

Equity Premium Puzzle, Expectations and Covid-19: Evidence from Germany

– work in progress –

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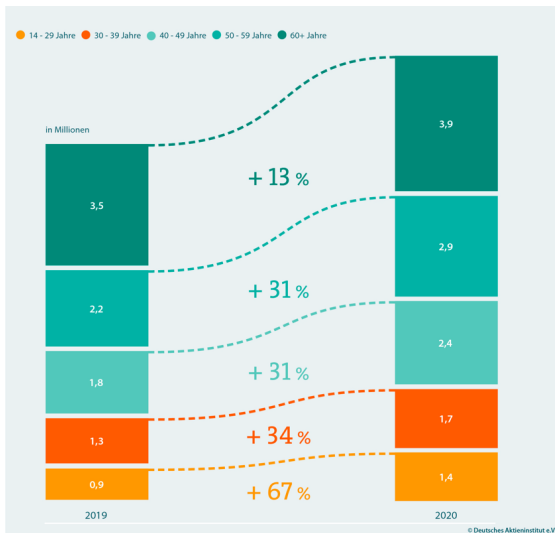
Motivation: Stock market turbulence due to Covid-19



S &P 500

Eurostoxx 50

Motivation: Change of Equity Holders



This paper

Research Question

- ① What prevents households from investing?
- ② What make them invest?
- ③ How are expectations and financial investments connected?

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This paper

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- ① What prevents households from investing?
- ② What make them invest?
- ③ How are expectations and financial investments connected?

Inserting questions in the *Bundesbank Online Pilot (BOP)* I find that...

- ① **Participation costs:** lack of information and interest
- ② **Adjustment costs:** risk and time constraint
- ③ **Buyers** invested either because of opportunity or savingsplan.
- ④ Higher house price and inflation **expectations** reduce the likelihood to invest

Gap in the Literature

- ① Equity Premium Puzzle: Comparing mechanisms
In spirit of Choi and Robertson (2020); Bender, Choi, Dyson, and Robertson (2019)
- ② Adjustment Costs and how to overcome them
Bonaparte, Cooper, and Zhu (2012)
- ③ Expectations and Financial Asset investments
Giglio, Maggiori, Stroebel, and Utkus (2019); Manski (2018)

Bundesbank Online Panel

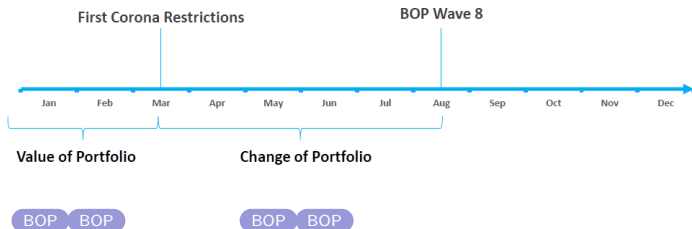
- Bundesbank Online Pilot Survey on Consumer Expectations (BOP)
- Online survey of German citizens aged 16 years or older
- Monthly survey with 2,000 households
- Representative sample
- Individuals' expectations and socio-demographic characteristics

Bundesbank Online Panel

- Bundesbank Online Pilot Survey on Consumer Expectations (BOP)
- Online survey of German citizens aged 16 years or older
- Monthly survey with 2,000 households
- Representative sample
- Individuals' expectations and socio-demographic characteristics
- **Additional questions on financial asset investments**

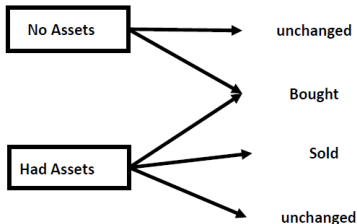
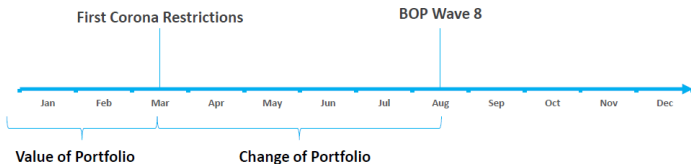
Bundesbank Online Panel

Time Line



Bundesbank Online Panel

Time Line



| |
|---------------------|
| I. No Participation |
| II. Buyer |
| III. Seller |
| IV. No Adjustment |

Bundesbank Online Panel

| No Participation BOP | No Adjustment BOP | Bought BOP | Sold BOP |
|-------------------------------------|----------------------|--|---|
| prices fall | prices fall | prices rise | prices fall |
| too risky shock distrust | too risky | | too risky shock |
| no savings costs | no savings costs | costs less consumption more income | no savings need for consumption need debt obligations |
| peer-effect | peer-effect | peer-effect | peer-effect |
| no time | no time | time | no time |
| information no interest moral | | information savings plan | re-balancing |

General Results

| | | no participation (I) | no adjustment (II) | bought (III) | sold (IV) |
|--------|---|-------------------------|-----------------------|-----------------|--------------|
| Total | % | 55.1 | 23.0 | 20.0 | 5.8 |
| | € | | | 5,100 | -3,100 |
| Funds | % | | | 69.5 | 57.3 |
| | € | | | 2,100 | -1,900 |
| Bonds | % | | | 51.5 | 68.4 |
| | € | | | 2,300 | 0 |
| Stocks | % | | | 8.3 | 13.2 |
| | € | | | 0 | -200 |
| Other | % | | | 17.8 | 29.3 |
| | € | | | 600 | -1,100 |
| n | | 1,013 | 513 | 454 | 133 |

General Results

| | (1) No Participation | (2) No Adjustment | (3) Has Bought | (4) Has Sold |
|----------------|----------------------------|-------------------------|----------------------|----------------------|
| college | -0.318*** (0.086) | 0.089 (0.096) | 0.292*** (0.094) | 0.219* (0.124) |
| female | 0.287*** (0.082) | 0.069 (0.096) | -0.467*** (0.087) | -0.370*** (0.123) |
| < 30 | -0.052 (0.129) | -0.216 (0.176) | 0.360*** (0.128) | 0.183 (0.176) |
| owner | -0.381*** (0.086) | 0.307*** (0.101) | 0.240*** (0.092) | -0.116 (0.134) |
| fin illiterate | 0.457*** (0.153) | -0.218 (0.190) | -0.596*** (0.157) | -0.047 (0.190) |
| Observations | 2022 | 2022 | 2022 | 2022 |
| Controls | Yes | Yes | Yes | Yes |

