
The Financial Situation of Students During the COVID-19 Pandemic

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Impact of COVID-19 pandemic and policy protections on students' lives, in terms of their:

- mental and physical health (Aucejo et al., 2020; Rodríguez-Planas, 2020)
- study progress and learning outcomes (Aucejo et al., 2020; Belghith et al., 2020; Rodríguez-Planas, 2021)
- employment and their financial situation (Aristovnik et al., 2020; Aucejo et al., 2020; Belghith et al., 2020)

(Financial) Inequalities in higher education in Germany

- educational inequalities with regard to parental educational background (Hauschildt et al., 2021)
- inequalities in dependency on employment during studies (Middendorff et al., 2017)

Impact of the changed financial situation

- may directly affect study progress and study success (Chen and DesJardins, 2010; Glocker, 2011)
- expectation: heterogeneous impact of the pandemic in terms of gender and socio-economic background (Doolan et al., 2021; Farnell et al., 2021; Jaeger et al., 2021)
- decline in income: existing social inequalities in education increase

Aims

- analyze and quantify the contribution of the pandemic and associated losses for students
- understand the extent to which social inequality has increased due to the pandemic

Contributions

- no administrative data on employment and financial situation of students in Germany
- own data collection early during the pandemic
- unique survey data: quantify changes in students' financial situation
- focus on: different phases (of economic restrictions) of the pandemic
- identify students' (changing) adaptation strategies to income and employment shocks

Leibniz University Hannover (LUH) Student Survey (2021)

- conducted online in June 2021
- 12,400 students were randomly selected and invited to participate
- 1,381 responded to the survey (gross response rate of 11%)
- final sample: 612 responses of students
- balanced panel with 3,060 observations (612×5)

Information collected

- information on the financial situation (*income* and expenses), employment, and housing situation of students during different phases of the pandemic

Phases of the Pandemic

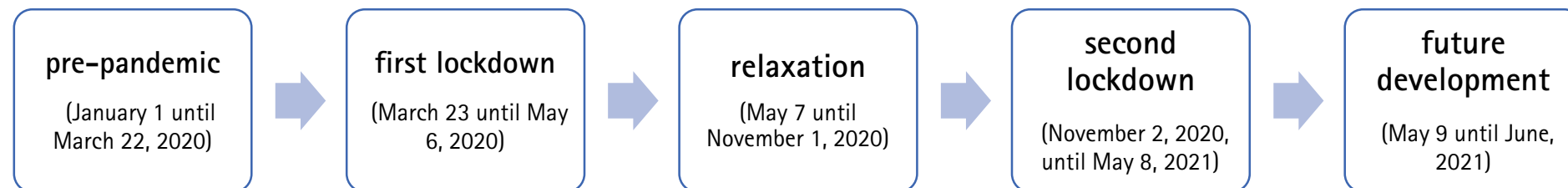


Table 1: Summary Statistics in Comparison to the Population (LUH)

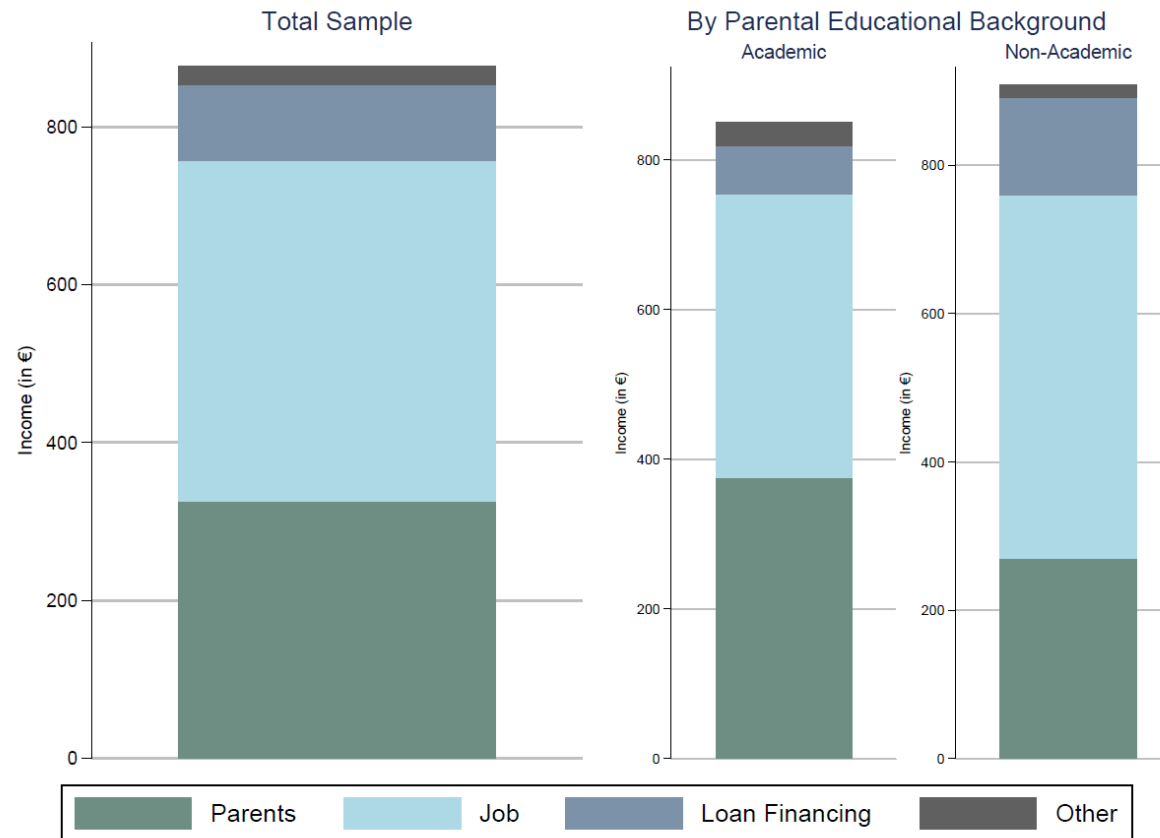
| | N (Sample) (1) | Mean (Sample) (2) | Mean (LUH) (3) | Difference (2) – (3) (4) |
|------------------------|----------------------|-------------------------|----------------------|--------------------------------|
| Female | 612 | 58.17% | 40.93% | 17.24*** |
| International Students | 612 | 4.41% | 15.26% | -10.85*** |
| Age (Median) | 610 | 24 | 21 | 3 |
| First-Year Students | 612 | 21.24% | 28.24% | -7.00*** |
| Bachelor | 612 | 53.27% | 60.15% | -6.88*** |
| Master | 612 | 39.05% | 31.67% | 7.38*** |
| University Degree | 612 | 7.19% | 7.53% | -0.33 |
| N (LUH) | | | 30,196 | |

Robustness Checks:

- re-estimation with re-weighting with the shares of LUH
- our main results are robust
- potential issue of systematic dropouts (before data collection)
- sample is not biased by a systematic change in the dropout rate

