), East Germans are 26.32% less likely to hold passive investments
2) Are **less diversified** (number of distinct assets): Relative to the average number of assets (4.442), East Germans hold 33.07% fewer assets in their portfolios
3) Hold **more expensive funds**: Relative to the mean fee (1.375%), East Germans pay 3.71% higher fees
4) Are **less diversified with respect to individual stocks** (Herfindahl index based on individual stock holdings): Relative to the mean (0.689), East German portfolios are 5.52% more concentrated
5) Are more likely to **hold bank-owned products** which are generally more expensive (relative to the mean of 0.416, East Germans hold 7.45% more bank owned products)

Conclusion

- East German investors continue to be less willing to assume financial risk and are less likely to participate in the stock market, in particular if they had
  - **Strong** exposure to communism (older, living further away from the former border to West Germany, living in counties where Stasi activity was high).
  - **Had pro-communism experiences** (living in pro-communist counties; in counties with Olympic medal winners; in counties with special subsidies and renaming ceremony).
  - **Had no particularly negative experiences** (environmental pollution, religious discrimination).
- Long-term effect of political propaganda is costly: East German investors forego the equity premium, are less diversified and pay higher fees.
- **Big picture:** Emotional coloring (or priming) as a foundation of experience-based belief formation.
  - **Long-term effect of life-time experiences is colored by "how" emotions at the time color the experience.**

Questions for Further Steps

Debate in the literature on experience effects: **channels**.

- Much of the evidence has shown that lifetime experiences directly affect **belief formation**, e.g., stock-market expectations or inflation expectations.

- Much of the literature in political economy and labor economics, and in particular prior literature that exploits East-West differences, tends to suggests that the channel might be via **preferences**, norms, and outcomes such as trust (Alesina and Fuch-Schuendeln 2007; Lichter, Loeffler, Siegloch 2016).

Binary choice between the beliefs channel and the preference channel incomplete?

- Cf. literature on the affect heuristic and memory suggests that emotions color experiences. Different "systems"?

- Experiences with the communist system and political propaganda against capital markets offers the opportunity to explore those angles.