General Results

| | (1) No Participation | (2) No Adjustment | (3) Has Bought | (4) Has Sold |
|---------------|----------------------------|-------------------------|----------------------|--------------------|
| full-time | -0.236 (0.145) | -0.034 (0.173) | 0.402** (0.162) | 0.375* (0.218) |
| part-time | -0.120 (0.185) | 0.014 (0.237) | 0.254 (0.204) | 0.401 (0.273) |
| retired | -0.102 (0.159) | 0.019 (0.185) | 0.132 (0.177) | 0.405* (0.244) |
| self-employed | -0.075 (0.226) | -0.086 (0.245) | 0.190 (0.228) | 0.626** (0.289) |
| < 1500€ | 0.420*** (0.141) | -0.279* (0.148) | -0.568*** (0.183) | 0.033 (0.209) |
| Observations | 2022 | 2022 | 2022 | 2022 |
| Controls | Yes | Yes | Yes | Yes |

No Participation

No Participation

| | Fully agree (I) | At least rather agree (II) | Mean (III) | Standardized (III) |
|--------------------|--------------------|----------------------------------|---------------|-----------------------|
| information | 50.52% | 72.80% | 3.25 | 0.58 |
| no interest | 47.49% | 69.88% | 3.17 | 0.47 |
| distrust | 37.99% | 63.03% | 3.00 | 0.27 |
| too risky | 34.77% | 59.35% | 2.88 | 0.17 |
| no time | 33.37% | 57.89% | 2.83 | 0.09 |
| peer-effect | 30.22% | 51.31% | 2.70 | -0.08 |
| no savings | 30.32% | 53.92% | 2.73 | -0.12 |
| prices fall | 17.52% | 51.77% | 2.61 | -0.15 |
| shock | 23.91% | 46.28% | 2.53 | -0.22 |
| costs | 19.95% | 42.88% | 2.44 | -0.34 |
| moral | 16.27% | 32.39% | 2.17 | -0.70 |

No Participation: PCA

Comp 1

Comp 2

Comp 3

No Participation: PCA

| | Comp 1 | Comp 2 | Comp 3 |
|-------------|---------------|--------|--------|
| | risk aversion | | |
| too risky | 0.42 | | |
| distrust | 0.42 | | |
| shock | 0.37 | | |
| prices fall | 0.35 | | |

No Participation: PCA

| Comp 1 risk aversion | | Comp 2 lack of resources | | Comp 3 |
|-------------------------|------|-----------------------------|-------|--------|
| too risky | 0.42 | no interest | 0.47 | |
| distrust | 0.42 | information | 0.40 | |
| shock | 0.37 | no time | 0.40 | |
| prices fall | 0.35 | no savings | 0.34 | |
| | | shock | -0.33 | |

No Participation: PCA

| Comp 1 risk aversion | | Comp 2 lack of resources | | Comp 3 lack of savings | |
|-------------------------|------|-----------------------------|-------|---------------------------|-------|
| too risky | 0.42 | no interest | 0.47 | no savings | 0.64 |
| distrust | 0.42 | information | 0.40 | moral | -0.60 |
| shock | 0.37 | no time | 0.40 | | |
| prices fall | 0.35 | no savings | 0.34 | | |
| | | shock | -0.33 | | |

No Participation: PCA

| | (1) Risk Aversion | (2) Lack of Resources | (3) Lack of Savings |
|----------------|-------------------------|-----------------------------|---------------------------|
| age | 0.006*** (0.002) | -0.009*** (0.002) | -0.002 (0.003) |
| < 1500 | -0.073 (0.058) | 0.029 (0.064) | 0.261*** (0.096) |
| Observations | 811 | 823 | 827 |
| Adjusted R^2 | 0.073 | 0.103 | 0.059 |
| Controls | Yes | Yes | Yes |

Controls

No Participation

Takeaway #1: No Participation

- 1 Lack of information and interest are dominant factors
- 2 Importance of risk increases with age, lack of resources decrease in age, and lack of savings decreases with income

No Adjustment

No Adjustment

| | Fully agree (I) | At least rather agree (II) | Mean (III) | Standardized (III) |
|-------------|--------------------|----------------------------------|---------------|-----------------------|
| too risky | 20.47% | 55.52% | 2.53 | 0.31 |
| no time | 17.05% | 49.39% | 2.38 | 0.11 |
| prices fall | 9.47% | 48.62% | 2.39 | 0.09 |
| no savings | 18.25% | 42.20% | 2.30 | -0.06 |
| peer-effect | 17.24% | 36.07% | 2.12 | -0.19 |
| costs | 10.67% | 32.40% | 2.09 | -0.28 |

[Demo](#)

No Adjustment: PCA

| Comp 1 | | Comp 2 | |
|-------------|------|-----------------|-------|
| bad timing | | time constraint | |
| too risky | 0.63 | no savings | -0.70 |
| prices fall | 0.58 | peer effect | 0.55 |
| costs | 0.49 | no time | 0.45 |

No Adjustment

Takeaway #2: No Adjustment

- ① Risk, time, and prices fall are dominant factors
- ② Either bad timing or time constraint
- ③ Needs more research

Buyer

Buyer

| | Fully agree (I) | At least rather agree (II) | Mean (III) | Standardized (III) |
|--------------------|--------------------|----------------------------------|---------------|-----------------------|
| plan | 43.54% | 62.07% | 2.76 | 0.92 |
| prices rise | 38.74% | 64.08% | 2.79 | 0.90 |
| time | 8.09% | 26.59% | 1.77 | -0.07 |
| information | 7.60% | 24.22% | 1.70 | -0.15 |
| less consumption | 3.88% | 18.73% | 1.58 | -0.29 |
| more income | 4.33% | 19.88% | 1.57 | -0.31 |
| peer-effect | 4.15% | 13.87% | 1.49 | -0.36 |
| bank fees | 0.38% | 3.52% | 1.21 | -0.65 |