Notes: University degree including state certificate and excluding teaching degree, bachelor's and master's degree. Type of degree without other and promotion. Column (4) show the difference in means of column (2)-(3) and the respective significance value from a difference in means test. Own calculations. Data in column (2) is taken from Leibniz University Hannover student survey, 2021. Data in column (3) is taken from LUH (2020). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

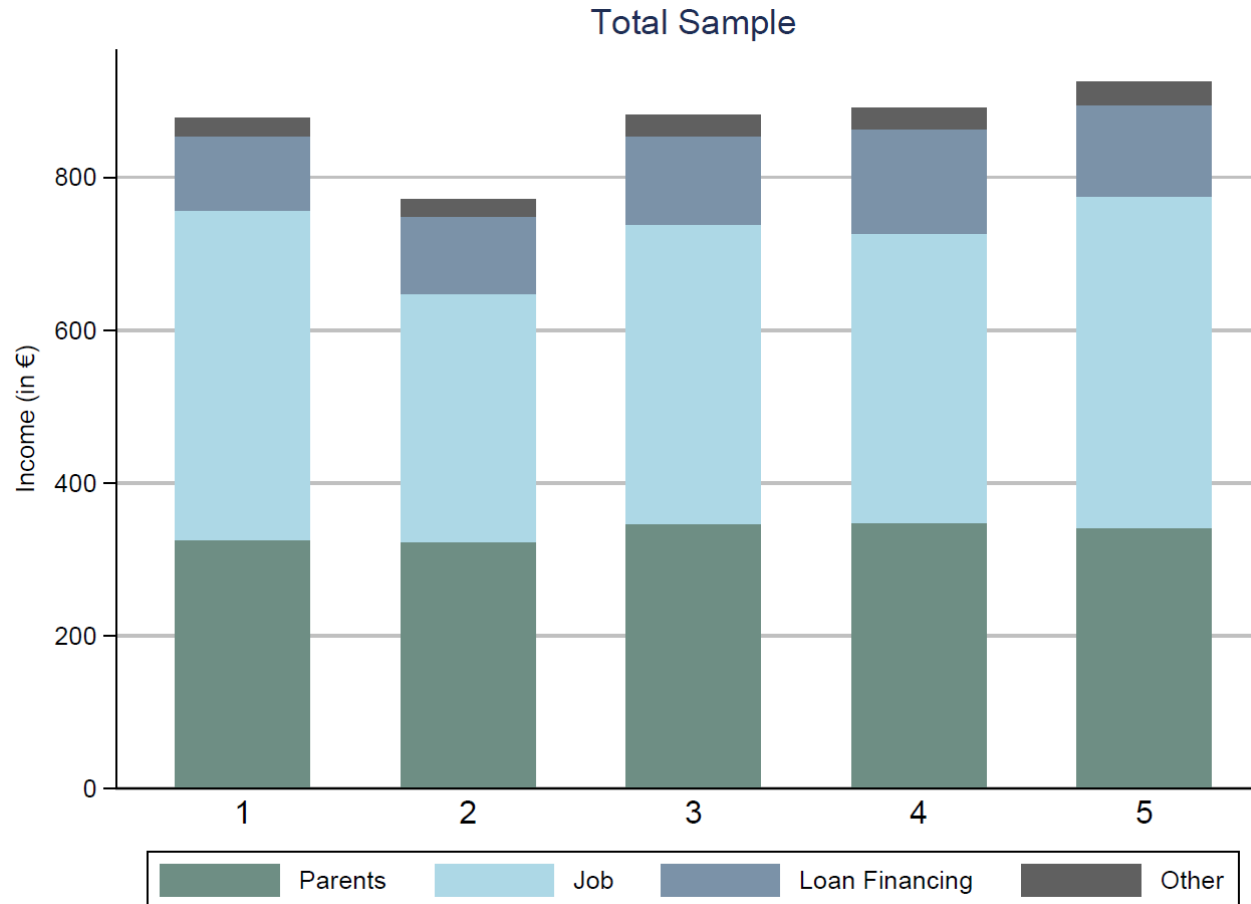
Students' average monthly income and funding composition (pre-pandemic)



Notes: Panel A is the total sample with a set of 612 students. Panel B differentiates the total sample by parental educational background of the students into an academic (326) and a non-academic (286) background group. The academic background group includes students with at least one parent with a tertiary degree. Own calculations with data from Leibniz University Hannover student survey, 2021.

Descriptive Statistics

Students' average monthly income and funding composition by phases of the pandemic



Notes: Total sample with a set of 612 students. Own calculations with data from Leibniz University Hannover student survey, 2021.

1) **Main Effects:** fixed effects panel regression model over the five phases

$$\ln(y_{it}) = \alpha + \beta Phase_{it} + \delta_i + \varepsilon_{it}$$

Separate model for the total income and each of the sources:

- I. allowances from parents
- II. job income
- III. loan financing
- IV. other income

2) **Socio-Economic Heterogeneity:** heterogeneity analyses by parental educational background

Table 2: Change in total income over the 5 phases (percentage changes)

| | Total Sample | By Parental Educational Background | |
|---------------------------|--------------|------------------------------------|-------------------|
| | (1) | Academic (2) | Non- Academic (3) |
| | Income | Income | Income |
| Phase 2 (First Lockdown) | -18.94*** | -16.89*** | -21.26*** |
| Phase 3 (Relaxation) | -3.54 | 0.40 | -7.96 |
| Phase 4 (Second Lockdown) | -1.88 | -1.98 | -1.69 |
| Phase 5 (Expectation) | 11.29*** | 14.22*** | 8.00 |
| Observations | 3,060 | 1,630 | 1,430 |
| R^2 | 0.025 | 0.038 | 0.019 |
| Mean (in €) | 877.17 | 850.10 | 908.02 |

Notes: Shown are the β coefficients converted by $100*(e^\beta - 1) \%$ and the γ coefficients converted by $100*(e^\gamma - 1) \%$. Coefficients given as percentage change in income. The unconverted coefficients and standard errors are given in Appendix. The constants α respectively ν are not shown. The coefficients refer to the mean value of income in phase 1 (pre-pandemic). Mean (in €): Mean income in phase 1. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Income Composition (by Educational Background)



Table 3: Change in the composition of students' funding by parental educational background (percentage changes)

| | Academic Background | | | | Non-Academic Background | | | |
|---------------------------|---------------------|------------|--------------------------|--------------|-------------------------|------------|--------------------------|--------------|
| | (1) Parents | (2) Job | (3) Loan Financing | (4) Other | (5) Parents | (6) Job | (7) Loan Financing | (8) Other |
| Phase 2 (First Lockdown) | 1.82 | -62.43*** | 3.05 | 1.82 | 8.98 | -68.93*** | 6.93 | -7.13* |
| Phase 3 (Relaxation) | 10.85 | -17.88 | 17.00** | 8.87* | 0.50 | -28.89* | 22.14** | 1.41 |
| Phase 4 (Second Lockdown) | 19.24* | -22.89 | 21.90** | 5.34 | 3.46 | -44.68*** | 80.76*** | 6.08 |
| Phase 5 (Expectation) | 41.62*** | 49.93** | 15.60 | 2.63 | -0.70 | 11.74 | 53.88*** | 20.56* |
| Observations | 1,630 | 1,630 | 1,630 | 1,630 | 1,430 | 1,430 | 1,430 | 1,430 |
| R^2 | 0.014 | 0.055 | 0.007 | 0.001 | 0.001 | 0.056 | 0.025 | 0.011 |
| Mean (in €) | 375.56 | 379.12 | 64.98 | 30.44 | 269.62 | 490.24 | 132.06 | 16.10 |

Notes: Shown are the γ coefficients converted by $100 \cdot (e^\gamma - 1) \%$. Coefficients given as percentage change in income. The unconverted coefficients and standard errors are given in Appendix Table A.12. The constant ν is not shown. The coefficients refer to the mean value of income in phase 1 (pre-pandemic). Mean (in €): Income in phase 1. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Intention to drop out of or extend studies due to financial concerns (percentage changes)

| | Total Sample | |
|---------------------------|-------------------|-------------------|
| | (1) Drop Out | (2) Extend |
| Phase 2 (First Lockdown) | 0.03*** (0.01) | 0.17*** (0.01) |
| Phase 3 (Relaxation) | 0.03*** (0.01) | 0.08*** (0.01) |
| Phase 4 (Second Lockdown) | 0.12*** (0.01) | 0.26*** (0.02) |
| Observations | 2,612 | 2,612 |
| R^2 | 0.061 | 0.098 |

Notes: Coefficients given as change in intention to drop out of or extend studies due to financial concerns. Reference is phase 1 (pre-pandemic). Robust standard errors (clustered by individuals) in parentheses. We used a different sample for the analysis of compensation effects. Here, we consider all students with complete answers from the questionnaire regarding the relevant questions. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Key findings

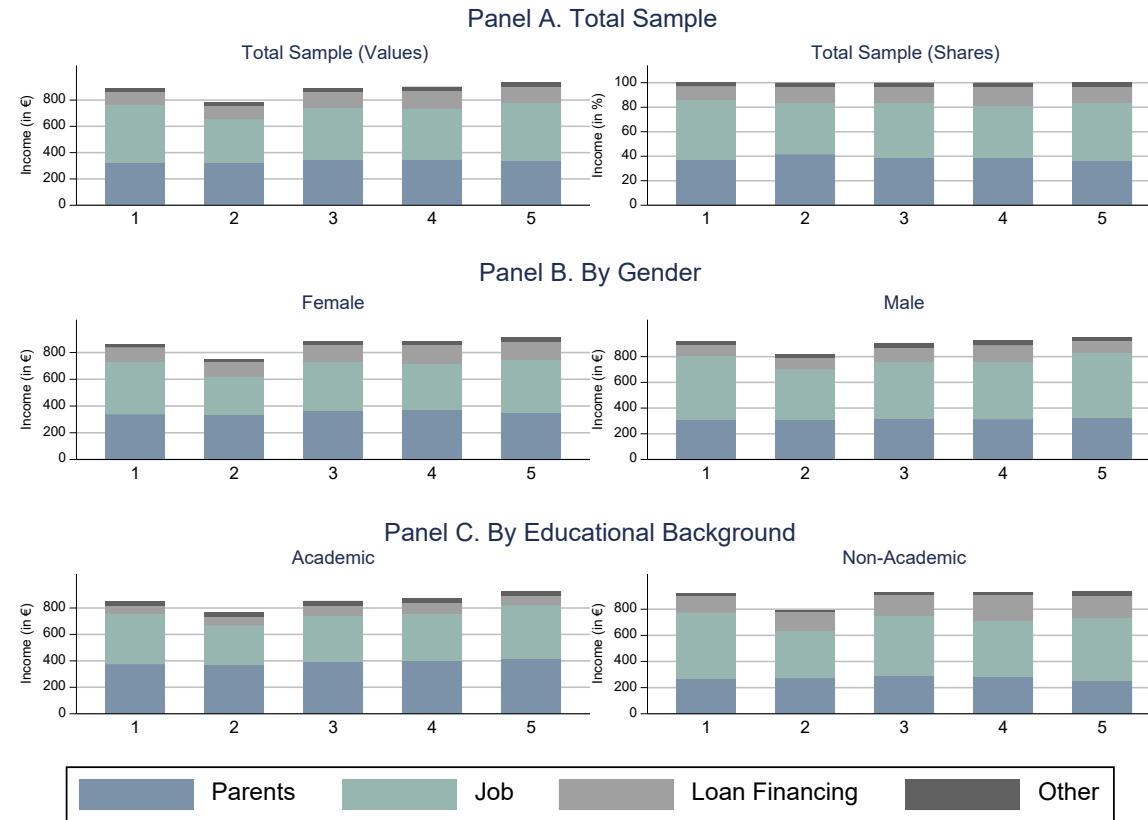
- **Impact on students' financial situation**
 - pandemic strongly affected students' job income (due to the loss of many student jobs)
 - students from non-academic backgrounds suffered particularly
 - regarding to job income losses and higher loan financing in the future
 - imply a widening of existing educational inequalities
- **Potential impact on studies (compensation effects)**
 - increasing intentions to drop out or to extend studies due to financial concerns with the duration of the pandemic
- higher loan financing, higher expected expenses and extension of studies worsen the financial situation of (affected) students in the future

**THANK YOU FOR YOUR ATTENTION!
QUESTIONS AND COMMENTS?**

BACKUP

Descriptive statistics

Fig. 1: Students' monthly income and funding composition by phase of the pandemic.



Notes: Panel A is the total sample with a set of 592 students. Panel B differentiates the total sample by gender into women (344) and men (248). Panel C differentiates the total sample by parental background of the students into an academic (315) and a non-academic (277) background group. The academic background group includes students with at least one parent with a tertiary degree. See Appendix Table A.5 for corresponding descriptive statistics. Own calculations with data from Leibniz University Hannover student survey, 2021.

Fig. 2: Students' monthly expenses and composition by phase of the pandemic.



Notes: Panel A is the total sample with a set of 612 students. Panel B differentiates the total sample by gender into women (356) and men (256). Panel C differentiates the total sample by parental background of the students into an academic (326) and a non-academic (286) background group. The academic background group includes students with at least one parent with a tertiary degree. See Appendix Table A.4 for corresponding descriptive statistics. Own calculations with data from Leibniz University Hannover student survey, 2021.