Buyer: active vs passive

| | (1) active | (2) passive |
|---------------|----------------------------|----------------------|
| owner | 0.565*** (0.196) | -0.401** (0.192) |
| < 30 | 0.624** (0.254) | -0.347 (0.261) |
| first time | 0.627* (0.351) | -0.744** (0.353) |
| bought & sold | 0.669*** (0.206) | -0.818*** (0.206) |
| Observations | 454 | 454 |
| Controls | Yes | Yes |

Buyer: active vs passive

| | (1) active | (2) passive |
|---------------|----------------------------|----------------------|
| owner | 0.565*** (0.196) | -0.401** (0.192) |
| < 30 | 0.624** (0.254) | -0.347 (0.261) |
| first time | 0.627* (0.351) | -0.744** (0.353) |
| bought & sold | 0.669*** (0.206) | -0.818*** (0.206) |
| Observations | 454 | 454 |
| Controls | Yes | Yes |

| | (1) active | (2) passive |
|------------------|----------------------------|----------------------|
| time | 0.703*** (0.126) | -1.152*** (0.136) |
| information | 0.206* (0.121) | -0.899*** (0.128) |
| less consumption | 0.224 (0.170) | -0.820*** (0.167) |
| more income | 0.415** (0.172) | -1.120*** (0.157) |
| costs | 0.871*** (0.270) | -2.069*** (0.301) |
| peer effect | 0.742*** (0.166) | -1.534*** (0.170) |
| Observations | 431 | 431 |
| Controls | Yes | Yes |

Buyer: By asset type

| | (1) Funds | (2) Bonds | (3) Stocks | (4) Other |
|---------------|--------------|--------------|---------------|--------------|
| has Funds | | | | |
| has Bonds | | | | |
| has Stocks | | | | |
| has Other | | | | |
| first time | | | | |
| bought & sold | | | | |
| Observations | 454 | 454 | 430 | 454 |
| Controls | Yes | Yes | Yes | Yes |

Buyer: By asset type

| | (1) Funds | (2) Bonds | (3) Stocks | (4) Other |
|---------------|----------------------------|----------------------------|----------------------------|----------------------------|
| has Funds | 2.527*** (0.317) | -0.699** (0.327) | 1.219** (0.553) | -0.771* (0.408) |
| has Bonds | 0.063 (0.341) | 1.432*** (0.263) | 0.538 (0.399) | 0.036 (0.382) |
| has Stocks | -0.241 (0.380) | 0.203 (0.389) | 2.192*** (0.395) | -0.057 (0.490) |
| has Other | -0.321 (0.329) | 0.901*** (0.325) | 0.150 (0.427) | 2.027*** (0.349) |
| first time | 0.570 (0.414) | 1.098*** (0.379) | 0.000 (.) | 0.900* (0.461) |
| bought & sold | -0.419* (0.222) | 0.452 (0.276) | -0.598* (0.326) | -0.139 (0.316) |
| Observations | 454 | 454 | 430 | 454 |
| Controls | Yes | Yes | Yes | Yes |

Buyer: By asset type

| | Funds | Bonds | Stocks | Other |
|--------------|---------------------------|----------------------------|--------------------|----------------------------|
| value funds | 0.108** (0.047) | -0.085* (0.051) | -0.127* (0.070) | -0.021 (0.059) |
| value bonds | -0.143** (0.061) | 0.206*** (0.051) | -0.040 (0.075) | -0.191*** (0.067) |
| value stocks | 0.010 (0.079) | -0.032 (0.079) | 0.045 (0.067) | -0.035 (0.104) |
| value other | -0.088 (0.062) | -0.142** (0.062) | -0.170 (0.112) | 0.193*** (0.071) |
| Observations | 454 | 454 | 430 | 454 |
| Controls | Yes | Yes | Yes | Yes |

Buyer

Takeaway #3: Buyer

- ① Active vs Passive buyers
- ② Active buyers are younger, richer and respond to additional information, time, income, costs, and peer effects.
- ③ Respondents bought the asset type they already held

House Price Expectations and Buyer

| | (1) All | (2) Owner | (3) Renter | (4) All | (5) Owner | (6) Renter |
|----------------|------------|--------------|---------------|------------|--------------|---------------|
| housing quali | | | | | | |
| prop quali | | | | | | |
| rent quali | | | | | | |
| house price PE | | | | | | |
| Observations | 2019 | 1263 | 759 | 1880 | 1176 | 704 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |

Conditional on Stockholdings

House Price Expectations and Buyer

| | (1) All | (2) Owner | (3) Renter | (4) All | (5) Owner | (6) Renter |
|----------------|----------------------|--------------|---------------|------------|--------------|---------------|
| housing quali | -0.195*** (0.050) | | | | | |
| prop quali | | | | | | |
| rent quali | | | | | | |
| house price PE | | | | | | |
| Observations | 2019 | 1263 | 759 | 1880 | 1176 | 704 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |

Conditional on Stockholdings

House Price Expectations and Buyer

| | (1) All | (2) Owner | (3) Renter | (4) All | (5) Owner | (6) Renter |
|----------------|----------------------|----------------------|--------------------|------------|--------------|---------------|
| housing quali | -0.195*** (0.050) | | | | | |
| prop quali | | -0.146*** (0.055) | | | | |
| rent quali | | | -0.150* (0.079) | | | |
| house price PE | | | | | | |
| Observations | 2019 | 1263 | 759 | 1880 | 1176 | 704 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |

Conditional on Stockholdings

House Price Expectations and Buyer

| | (1) All | (2) Owner | (3) Renter | (4) All | (5) Owner | (6) Renter |
|----------------|----------------------|----------------------|--------------------|----------------------|-------------------|----------------------|
| housing quali | -0.195*** (0.050) | | | | | |
| prop quali | | -0.146*** (0.055) | | | | |
| rent quali | | | -0.150* (0.079) | | | |
| house price PE | | | | -0.026*** (0.008) | -0.011 (0.010) | -0.049*** (0.014) |
| Observations | 2019 | 1263 | 759 | 1880 | 1176 | 704 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |

Conditional on Stockholdings

Inflation Expectations and Buyer

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|-----------------------------|------|------|------|------|------|------|------|------|
| inflation quali | | | | | | | | |
| inflation PE | | | | | | | | |
| fin illiterate: | | | | | | | | |
| inflation > 30 | | | | | | | | |
| fin illiterate: | | | | | | | | |
| inflation > 10 | | | | | | | | |
| $0 < \text{inflation} < 10$ | | | | | | | | |
| $0 < \text{inflation} < 5$ | | | | | | | | |
| inflation prob exp | | | | | | | | |
| inflation prob std | | | | | | | | |
| Observations | 2018 | 1883 | 1883 | 1883 | 1827 | 1663 | 1720 | 1720 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Inflation Expectations and Buyer

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|--------------------|-----------|------|------|------|------|------|------|------|
| inflation quali | -0.235*** | | | | | | | |
| | (0.073) | | | | | | | |
| inflation PE | | | | | | | | |
| fin illiterate: | | | | | | | | |
| inflation > 30 | | | | | | | | |
| fin illiterate: | | | | | | | | |
| inflation > 10 | | | | | | | | |
| 0 < inflation < 10 | | | | | | | | |
| 0 < inflation < 5 | | | | | | | | |
| inflation prob exp | | | | | | | | |
| inflation prob std | | | | | | | | |
| Observations | 2018 | 1883 | 1883 | 1883 | 1827 | 1663 | 1720 | 1720 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Inflation Expectations and Buyer

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|------------------------------------|----------------------|----------------------|------|------|------|------|------|------|
| inflation quali | -0.235*** (0.073) | | | | | | | |
| inflation PE | | -0.098*** (0.019) | | | | | | |
| fin illiterate: inflation > 30 | | | | | | | | |
| fin illiterate: inflation > 10 | | | | | | | | |
| 0 < inflation < 10 | | | | | | | | |
| 0 < inflation < 5 | | | | | | | | |
| inflation prob exp | | | | | | | | |
| inflation prob std | | | | | | | | |
| Observations | 2018 | 1883 | 1883 | 1883 | 1827 | 1663 | 1720 | 1720 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Inflation Expectations and Buyer

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|------------------------------------|----------------------|----------------------|----------------------|----------------------|------|------|------|------|
| inflation quali | -0.235*** (0.073) | | | | | | | |
| inflation PE | | -0.098*** (0.019) | -0.097*** (0.018) | -0.093*** (0.020) | | | | |
| fin illiterate: inflation > 30 | | | -0.366 (0.227) | | | | | |
| fin illiterate: inflation > 10 | | | | -0.183 (0.214) | | | | |
| 0 < inflation < 10 | | | | | | | | |
| 0 < inflation < 5 | | | | | | | | |
| inflation prob exp | | | | | | | | |
| inflation prob std | | | | | | | | |
| Observations | 2018 | 1883 | 1883 | 1883 | 1827 | 1663 | 1720 | 1720 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Inflation Expectations and Buyer

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------|------|
| inflation quali | -0.235*** (0.073) | | | | | | | |
| inflation PE | | -0.098*** (0.019) | -0.097*** (0.018) | -0.093*** (0.020) | | | | |
| fin illiterate: inflation > 30 | | | -0.366 (0.227) | | | | | |
| fin illiterate: inflation > 10 | | | | -0.183 (0.214) | | | | |
| 0 < inflation < 10 | | | | | -0.116*** (0.025) | | | |
| 0 < inflation < 5 | | | | | | -0.141*** (0.034) | | |
| inflation prob exp | | | | | | | | |
| inflation prob std | | | | | | | | |
| Observations | 2018 | 1883 | 1883 | 1883 | 1827 | 1663 | 1720 | 1720 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Inflation Expectations and Buyer

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| inflation quali | -0.235*** (0.073) | | | | | | | |
| inflation PE | | -0.098*** (0.019) | -0.097*** (0.018) | -0.093*** (0.020) | | | | |
| fin illiterate: inflation > 30 | | | -0.366 (0.227) | | | | | |
| fin illiterate: inflation > 10 | | | | -0.183 (0.214) | | | | |
| 0 < inflation < 10 | | | | | -0.116*** (0.025) | | | |
| 0 < inflation < 5 | | | | | | -0.141*** (0.034) | | |
| inflation prob exp | | | | | | | -0.049*** (0.017) | -0.088*** (0.019) |
| inflation prob std | | | | | | | | -0.564*** (0.191) |
| Observations | 2018 | 1883 | 1883 | 1883 | 1827 | 1663 | 1720 | 1720 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Expectations and Buyer

Takeaway #4: Expectations

- ① Higher houseprice expectations crowds out financial asset investments
- ② Higher inflation expectations reduces probability to buy

Conclusion

This paper asks households about their financial investment behavior during the covid-19 pandemic and finds:

- ① **Participation costs:** lack of information and interest
- ② **Adjustment costs:** risk and time constraint
- ③ **Buyers** invested either because of opportunity or savingsplan.
- ④ Higher house price and inflation **expectations** reduce the likelihood to invest

THANKS for your attention

I am grateful for comments and suggestions

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Seller

| | Fully agree (I) | At least rather agree (II) | Mean (III) | Standardized (III) |
|-----------------------------|--------------------|----------------------------------|---------------|-----------------------|
| prices fall | 12.46% | 40.94% | 2.29 | 0.84 |
| re-balancing | 23.93% | 44.36% | 2.25 | 0.71 |
| shock | 6.83% | 26.54% | 1.79 | 0.15 |
| too risky | 6.96% | 23.06% | 1.72 | 0.06 |
| need consumption | 6.84% | 17.60% | 1.55 | -0.17 |
| need debt obligations | 5.94% | 13.38% | 1.43 | -0.31 |
| no time | 4.02% | 11.68% | 1.38 | -0.35 |
| peer-effect | 0.25% | 10.79% | 1.34 | -0.39 |
| need support friends/family | 1.60% | 6.79% | 1.23 | -0.54 |