Table 1: Change in income and its composition over the 5 phases (percentage changes).

| | Total Income | Composition | | | |
|---------------------------|---------------|----------------|------------|-----------------------|--------------|
| | (1) Income | (2) Parents | (3) Job | (4) Loan Financing | (5) Other |
| Phase 2 (First Lockdown) | -18.94*** | 5.13 | -65.63*** | 4.81 | -2.47 |
| Phase 3 (Relaxation) | -3.54 | 5.87 | -23.28** | 19.36*** | 5.34* |
| Phase 4 (Second Lockdown) | -1.88 | 11.63 | -33.97*** | 46.52*** | 5.65 |
| Phase 5 (Expectation) | 11.29*** | 19.96** | 30.73** | 32.05*** | 10.63 |
| Observations | 3,060 | 3,060 | 3,060 | 3,060 | 3,060 |
| R^2 | 0.025 | 0.003 | 0.055 | 0.015 | 0.003 |
| Mean (in €) | 877.17 | 326.05 | 431.05 | 96.33 | 23.74 |

Notes: Shown are the β coefficients converted by $100 \cdot (e^\beta - 1) \%$. Coefficients given as percentage change in income. The unconverted coefficients and standard errors are given in Appendix Table A.9. The constant α is not shown. The coefficients refer to the mean value of income in phase 1 (pre-pandemic). Mean (in €): Mean income in phase 1. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2: Change in income over the 5 phases by gender and educational background (percentage changes).

| | Gender | | Educational Background | |
|---------------------------|-------------------------|-----------------------|---------------------------|--------------------------------|
| | Female (2) Income | Male (3) Income | Academic (4) Income | Non- Academic (5) Income |
| Phase 2 (First Lockdown) | -19.35*** | -18.37*** | -16.89*** | -21.26*** |
| Phase 3 (Relaxation) | -2.76 | -4.69 | 0.40 | -7.96 |
| Phase 4 (Second Lockdown) | -0.50 | -3.63 | -1.98 | -1.69 |
| Phase 5 (Expectation) | 13.54** | 8.22 | 14.22*** | 8.00 |
| Observations | 1,780 | 1,280 | 1,630 | 1,430 |
| R^2 | 0.028 | 0.021 | 0.038 | 0.019 |
| Mean (in €) | 854.54 | 908.63 | 850.10 | 908.02 |

Notes: Shown are the γ coefficients converted by $100*(e^\gamma - 1)$ %. Coefficients given as percentage change in income. The unconverted coefficients and standard errors are given in Appendix Table A.10. The constant ν is not shown. The coefficients refer to the mean value of income in phase 1 (pre-pandemic). Mean (in €): Mean income in phase 1. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Composition of students' funding by gender (percentage changes).

| | Female | | | | Male | | | |
|---------------------------|----------------|------------|--------------------------|--------------|----------------|------------|--------------------------|--------------|
| | (1) Parents | (2) Job | (3) Loan Financing | (4) Other | (5) Parents | (6) Job | (7) Loan Financing | (8) Other |
| Phase 2 (First Lockdown) | 3.15 | -71.23*** | 1.82 | 0.00 | 7.79 | -55.96*** | 9.20 | -5.82 |
| Phase 3 (Relaxation) | 10.41 | -25.70** | 18.41** | 5.44 | 0.00 | -19.75 | 20.80* | 5.13 |
| Phase 4 (Second Lockdown) | 23.12** | -40.61*** | 49.03*** | 6.61 | -2.66 | -23.51 | 43.05*** | 4.50 |
| Phase 5 (Expectation) | 28.92** | 22.14 | 41.34*** | 24.61** | 8.55 | 43.62* | 20.32 | -6.11 |
| Observations | 1,780 | 1,780 | 1,780 | 1,780 | 1,280 | 1,280 | 1,280 | 1,280 |
| R^2 | 0.008 | 0.066 | 0.019 | 0.011 | 0.002 | 0.041 | 0.011 | 0.003 |
| Mean (in €) | 336.27 | 391.32 | 106.06 | 20.89 | 311.84 | 486.30 | 82.79 | 27.70 |

Notes: Shown are the γ coefficients converted by $100*(e^\gamma - 1)$ %. Coefficients given as percentage change in income. The unconverted coefficients and standard errors are given in Appendix Table A.11. The constant ν is not shown. The coefficients refer to the mean value of income in phase 1 (pre-pandemic). Mean (in €): Income in phase 1. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Composition of students' funding by educational background (percentage changes).

| | Academic Background | | | | Non-Academic Background | | | |
|---------------------------|---------------------|------------|--------------------------|--------------|-------------------------|------------|--------------------------|--------------|
| | (1) Parents | (2) Job | (3) Loan Financing | (4) Other | (5) Parents | (6) Job | (7) Loan Financing | (8) Other |
| Phase 2 (First Lockdown) | 1.82 | -62.43*** | 3.05 | 1.82 | 8.98 | -68.93*** | 6.93 | -7.13* |
| Phase 3 (Relaxation) | 10.85 | -17.88 | 17.00** | 8.87* | 0.50 | -28.89* | 22.14** | 1.41 |
| Phase 4 (Second Lockdown) | 19.24* | -22.89 | 21.90** | 5.34 | 3.46 | -44.68*** | 80.76*** | 6.08 |
| Phase 5 (Expectation) | 41.62*** | 49.93** | 15.60 | 2.63 | -0.70 | 11.74 | 53.88*** | 20.56* |
| Observations | 1,630 | 1,630 | 1,630 | 1,630 | 1,430 | 1,430 | 1,430 | 1,430 |
| R^2 | 0.014 | 0.055 | 0.007 | 0.001 | 0.001 | 0.056 | 0.025 | 0.011 |
| Mean (in €) | 375.56 | 379.12 | 64.98 | 30.44 | 269.62 | 490.24 | 132.06 | 16.10 |

Notes: Shown are the γ coefficients converted by $100*(e^\gamma - 1)$ %. Coefficients given as percentage change in income. The unconverted coefficients and standard errors are given in Appendix Table A.12. The constant ν is not shown. The coefficients refer to the mean value of income in phase 1 (pre-pandemic). Mean (in €): Income in phase 1. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.1
Summary statistics.

| | N | Mean | SD | Min | Max |
|--|-----|-------|------|-----|-----|
| | (1) | (2) | (3) | (4) | (5) |
| Female | 612 | 0.58 | 0.49 | 0 | 1 |
| Age | 610 | 24.46 | 4.51 | 16 | 55 |
| Migration | 604 | 0.07 | 0.26 | 0 | 1 |
| Academic Background | 612 | 0.53 | 0.50 | 0 | 1 |
| Vocational Training | 609 | 0.19 | 0.39 | 0 | 1 |
| Own Apartment | 610 | 0.72 | 0.45 | 0 | 1 |
| Semester | 609 | 7.74 | 3.93 | 1 | 16 |
| Dept. of Architecture and Landscape Sciences | 612 | 0.08 | 0.27 | 0 | 1 |
| Dept. of Civil Engineering and Geodetic Science | 612 | 0.07 | 0.26 | 0 | 1 |
| Dept. of Electrical Engineering and Computer Science | 612 | 0.09 | 0.28 | 0 | 1 |
| Dept. of Law | 612 | 0.08 | 0.26 | 0 | 1 |
| Dept. of Mechanical Engineering | 612 | 0.09 | 0.28 | 0 | 1 |
| Dept. of Mathematics and Physics | 612 | 0.06 | 0.23 | 0 | 1 |
| Dept. of Natural Sciences | 612 | 0.15 | 0.35 | 0 | 1 |
| Dept. of Humanities | 612 | 0.26 | 0.43 | 0 | 1 |
| Dept. of Economics and Management | 612 | 0.10 | 0.30 | 0 | 1 |
| Other Department | 612 | 0.02 | 0.11 | 0 | 1 |

Notes: All variables are fixed for each individual and across the five phases and describe the condition in the pre-pandemic phase. Own calculations with data from Leibniz University Hannover student survey, 2021.

Summary statistics in comparison to the Population

Table A.2
Summary statistics in comparison to the population.

| | N (Sample) | Mean (Sample) | Mean (LUH) | Difference (2) – (3) | Mean (Germany) | Difference (2) – (5) |
|------------------------|---------------|------------------|---------------|-------------------------|-------------------|-------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Female | 612 | 58.17% | 40.93% | 17.24*** | 49.00% | 9.17*** |
| International Students | 612 | 4.41% | 15.26% | -10.85*** | 11.10% | -6.69*** |
| Age (Median) | 610 | 24 | 21 | 3 | 23 | 1 |
| First-Year Students | 612 | 21.24% | 28.24% | -7.00*** | - | - |
| Bachelor | 612 | 53.27% | 60.15% | -6.88*** | 69.81% | -16.54*** |
| Master | 612 | 39.05% | 31.67% | 7.38*** | 20.32% | 18.73*** |
| University Degree | 612 | 7.19% | 7.53% | -0.33 | 9.87% | -2.68*** |
| Observations | | | 30,196 | - | 2,709,197 | - |

Notes: University degree including state certificate and excluding teaching degree, bachelor's and master's degree. Type of degree without other and promotion. Column (4) and (6) show the difference in means of column (2)-(3) respectively column (2)-(5) and the respective significance value from a difference in means test. Own calculations. Data in column (2) is taken from Leibniz University Hannover student survey, 2021. Data in column (3) is taken from LUH (2020). Data in column (5) is taken from Federal Statistical Office (2020). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Development of the number of students at LUH

Table A.3
Development of the number of students at Leibniz University Hannover.

| | Summer 2017 | Winter 2017 | Summer 2018 | Winter 2018 | Summer 2019 | Winter 2019 | Summer 2020 | Winter 2020 | Summer 2021 | Winter 2021 |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| New Enrollments | 1,014 | 4,946 | 1,165 | 4,778 | 816 | 4,727 | 509 | 3,221 | 622 | 3,573 |
| Total Amount of Students | 26,093 | 28,695 | 27,101 | 29,692 | 28,151 | 30,207 | 28,141 | 29,439 | 27,287 | 28,817 |
| From this (in %): | | | | | | | | | | |
| Disease | 0.22 | 0.14 | 0.15 | 0.15 | 0.26 | 0.15 | 0.21 | 0.19 | 0.30 | - |
| Change of University | 0.77 | 1.71 | 0.84 | 1.86 | 0.75 | 1.90 | 0.72 | 1.65 | 0.78 | - |
| Dropout or Interruption | 1.43 | 1.71 | 1.23 | 1.24 | 1.17 | 1.61 | 1.11 | 1.57 | 1.13 | - |

Notes: New enrollments are first enrollment in an institution of higher education. Due to the change in secondary school duration from 8 to 9 school years in Lower Saxony, there was a lack of a high school graduating class in 2020. Own calculations with data from the enrollment office of Leibniz University Hannover.

Use of the individual sources of financing



Table A.4
Use of the individual sources of financing.

| | % | Mean | SD | Median | Min | Max |
|---------------------------|-------|--------|--------|--------|-----|-------|
| Total Income | | | | | | |
| Phase 1 (Pre-Pandemic) | - | 877.17 | 509.36 | 800 | 0 | 3,000 |
| Phase 2 (First Lockdown) | - | 771.76 | 486.65 | 730 | 0 | 2,600 |
| Phase 3 (Relaxation) | - | 881.27 | 590.10 | 800 | 0 | 3,100 |
| Phase 4 (Second Lockdown) | - | 891.23 | 553.93 | 813 | 0 | 3,800 |
| Phase 5 (Expectation) | - | 924.94 | 510.57 | 850 | 0 | 4,500 |
| Parents | | | | | | |
| Phase 1 (Pre-Pandemic) | 73.69 | 326.05 | 313.86 | 250 | 0 | 1,500 |
| Phase 2 (First Lockdown) | 75.16 | 323.25 | 308.76 | 250 | 0 | 1,400 |
| Phase 3 (Relaxation) | 74.67 | 347.22 | 385.29 | 250 | 0 | 2,700 |
| Phase 4 (Second Lockdown) | 75.33 | 347.87 | 359.00 | 250 | 0 | 2,500 |
| Phase 5 (Expectation) | 76.96 | 341.90 | 339.87 | 250 | 0 | 2,000 |
| Job | | | | | | |
| Phase 1 (Pre-Pandemic) | 71.73 | 431.05 | 514.13 | 378 | 0 | 3,000 |
| Phase 2 (First Lockdown) | 54.74 | 324.91 | 480.35 | 150 | 0 | 2,600 |
| Phase 3 (Relaxation) | 68.79 | 391.04 | 521.86 | 275 | 0 | 3,000 |
| Phase 4 (Second Lockdown) | 65.68 | 378.46 | 484.23 | 275 | 0 | 2,800 |
| Phase 5 (Expectation) | 76.63 | 433.31 | 481.01 | 400 | 0 | 2,800 |
| Loan Financing | | | | | | |
| Phase 1 (Pre-Pandemic) | 19.61 | 96.33 | 222.67 | 0 | 0 | 900 |
| Phase 2 (First Lockdown) | 20.26 | 100.80 | 225.91 | 0 | 0 | 900 |
| Phase 3 (Relaxation) | 22.39 | 116.33 | 253.54 | 0 | 0 | 1,691 |
| Phase 4 (Second Lockdown) | 25.65 | 136.80 | 268.15 | 0 | 0 | 1,150 |
| Phase 5 (Expectation) | 24.18 | 118.99 | 243.75 | 0 | 0 | 1,350 |
| Other | | | | | | |
| Phase 1 (Pre-Pandemic) | 8.50 | 23.74 | 89.96 | 0 | 0 | 600 |
| Phase 2 (First Lockdown) | 8.01 | 22.80 | 88.60 | 0 | 0 | 600 |
| Phase 3 (Relaxation) | 9.48 | 26.68 | 96.45 | 0 | 0 | 600 |
| Phase 4 (Second Lockdown) | 9.48 | 28.10 | 102.24 | 0 | 0 | 706 |
| Phase 5 (Expectation) | 10.13 | 30.74 | 105.75 | 0 | 0 | 650 |

Notes: % given as a share of total observations (N=612). Mean, SD, Median, Min and Max given in euros. Own calculations with data from Leibniz University Hannover student survey, 2021.