Demo

Seller

| Comp 1 Crisis | | Comp 2 Lack of Resources | | Comp 3 Social Component | | Comp 4 Rebalancing | |
|------------------|------|-----------------------------|------|---------------------------------|------|-----------------------|------|
| too risky | 0.59 | need debt obligations | 0.66 | peer effect | 0.75 | rebalancing | 0.94 |
| shock | 0.56 | need consumption | 0.65 | need support friends and family | 0.56 | | |
| no time | 0.44 | | | | | | |
| prices fall | 0.34 | | | | | | |

Seller

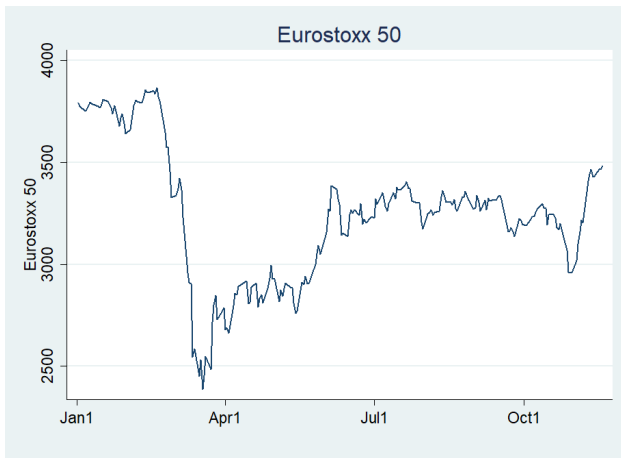
Takeaway #5: Seller

- ① prices fall and re-balancing seem to be most important
- ② Shock and riskiness drives some households out

Motivation (2): Stock market turbulence due to Covid-19

[back](#)

Motivation (2): Stock market turbulence due to Covid-19



BOP Questions (1)

| 816A | PRO A1 | Stock market 1 | has_portfolio_[a-d] |
|--|--------|----------------|---------------------|
| <p>Info box with the following text:</p> <p>A) A fund is a "basket" of many, sometimes very different, securities. A fund share denotes a share in this basket and its income. In some cases, the fund finances only individual projects, such as real estate, ship building or films. Examples of common types of funds are share-based funds, bond-based funds, money market funds, funds of funds, hedge funds, exchange-traded funds (ETFs), shipping funds and media funds.</p> <p>B) Fixed income securities are assets which entitle the bearer to a pre-determined rate of interest. Depending on who issued these securities, they could be government bonds (such as Federal bonds, Federal savings notes, Federal Treasury financing paper, Federal Treasury notes, municipal bonds, Pfandbriefe issued by central, state or local government), corporate bonds or other debt securities (e.g. bank bonds).</p> <p>C) A listed share is a security that is traded on the stock exchange which shows the shareholder (owner of the security) as being a co-owner of a public limited company. This type of security therefore usually entitles the bearer to a share of the company's income. The share constitutes a certificate which securitises a share in the capital of a public limited company.</p> <p>QUESTION: <u>Prior to the coronavirus pandemic</u>, did you hold the following financial assets directly in your safe custody account?</p> <p>1 = Yes 2 = No</p> <p>a) Fund shares b) Fixed income securities (such as government bonds, corporate bonds and bank bonds) c) Listed shares d) Other financial products (such as foreign exchange, gold, cryptocurrency)</p> | | | |

back

BOP Questions (2)

| 816B | PRO A1 | Stock market 1 | value_portfolio_[a-d] |
|--|--------|----------------|-----------------------|
| Input filter: if has_portfolio_a == 1 OR has_portfolio_b == 1 OR has_portfolio_c == 1 OR has_portfolio_d == 1 | | | |
| Info box with the following text: | | | |
| <p>A) A fund is a "basket" of many, sometimes very different, securities. A fund share denotes a share in this basket and its income. In some cases, the fund finances only individual projects, such as real estate, ship building or films. Examples of common types of funds are share-based funds, bond-based funds, money market funds, funds of funds, hedge funds, exchange-traded funds (ETFs), shipping funds and media funds.</p> <p>B) Fixed income securities are assets which entitle the bearer to a pre-determined rate of interest. Depending on who issued these securities, they could be government bonds (such as Federal bonds, Federal savings notes, Federal Treasury financing paper, Federal Treasury notes, municipal bonds, Pfandbriefe issued by central, state or local government), corporate bonds or other debt securities (e.g. bank bonds).</p> <p>C) A listed share is a security that is traded on the stock exchange which shows the shareholder (owner of the security) as being a co-owner of a public limited company. This type of security therefore usually entitles the bearer to a share of the company's income. The share constitutes a certificate which securitises a share in the capital of a public limited company.</p> | | | |
| <p>QUESTION: What is your rough estimate of the market value of your financial assets prior to the coronavirus pandemic?</p> <p>a Fund shares [only show item if portfolio_a =1]</p> <p>b Fixed income securities (such as government bonds, corporate bonds and bank bonds) [only show item if portfolio_b =1]</p> <p>c Listed shares [only show item if portfolio_c =1]</p> <p>d Other financial products (such as foreign exchange, gold, cryptocurrency) [only show item if portfolio_d =1]</p> | | | |
| <p>Show brackets:</p> <p>1 = €1 to less than €500</p> <p>2 = €500 to less than €1,000</p> <p>3 = €1,000 to less than €3,000</p> <p>4 = €3,000 to less than €5,000</p> <p>5 = €5,000 to less than €10,000</p> <p>6 = €10,000 to less than €20,000</p> <p>7 = €20,000 to less than €30,000</p> <p>8 = €30,000 to less than €50,000</p> <p>9 = €50,000 or more</p> | | | |