Expenses of the individual positions



Table A.5
Expenses of the individual positions.

| | % | Mean | SD | Median | Min | Max |
|---------------------------|-------|--------|--------|--------|-----|-------|
| Total Expenses | | | | | | |
| Phase 1 (Pre-Pandemic) | - | 583.73 | 322.46 | 599 | 0 | 2,010 |
| Phase 2 (First Lockdown) | - | 532.20 | 311.56 | 550 | 0 | 1,850 |
| Phase 3 (Relaxation) | - | 583.53 | 325.64 | 588 | 0 | 2,090 |
| Phase 4 (Second Lockdown) | - | 581.83 | 367.66 | 578 | 0 | 2,700 |
| Phase 5 (Expectation) | - | 664.73 | 323.62 | 650 | 0 | 2,300 |
| Housing | | | | | | |
| Phase 1 (Pre-Pandemic) | 75.84 | 307.17 | 225.53 | 345 | 0 | 1,100 |
| Phase 2 (First Lockdown) | 75.68 | 307.71 | 226.25 | 348 | 0 | 1,100 |
| Phase 3 (Relaxation) | 78.04 | 320.91 | 231.09 | 350 | 0 | 1,200 |
| Phase 4 (Second Lockdown) | 79.90 | 334.77 | 250.11 | 350 | 0 | 1,500 |
| Phase 5 (Expectation) | 85.64 | 364.26 | 225.24 | 360 | 0 | 1,200 |
| Cost of living | | | | | | |
| Phase 1 (Pre-Pandemic) | 95.44 | 206.30 | 125.28 | 200 | 0 | 650 |
| Phase 2 (First Lockdown) | 94.09 | 190.94 | 122.76 | 200 | 0 | 600 |
| Phase 3 (Relaxation) | 95.27 | 207.90 | 131.21 | 200 | 0 | 800 |
| Phase 4 (Second Lockdown) | 94.59 | 210.70 | 151.44 | 200 | 0 | 1,000 |
| Phase 5 (Expectation) | 97.80 | 218.75 | 115.04 | 200 | 0 | 600 |
| Leisure | | | | | | |
| Phase 1 (Pre-Pandemic) | 80.57 | 70.26 | 68.49 | 50 | 0 | 360 |
| Phase 2 (First Lockdown) | 54.05 | 33.55 | 54.02 | 10 | 0 | 300 |
| Phase 3 (Relaxation) | 71.62 | 54.73 | 69.52 | 30 | 0 | 400 |
| Phase 4 (Second Lockdown) | 56.42 | 36.36 | 55.32 | 10 | 0 | 300 |
| Phase 5 (Expectation) | 87.67 | 81.72 | 78.40 | 50 | 0 | 500 |

Notes: % given as a share of total observations (N=592). Mean, SD, Median, Min and Max given in euros.
Excluding other expenses. Own calculations with data from Leibniz University Hannover student survey, 2021.

Use of the individual sources of financing by educational background in phase 1



Table A.6

Use of the individual sources of financing by gender in phase 1.

| | % | % | Difference | Mean | Mean | Difference |
|----------------|-------|-------|------------|--------|--------|------------|
| | Women | Men | (1) – (2) | Women | Men | (4) – (5) |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Total Income | - | - | - | 854.54 | 908.63 | -54.09* |
| Parents | 75.00 | 71.88 | 3.13 | 336.27 | 311.84 | 24.42 |
| Job | 72.47 | 70.70 | 1.77 | 391.32 | 486.30 | -94.98** |
| Loan Financing | 21.91 | 16.41 | 5.5** | 106.06 | 82.79 | 23.28 |
| Other | 7.87 | 9.38 | -1.51 | 20.89 | 27.70 | -6.80 |

Notes: % given as a share of total observations (N=612, women: 356, men: 256). Mean given in euros. Column (3) and (6) show the difference in means of column (1)-(2) respectively column (4)-(5) and the respective significance value from a difference in means test. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Non-academic background students are more likely to have had vocational training before entering university.

Use of the individual sources of financing by educational background in phase 1

Table A.7

Use of the individual sources of financing by educational background in phase 1.

| | % | % | Difference | Mean | Mean | Difference |
|----------------|--------------|----------|------------|--------------|----------|------------|
| | Non-Academic | Academic | (1) – (2) | Non-Academic | Academic | (4) – (5) |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Total Income | - | - | - | 908.02 | 850.10 | 57.92* |
| Parents | 67.13 | 79.45 | 12.31*** | 269.62 | 375.56 | -105.93*** |
| Job | 74.48 | 69.33 | 5.15* | 490.24 | 379.12 | 111.12*** |
| Loan Financing | 26.22 | 13.80 | 12.42*** | 132.06 | 64.98 | 67.08*** |
| Other | 6.64 | 10.12 | 3.48** | 16.10 | 30.44 | -14.34** |

Notes: % given as a share of total observations (N=612, non-academic: 286, academic: 326). Mean given in euros. Column (3) and (6) show the difference in means of column (1)-(2) respectively column (4)-(5) and the respective significance value from a difference in means test. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Non-academic background students are more likely to have had vocational training before entering university.

Table A.8
Negative consequences on the job of employed students.

| | Dismissal | | Unpaid Leave | | Reduced Working Time | | None | |
|---------------------------|-----------|-------|--------------|-------|----------------------|-------|----------|-------|
| | Quantity | % | Quantity | % | Quantity | % | Quantity | % |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Phase 2 (First Lockdown) | 60 | 13.92 | 81 | 18.79 | 77 | 17.87 | 213 | 49.42 |
| Phase 3 (Relaxation) | 38 | 9.20 | 17 | 4.12 | 99 | 23.97 | 259 | 62.71 |
| Phase 4 (Second Lockdown) | 39 | 9.44 | 51 | 12.35 | 51 | 12.35 | 271 | 65.86 |

Notes: N = 413. Own calculations with data from Leibniz University Hannover student survey, 2021.

Initial estimate (with unconverted coefficients)



Table A.9
Change in income and its composition over the 5 phases.

| | Total Income | Composition | | | |
|---------------------------|--------------------|------------------|--------------------|-----------------------|-----------------|
| | (1) Income | (2) Parents | (3) Job | (4) Loan Financing | (5) Other |
| Phase 2 (First Lockdown) | -0.21*** (0.04) | 0.05 (0.04) | -1.07*** (0.11) | 0.05 (0.05) | -0.03 (0.02) |
| Phase 3 (Relaxation) | -0.04 (0.04) | 0.06 (0.06) | -0.26** (0.11) | 0.18*** (0.06) | 0.05* (0.03) |
| Phase 4 (Second Lockdown) | -0.02 (0.05) | 0.11 (0.08) | -0.42*** (0.14) | 0.38*** (0.08) | 0.06 (0.04) |
| Phase 5 (Expectation) | 0.11*** (0.04) | 0.18** (0.09) | 0.27** (0.12) | 0.28*** (0.09) | 0.10 (0.07) |
| Observations | 3,060 | 3,060 | 3,060 | 3,060 | 3,060 |
| R^2 | 0.025 | 0.003 | 0.055 | 0.015 | 0.003 |
| Mean (in €) | 877.17 | 326.05 | 431.05 | 96.33 | 23.74 |

Notes: The constant α is not shown. The coefficients refer to the mean value of income in phase 1 (pre-pandemic). Mean (in €): Mean income in phase 1. Robust standard errors (clustered by individuals) in parentheses. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Initial estimate (with unconverted coefficients)



Table A.10
Change in income over the 5 phases by gender and educational background.

| | Gender | | Educational Background | |
|---------------------------|-------------------------|-----------------------|---------------------------|-------------------------------|
| | Female (2) Income | Male (3) Income | Academic (4) Income | Non-Academic (5) Income |
| Phase 2 (First Lockdown) | -0.22*** (0.05) | -0.20*** (0.06) | -0.19*** (0.04) | -0.24*** (0.06) |
| Phase 3 (Relaxation) | -0.03 (0.06) | -0.05 (0.05) | 0.00 (0.04) | -0.08 (0.08) |
| Phase 4 (Second Lockdown) | -0.01 (0.06) | -0.04 (0.07) | -0.02 (0.05) | -0.02 (0.07) |
| Phase 5 (Expectation) | 0.13** (0.05) | 0.08 (0.06) | 0.13*** (0.04) | 0.08 (0.07) |
| Observations | 1,780 | 1,280 | 1,630 | 1,430 |
| R^2 | 0.028 | 0.021 | 0.038 | 0.019 |
| Mean (in €) | 854.54 | 908.63 | 850.10 | 908.02 |

Notes: The constant v is not shown. The coefficients refer to the mean value of income in phase 1 (pre-pandemic). Mean (in €): Income in phase 1. Robust standard errors (clustered by individuals) in parentheses. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Initial estimate (with unconverted coefficients)



Table A.11
Composition of students' funding by gender.

| | Female | | | | Male | | | |
|------------------------------|------------------|--------------------|--------------------------|------------------|-----------------|--------------------|--------------------------|-----------------|
| | (1) Parents | (2) Job | (3) Loan Financing | (4) Other | (5) Parents | (6) Job | (7) Loan Financing | (8) Other |
| Phase 2 (First Lockdown) | 0.03 (0.06) | -1.25*** (0.15) | 0.02 (0.06) | 0.00 (0.02) | 0.08 (0.07) | -0.82*** (0.16) | 0.09 (0.07) | -0.06 (0.05) |
| Phase 3 (Relaxation) | 0.10 (0.08) | -0.30** (0.14) | 0.17** (0.08) | 0.05 (0.04) | -0.00 (0.09) | -0.22 (0.17) | 0.19* (0.10) | 0.05 (0.06) |
| Phase 4 (Second Lockdown) | 0.21** (0.10) | -0.52*** (0.18) | 0.40*** (0.11) | 0.06 (0.05) | -0.03 (0.13) | -0.27 (0.21) | 0.36*** (0.12) | 0.04 (0.08) |
| Phase 5 (Expectation) | 0.25** (0.12) | 0.20 (0.17) | 0.35*** (0.12) | 0.22** (0.09) | 0.08 (0.12) | 0.36* (0.19) | 0.18 (0.13) | -0.06 (0.10) |
| Observations | 1,780 | 1,780 | 1,780 | 1,780 | 1,280 | 1,280 | 1,280 | 1,280 |
| R^2 | 0.008 | 0.066 | 0.019 | 0.011 | 0.002 | 0.041 | 0.011 | 0.003 |
| Mean (in €) | 336.27 | 391.32 | 106.06 | 20.89 | 311.84 | 486.30 | 82.79 | 27.70 |

Notes: The constant v is not shown. The coefficients refer to the mean value of income in phase 1 (pre-pandemic). Mean (in €): Income in phase 1. Robust standard errors (clustered by individuals) in parentheses. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Initial estimate (with unconverted coefficients)

Table A.12
Composition of students' funding by educational background.

| | Academic Background | | | | Non-Academic Background | | | |
|------------------------------|---------------------|--------------------|------------------|-----------------|-------------------------|--------------------|-------------------|------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | Parents | Job | Loan | Other | Parents | Job | Loan | Other |
| | Financing | | | | Financing | | | |
| Phase 2 (First Lockdown) | 0.02 (0.05) | -0.98*** (0.15) | 0.03 (0.05) | 0.02 (0.03) | 0.09 (0.07) | -1.17*** (0.16) | 0.07 (0.09) | -0.07* (0.04) |
| Phase 3 (Relaxation) | 0.10 (0.07) | -0.20 (0.14) | 0.16** (0.08) | 0.08* (0.05) | 0.00 (0.10) | -0.34* (0.17) | 0.20** (0.10) | 0.01 (0.04) |
| Phase 4 (Second Lockdown) | 0.18* (0.10) | -0.26 (0.20) | 0.20** (0.09) | 0.05 (0.06) | 0.03 (0.12) | -0.59*** (0.19) | 0.59*** (0.14) | 0.06 (0.07) |
| Phase 5 (Expectation) | 0.35*** (0.12) | 0.41** (0.17) | 0.14 (0.10) | 0.03 (0.09) | -0.01 (0.13) | 0.11 (0.18) | 0.43*** (0.15) | 0.19* (0.10) |
| Observations | 1,630 | 1,630 | 1,630 | 1,630 | 1,430 | 1,430 | 1,430 | 1,430 |
| R ² | 0.014 | 0.055 | 0.007 | 0.001 | 0.001 | 0.056 | 0.025 | 0.011 |
| Mean (in €) | 375.56 | 379.12 | 64.98 | 30.44 | 269.62 | 490.24 | 132.06 | 16.10 |

Notes: The constant v is not shown. The coefficients refer to the mean value of income in phase 1 (pre-pandemic). Mean (in €): Income in phase 1. Robust standard errors (clustered by individuals) in parentheses. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

- Systematic dropouts: potential issue of a cross-sectional survey of enrolled students
 - check: comparison of the development of dropout rates in the years before the pandemic and in the period of the pandemic
 - no significant differences between the two periods
 - sample: not biased by a systematic change in the dropout rate
- Estimation results (main effects) are robust to different specifications
 - pooled OLS regressions with and without covariates (socio-demographic and student characteristics)
 - reweighting with the shares of Leibniz University Hannover

Table A.13
Robustness checks.

| | Pooled OLS | Pooled OLS | LUH Weights |
|---------------------------|--------------------|--------------------|--------------------|
| | (1) | (2) | (3) |
| | Income | Income | Income |
| Phase 2 (First Lockdown) | -0.21*** (0.06) | -0.21*** (0.06) | -0.19*** (0.06) |
| Phase 3 (Relaxation) | -0.04 (0.06) | -0.03 (0.06) | -0.03 (0.06) |
| Phase 4 (Second Lockdown) | -0.02 (0.06) | -0.02 (0.06) | -0.02 (0.05) |
| Phase 5 (Expectation) | 0.11* (0.06) | 0.11* (0.06) | 0.09* (0.05) |
| Female | | -0.02 (0.04) | -0.01 (0.04) |
| International Students | | -0.07 (0.09) | -0.02 (0.05) |
| Age | | 0.04*** (0.00) | 0.03*** (0.00) |
| First-Year Students | | -0.03 (0.04) | -0.08** (0.04) |
| Degree | | 0.09*** (0.03) | 0.14*** (0.03) |
| Observations | 3,050 | 3,040 | 3,040 |
| Population | | | 30,196 |
| R^2 | 0.011 | 0.049 | 0.050 |

Notes: The constant is not shown. The coefficients refer to the mean value of income in phase 1 (pre-pandemic). Coefficients given as change in income. Standard error in parentheses. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.14
Robustness check: Impact of negative consequences on income.