[back](#)

BOP Questions (3)

| 817A | PRO A1 | Stock market 2 – change | portfolio_bought_[a-d] portfolio_sold_[a-d] portfolio_unchanged_[a-d] | | | | | | | | | | | | | | | | | | | | |
|--|------------|-------------------------|---|--|------------|----------|-----------------------------|----------------|--|--|--|----------------------------|--|--|--|------------------|--|--|--|--|--|--|--|
| <p>QUESTION: Have you bought or sold the following financial assets <u>since the start of the coronavirus pandemic?</u></p> <table border="1"> <thead> <tr> <th></th> <th>1 – Bought</th> <th>2 – Sold</th> <th>3 – Neither bought nor sold</th> </tr> </thead> <tbody> <tr> <td>a) Fund shares</td> <td></td> <td></td> <td></td> </tr> <tr> <td>b) Fixed income securities</td> <td></td> <td></td> <td></td> </tr> <tr> <td>c) Listed shares</td> <td></td> <td></td> <td></td> </tr> <tr> <td>d) Other financial products (such as foreign exchange, gold, cryptocurrency)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | | | | | 1 – Bought | 2 – Sold | 3 – Neither bought nor sold | a) Fund shares | | | | b) Fixed income securities | | | | c) Listed shares | | | | d) Other financial products (such as foreign exchange, gold, cryptocurrency) | | | |
| | 1 – Bought | 2 – Sold | 3 – Neither bought nor sold | | | | | | | | | | | | | | | | | | | | |
| a) Fund shares | | | | | | | | | | | | | | | | | | | | | | | |
| b) Fixed income securities | | | | | | | | | | | | | | | | | | | | | | | |
| c) Listed shares | | | | | | | | | | | | | | | | | | | | | | | |
| d) Other financial products (such as foreign exchange, gold, cryptocurrency) | | | | | | | | | | | | | | | | | | | | | | | |

[back](#)

BOP Questions (4)

| | | | |
|---|--------|------------------------|--|
| 817B | PRO A1 | Stock market 2 – value | portfolio_value_bought_[a-d] portfolio_value_sold_[a-d] |
| Input filter: if portfolio_unchanged_a == 2 OR portfolio_unchanged_b == 2 OR portfolio_unchanged_c == 2 OR portfolio_unchanged_d == 2 | | | |
| QUESTION: Please indicate the amount for which you have bought or sold financial assets <u>since the start of the coronavirus pandemic</u> . | | | |
| | | 1 – Bought | 2 – Sold |
| a) Fund shares {only show item if portfolio_bought_a = 1 OR portfolio_sold_a = 1} | | _euro | _euro |
| b) Fixed income securities {only show item if portfolio_bought_b = 1 OR portfolio_sold_b = 1} | | _euro | _euro |
| c) Listed shares {only show item if portfolio_bought_c = 1 OR portfolio_sold_c = 1} | | _euro | _euro |
| d) Other financial products (such as foreign exchange, gold, cryptocurrency) {only show item if portfolio_bought_d = 1 OR portfolio_sold_d = 1} | | _euro | _euro |

back

BOP Questions (5)

| 818A | PRO A1 | Stock market 3a | portfolio_reason_bought[a-h] |
|--|--------|-----------------|------------------------------|
| Input filter: if portfolio_bought_a == 1 OR portfolio_bought_b == 1 OR portfolio_bought_c == 1 OR portfolio_bought_d == 1 | | | |
| Order of the categories a to h is generated randomly for each respondent. | | | |
| <p>QUESTION: Why did you decide to buy the asset(s) after the coronavirus pandemic began?</p> <p>1 = Strongly agree 2 = Mostly agree 3 = Mostly disagree 4 = Strongly disagree</p> <p>Please select an answer for each row.</p> <p>a The prices are/were low at the time. b I (finally) found time for it. c I received additional information (e.g. from your bank, social media, television). d Since my consumption expenditure has fallen, I have money to invest. e Since my income has risen, I have money to invest. f My bank has (temporarily) lowered its safe custody account costs. g People in my circle of (close) family and friends have also bought assets. h I have a fixed savings plan.</p> | | | |

[back](#)

BOP Questions (6)

| 818B | PRO A1 | Stock market 3b | portfolio_reason_sold[a-i] |
|---|--------|-----------------|----------------------------|
| Input filter: if portfolio_sold_a == 1 OR portfolio_sold_b == 1 OR portfolio_sold_c == 1 OR portfolio_sold_d == 1 | | | |
| Order of the categories a to i is generated randomly for each respondent. | | | |
| <p>QUESTION: Why did you decide to sell the asset(s) after the coronavirus pandemic began?</p> <p>1 = Strongly agree 2 = Mostly agree 3 = Mostly disagree 4 = Strongly disagree</p> <p>Please select an answer for each row.</p> <p>a Prices will fall again or fall lower. b I have no time for it (anymore). c The recent collapse in financial market prices put me off. d Financial assets are too risky for me at the moment. e I needed the money to pay my bills. f I needed the money to support friends and relatives. g I needed the money for other consumption expenditure. h People in my circle of (close) family and friends have also sold assets. i I preferred to invest in other financial assets.</p> | | | |

[back](#)

BOP Questions (7)

| 818C | PRO A1 | Stock market 3c | portfolio_reason_nostocks[a-k] |
|--|--------|-----------------|--------------------------------|
| Input filter: if has_portfolio_a==2 AND has_portfolio_b==2 AND has_portfolio_c==2 AND has_portfolio_d==2 AND portfolio_unchanged_a == 1 AND portfolio_unchanged_b == 1 AND portfolio_unchanged_c == 1 AND portfolio_unchanged_d == 1 | | | |
| <p>QUESTION: Why did you decide not to buy any asset(s) during the coronavirus pandemic?</p> <p>1 = Strongly agree 2 = Mostly agree 3 = Mostly disagree 4 = Strongly disagree</p> <p>Please select an answer for each row.</p> <p>a Prices will fall again or fall lower. b I have no time for it (anymore). c I do not know enough about the financial market or how to buy assets. d The recent collapse in financial market prices puts me off. e Financial assets are too risky for me at the moment. f I have no money to save. g The costs of safe custody accounts and transactions are too high for me. h No one in my circle of (close) family and friends holds assets. i I do not trust the stock market. j I have moral concerns. k I have no interest in it.</p> | | | |