| | Negative Consequences | | | | No Negative Consequences | | | |
|------------------------------|-----------------------|------------------|--------------------|-------------------|--------------------------|-----------------|--------------------|-------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | Total | Parents | Job | Loan | Total | Parents | Job | Loan |
| | Income | | | Financing | Income | | | Financing |
| Phase 2 (First Lockdown) | -0.58*** (0.08) | 0.19** (0.10) | -2.88*** (0.20) | 0.18** (0.09) | -0.07 (0.05) | 0.01 (0.05) | -0.35*** (0.12) | -0.08 (0.06) |
| Phase 3 (Relaxation) | -0.32*** (0.06) | 0.14 (0.11) | -1.52*** (0.17) | 0.26** (0.11) | -0.06 (0.06) | 0.10 (0.10) | -0.39*** (0.14) | 0.13 (0.10) |
| Phase 4 (Second Lockdown) | -0.41*** (0.08) | 0.25* (0.13) | -2.23*** (0.20) | 0.50*** (0.15) | -0.04 (0.05) | 0.24* (0.13) | -0.77*** (0.18) | 0.39*** (0.13) |
| Phase 5 (Expectation) | -0.09* (0.05) | 0.27* (0.16) | -0.92*** (0.18) | 0.47*** (0.16) | 0.00 (0.05) | 0.16 (0.14) | -0.37** (0.16) | 0.28* (0.15) |
| Observations | 1,080 | 1,080 | 1,080 | 1,080 | 1,065 | 1,065 | 1,065 | 1,065 |
| R^2 | 0.08 | 0.01 | 0.22 | 0.02 | 0.00 | 0.01 | 0.03 | 0.02 |
| Mean (in €) | 936.80 | 312.52 | 508.10 | 93.01 | 1,048.86 | 303.72 | 634.84 | 88.18 |

Notes: Only students who were employed during the first lockdown. Negative consequences include dismissal, unpaid leave and reduced work hours during the first lockdown. The constant is not shown. The coefficients refer to the mean value of income in phase 1 (pre-pandemic). Mean (in €): Income in phase 1. Robust standard errors (clustered by individuals) in parentheses. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.15
Intention to drop out of studies due to financial concerns.

| | Total | Gender | | Educational Background | |
|---------------------------|-------------------|-------------------|-------------------|------------------------|-------------------|
| | | Female | Male | Academic | Non-Academic |
| | (1) | (2) | (3) | (4) | (5) |
| | Drop Out | Drop Out | Drop Out | Drop Out | Drop Out |
| Phase 2 (First Lockdown) | 0.03*** (0.01) | 0.03*** (0.01) | 0.03*** (0.01) | 0.03*** (0.01) | 0.04*** (0.01) |
| Phase 3 (Relaxation) | 0.03*** (0.01) | 0.04*** (0.01) | 0.02** (0.01) | 0.03*** (0.01) | 0.04*** (0.01) |
| Phase 4 (Second Lockdown) | 0.12*** (0.01) | 0.12*** (0.02) | 0.12*** (0.02) | 0.12*** (0.02) | 0.13*** (0.02) |
| Observations | 2,612 | 1,548 | 1,064 | 1,388 | 1,224 |
| R^2 | 0.061 | 0.058 | 0.066 | 0.059 | 0.063 |

Notes: Coefficients given as change in intention to drop out of studies due to financial concerns. Reference is phase 1 (pre-pandemic). Robust standard errors (clustered by individuals) in parentheses. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.16
Intention to extend studies due to financial concerns.

| | Total | Gender | | Educational Background | |
|---------------------------|-------------------|-------------------|-------------------|------------------------|-------------------|
| | | Female | Male | Academic | Non-Academic |
| | (1) | (2) | (3) | (4) | (5) |
| | Extend | Extend | Extend | Extend | Extend |
| Phase 2 (First Lockdown) | 0.17*** (0.01) | 0.15*** (0.02) | 0.20*** (0.02) | 0.16*** (0.02) | 0.18*** (0.02) |
| Phase 3 (Relaxation) | 0.08*** (0.01) | 0.07*** (0.01) | 0.08*** (0.02) | 0.08*** (0.01) | 0.07*** (0.01) |
| Phase 4 (Second Lockdown) | 0.26*** (0.02) | 0.27*** (0.02) | 0.24*** (0.03) | 0.24*** (0.02) | 0.28*** (0.03) |
| Observations | 2,612 | 1,548 | 1,064 | 1,388 | 1,224 |
| R^2 | 0.098 | 0.108 | 0.091 | 0.087 | 0.112 |

Notes: Coefficients given as change in intention to extend studies due to financial concerns. Reference is phase 1 (pre-pandemic). Robust standard errors (clustered by individuals) in parentheses. Own calculations with data from Leibniz University Hannover student survey, 2021. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

- we conduct an analysis in the sense of a time-series event study
- **event**: the sudden economic restrictions of the first lockdown that affected all students (causing an all-encompassing nationwide social shock)
- divides observation window into before and after the onset of the pandemic
- allows: to estimate changes in individual income as treatment effects by comparing income before and after the beginning of the first lockdown (treatment)
- we do not determine dynamic effects (as in difference-in-differences approaches with staggered rollout) because all students experience the treatment simultaneously
- since we cannot use any variation (that differs in the individual perspective of students) other than the events of the economic lockdowns that affected all students across Germany at the same time, our results show general patterns of the pandemic on the economic situation of students
- **Assumption for causal interpretation**:
 - no systematic changes in income other than the treatment over the considered period
 - then: the change in income (β) can be interpreted as a causal effect of the economic consequences of the pandemic

- since our observation window is relatively short (before and after the treatment), we assume that there are no further (short-term) income effects (unrelated to the treatment) besides the pandemic
- possible threat of seasonality:
 - seems to be negligible, since students generally do not save their income but spend it on covering their living expenses
 - moreover, we collected our data in such a way that any seasonal effects (e.g., due to work during semester breaks) are offset in monthly income
- given this reasoning on plausibility, our quantitative empirical estimates reflect a causal relationship
- the average monthly income of students in the first two phases of the pandemic in our sample is consistent with the results of Becker and Lörz (2020)
- this suggests that the effects of each phase are fundamental developments of the pandemic, since the first lockdown in particular affected all students across Germany at the same time
- however, in case of violation of any of the required assumptions and therefore potentially biased estimates, at least the estimated directions of the income changes correspond to the actual changes in each case, and thus contain important economic information

During the relaxation phase, the government responded with adjustments to the BAfoeG Act and further financial aid for students in pandemic-related financial distress:

- **BAfoeG Act:** Comparatively high incomes in the first months of the pandemic should not lead to a loss of BAfoeG entitlement. Since the individual regular period of study of students has been extended, the funding period is also extended as a result.
- **KfW student loan:** (of up to 650 euros per month) was made interest-free for all students from May 2020 to the end of 2021 without any preconditions.
- **Grant:** all students with a proven acute pandemic-related need (for example, due to a job loss) could receive a non-repayable grant of between 100 and 500 euros per month from mid-June 2020 to the end of March 2021.