[back](#)

BOP Questions (8)

[back](#)

| | | | |
|--|--------|-----------------|--------------------------------|
| 818D | PRO A1 | Stock market 3d | portfolio_reason_unchange[a-f] |
| Input filter: if (has_portfolio_a==1 OR has_portfolio_b==1 OR has_portfolio_c==1 OR has_portfolio_d==1) AND (portfolio_unchanged_a == 1 AND portfolio_unchanged_b == 1 AND portfolio_unchanged_c == 1 AND portfolio_unchanged_d == 1) | | | |
| <p>QUESTION: Why did you decide not to buy any more assets during the coronavirus pandemic?</p> <p>1 = Strongly agree 2 = Mostly agree 3 = Mostly disagree 4 = Strongly disagree</p> <p>Please select an answer for each row.</p> <p>a Prices will fall again or fall lower. b I have no time for it (anymore). c Financial assets are too risky for me at the moment. d I have no money to save. e The transaction costs are too high for me. f People in my circle of (close) family and friends have not bought assets either.</p> | | | |

| | (1) Risk Aversion | (2) Lack of Resources | (3) No Savings |
|----------------|-------------------------|-----------------------------|----------------------|
| < 1500 | -0.073 (0.058) | 0.029 (0.064) | 0.261*** (0.096) |
| Age | 0.006*** (0.002) | -0.009*** (0.002) | -0.002 (0.003) |
| Observations | 811 | 823 | 827 |
| Adjusted R^2 | 0.073 | 0.103 | 0.059 |
| Controls | Yes | Yes | Yes |

| | (1) Risk Aversion | (2) Lack of Resources | (3) Lack of Savings |
|----------------|-------------------------|-----------------------------|---------------------------|
| college | -0.034 (0.049) | 0.060 (0.048) | -0.053 (0.070) |
| female | -0.034 (0.044) | 0.089* (0.046) | -0.049 (0.063) |
| children | -0.046 (0.058) | 0.086 (0.056) | 0.090 (0.078) |
| owner | 0.057 (0.046) | -0.033 (0.047) | -0.103 (0.063) |
| fin illiterate | -0.025 (0.078) | 0.007 (0.060) | -0.080 (0.088) |
| part-time | -0.052 (0.078) | 0.034 (0.086) | -0.201 (0.126) |
| retired | -0.025 (0.092) | 0.071 (0.104) | -0.223 (0.138) |
| self-employed | 0.076 (0.110) | -0.052 (0.138) | -0.296 (0.201) |
| kurzarbeit | 0.081 (0.109) | -0.021 (0.110) | -0.049 (0.154) |
| age | 0.006*** (0.002) | -0.009*** (0.002) | -0.002 (0.003) |
| < 1500 | -0.073 (0.058) | 0.029 (0.064) | 0.261*** (0.096) |
| Observations | 811 | 823 | 827 |
| Adjusted R^2 | 0.073 | 0.103 | 0.059 |

| | (1) | (2) | (3) | (4) | (5) | (6) |
|-------------------------|-------------------|--------------------|----------------------|----------------------|----------------------|---------------------|
| | too risky | no time | prices fall | no savings | peer effect | costs |
| college | -0.061 (0.116) | 0.334** (0.148) | -0.151 (0.114) | 0.037 (0.149) | -0.182 (0.123) | 0.025 (0.101) |
| part-time | 0.128 (0.222) | 0.033 (0.257) | -0.535* (0.273) | 0.194 (0.389) | 0.123 (0.281) | 0.040 (0.181) |
| retired | 0.107 (0.240) | -0.142 (0.274) | -0.415* (0.217) | -0.365 (0.322) | 0.673** (0.264) | 0.125 (0.184) |
| self-employed | -0.242 (0.250) | 0.076 (0.338) | -0.652*** (0.226) | 0.438 (0.344) | 0.139 (0.266) | 0.230 (0.349) |
| female | -0.001 (0.104) | 0.084 (0.138) | -0.116 (0.137) | -0.148 (0.145) | 0.038 (0.139) | 0.142 (0.097) |
| kurzarbeit | -0.106 (0.255) | -0.148 (0.265) | -0.542*** (0.165) | 0.051 (0.242) | 0.468 (0.323) | 0.262 (0.334) |
| children | 0.119 (0.150) | 0.179 (0.184) | -0.244* (0.129) | 0.196 (0.206) | -0.175 (0.173) | -0.073 (0.129) |
| 1500-3000 | -0.240 (0.189) | 0.161 (0.274) | 0.259 (0.202) | -0.714*** (0.270) | 0.175 (0.245) | 0.379* (0.199) |
| 3000-5000 | 0.026 (0.186) | 0.021 (0.272) | 0.183 (0.237) | -0.862*** (0.285) | 0.353 (0.244) | 0.304 (0.198) |
| 5000-8000 | -0.355 (0.225) | 0.220 (0.318) | 0.274 (0.261) | -0.728** (0.319) | 0.508* (0.260) | 0.098 (0.207) |
| 8000+ | 0.358 (0.264) | 0.598* (0.323) | 0.031 (0.269) | -1.364*** (0.385) | 0.169 (0.319) | 0.213 (0.285) |
| owner | -0.029 (0.117) | -0.088 (0.136) | 0.324* (0.170) | -0.211 (0.158) | -0.166 (0.136) | 0.167* (0.100) |
| age | 0.006 (0.005) | -0.009* (0.006) | 0.004 (0.005) | 0.015** (0.007) | -0.019*** (0.007) | 0.004 (0.004) |
| fin illiterate | 0.292* (0.164) | 0.303* (0.167) | 0.209 (0.205) | -0.944*** (0.324) | 0.406* (0.241) | -0.255** (0.117) |
| Observations | 440 | 441 | 436 | 439 | 432 | 437 |
| Adjusted R ² | 0.038 | 0.124 | 0.097 | 0.112 | 0.073 | 0.046 |

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---------------|----------------------|----------------------|----------------------|---------------------|----------------------|-------------------|----------------------|
| | low valuation | plan | time | information | less consumption | more income | peer effect |
| college | -0.067 (0.121) | 0.100 (0.150) | -0.164 (0.102) | -0.060 (0.110) | 0.042 (0.084) | -0.052 (0.086) | 0.196** (0.089) |
| 1500-3000 | -0.801** (0.316) | 0.695* (0.376) | 0.092 (0.267) | -0.073 (0.377) | 0.503*** (0.161) | 0.174 (0.283) | -0.590* (0.346) |
| 3000-5000 | -0.594* (0.329) | 0.903** (0.403) | 0.142 (0.272) | -0.126 (0.376) | 0.357** (0.149) | -0.094 (0.270) | -0.534 (0.345) |
| 5000-8000 | -0.264 (0.327) | 0.531 (0.402) | 0.127 (0.286) | -0.245 (0.374) | 0.335* (0.171) | 0.093 (0.276) | -0.480 (0.347) |
| 8000+ | -0.214 (0.359) | 0.276 (0.431) | -0.139 (0.286) | -0.323 (0.419) | 0.392* (0.208) | 0.110 (0.305) | 0.093 (0.374) |
| < 30 | 0.000 (.) | 0.000 (.) | 0.000 (.) | 0.000 (.) | 0.000 (.) | 0.000 (.) | 0.000 (.) |
| 31-40 | -0.191 (0.213) | 0.323 (0.249) | -0.493*** (0.168) | 0.146 (0.231) | 0.028 (0.162) | 0.258 (0.171) | -0.340** (0.145) |
| 41-50 | -0.236 (0.164) | 0.650*** (0.244) | -0.355* (0.190) | -0.135 (0.175) | 0.021 (0.134) | 0.111 (0.142) | -0.475*** (0.138) |
| 51-60 | -0.523*** (0.194) | 0.463* (0.275) | -0.282 (0.206) | 0.140 (0.207) | -0.035 (0.138) | 0.161 (0.156) | -0.379*** (0.140) |
| 60+ | -0.499* (0.270) | 0.544* (0.288) | -0.264 (0.243) | 0.440* (0.230) | -0.223 (0.186) | -0.039 (0.152) | -0.434** (0.175) |
| first time | 0.195 (0.202) | -0.868*** (0.271) | 0.688*** (0.185) | 0.045 (0.236) | -0.266*** (0.102) | 0.382* (0.223) | -0.070 (0.251) |
| bought & sold | 0.518*** (0.131) | -0.957*** (0.175) | 0.217 (0.132) | 0.461*** (0.172) | -0.165* (0.092) | -0.017 (0.094) | 0.013 (0.100) |
| Observations | 435 | 438 | 438 | 437 | 438 | 438 | 434 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

| | (1) | (2) | (3) | (4) |
|----------------|---------------------|----------------------|---------------------|---------------------|
| | Crisis | Lack of Resources | Social Component | Rebalancing |
| college | 0.108 (0.097) | -0.459** (0.179) | 0.183* (0.092) | 0.121 (0.267) |
| kurzarbeit | -0.339* (0.185) | 0.184 (0.683) | 0.637*** (0.223) | -0.285 (0.978) |
| bought & sold | -0.258** (0.104) | -0.253 (0.200) | 0.122 (0.101) | 1.295*** (0.299) |
| Observations | 120 | 120 | 120 | 120 |
| Adjusted R^2 | 0.167 | 0.088 | 0.138 | 0.184 |
| Controls | Yes | Yes | Yes | Yes |

House Price Expectations and Buyer

| | (1) All | (2) Owner | (3) Renter | (4) All | (5) Owner | (6) Renter |
|------------------|----------------------|--------------------|-------------------|----------------------|------------------|----------------------|
| housing quali | -0.196*** (0.068) | | | | | |
| prop quali | | -0.132* (0.068) | | | | |
| rent quali | | | -0.119 (0.112) | | | |
| house price wins | | | | -0.029*** (0.011) | 0.000 (0.013) | -0.083*** (0.020) |
| Observations | 1010 | 716 | 294 | 952 | 677 | 275 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |

Inflation Expectations and Buyer

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| inflation quali | -0.260*** (0.100) | | | | | | | |
| inflation PE wins | | -0.092*** (0.022) | -0.092*** (0.022) | -0.084*** (0.026) | | | | |
| fin illiterate: inflation > 30 | | | -0.050 (0.335) | | | | | |
| fin illiterate: inflation > 10 | | | | -0.274 (0.388) | | | | |
| 0 < inflation < 10 | | | | | -0.119*** (0.030) | | | |
| 0 < inflation < 5 | | | | | | -0.145*** (0.047) | | |
| inflation prob exp | | | | | | | -0.081*** (0.021) | -0.104*** (0.027) |
| inflation prob sd | | | | | | | | -0.376 (0.257) |
| Observations | 1008 | 968 | 968 | 968 | 952 | 885 | 896 | 896 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Inflation Expectations and Buyer

| | (1) inflation | (2) inflation | (3) inflation | (4) Bought | (5) Bought |
|--------------------|---------------------|--------------------|---------------------|----------------------|----------------------|
| pess economy | 0.280*** (0.070) | | 0.279*** (0.071) | | -0.003 (0.022) |
| inc interest rates | | 0.452** (0.221) | 0.451** (0.216) | | -0.103* (0.060) |
| inflation PE wins | | | | -0.097*** (0.018) | -0.098*** (0.019) |
| Observations | 1883 | 1881 | 1881 | 1883 | 1881 |
| Controls | Yes | Yes | Yes | Yes | Yes |

[back](#)