

Broke, ill, and obese: The effect of household debt on health

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MOTIVATION

Research question



Analyzing the causal impact of household indebtedness on different health outcomes

- Effect via budget constraints or mental stress?**
- Adequate policy implications**
 - Financial literacy and debt counseling?
 - Low price campaigns for healthy food, access to health care?
- Socio-economic gradient of health**
 - Poor individuals in worse health

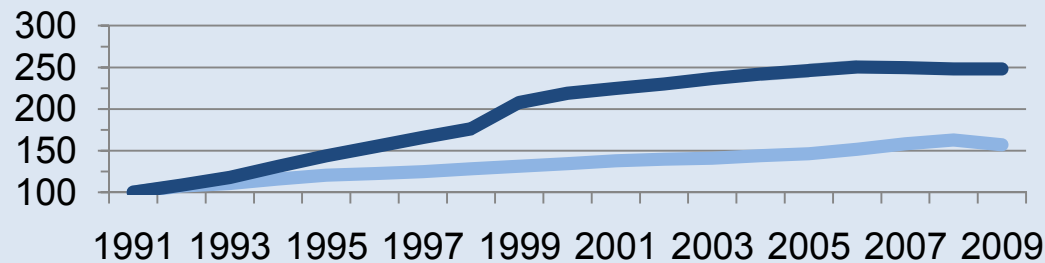
MOTIVATION



Household debt: facts and figures



Rising private debt volume

Graph 1: GDP and loans of banks to private households



Outstanding loans:
Banks to private HH
(1991=100) 
GDP
(1991=100) 

Source: Deutsche Bundesbank, Federal Stat. Office.



Increasing private debt burdens

Table 1: Average private debt burdens per household in euros

Year	Consumer debt	Mortgage debt (remainder)
1998	1,300	18,600
2008	1,700	24,500

Source: Deutsche Bundesbank.



Widespread debt-related financial distress

2.8 mill households overindebted: 6.9 % (SCHUFA, 2010)

LITERATURE REVIEW

Literature on household debt and health outcomes

➔ **Indebted have higher BMI (OLS)**

Münster et al. (2009, BMC Public Health)

➔ **Indebted are in worse mental health (IV)**

Brown et al. (2005, Journal of Economic Psychology)

➔ **Health shocks often follow arrears**

Duygan-Bump and Grant (2009, Economic Policy)

➔ **Strong correlations between debt and psychological health**

➔ **Subjective debt problems reduce mental health (bivariate probit)**

Bridges and Disney (2010, Journal of Health Economics)

THEORETICAL FRAMEWORK

Possible links between debt and health

1 Debt affects health

Financial stress: mental distress, psychosomatic health problems

Budget constraints: unhealthy food and avoidance of health care utilization

2 Health affects debt

High medical bills

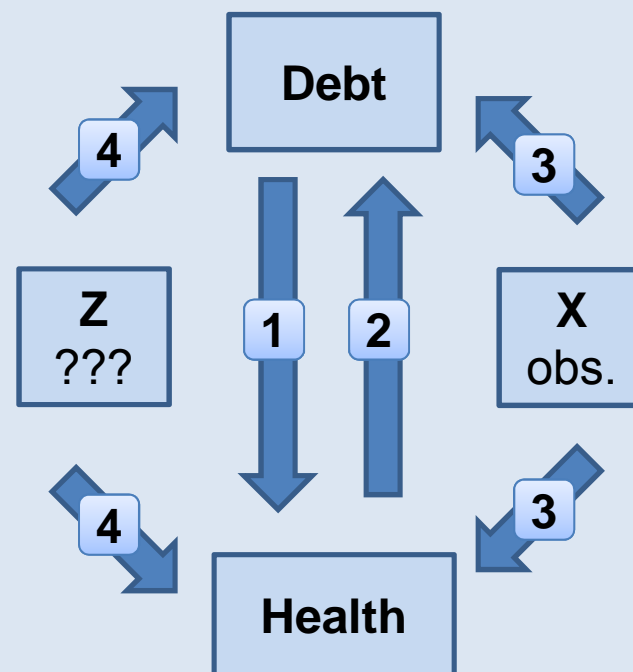
Health shocks lead to labor market exit

3 Observed third factors - X

Unemployment: makes sick, overindebted

4 Unobserved third factors - Z

Risk aversion, time preferences



DATA

Our dataset

✓ **German Socio-Economic Panel** (2002 – 2008)

✓ **PanelWhiz** used to prepare data

✓ **Individuals** under 65

24,579 individuals, 9,596 households (originally), 111,786 observations

✓ **Health measures**

Bad self-rated health (2002-2008)

Mental health score (2002, 2004, 2006, 2008)

BMI/obesity (2002, 2004, 2006, 2008)

✓ **Debt measures**

Repayments: Consumer credit / Income; Home loans / Income

Overindebted: $\text{Income} - \text{Debt repayments} < \text{Social assistance level}$

ECONOMETRIC METHODOLOGY

Estimation methods

- 1 OLS regression: health on debt and covariates**
Age, sex, education, labor force status, HH-income, region, marital status, health insurance, etc.
- 2 Fixed-effects**
Account for unobserved (time-invariant) heterogeneity
- 3 Fixed-effects with a subgroup**
Constantly employed between 2002 and 2008

REGRESSION RESULTS

1 Self-rated health and household indebtedness

- ✓ Overall health status negatively associated by debt: OLS
- ✓ Health status negatively affected by debt: fixed-effects estimator

Weaker effects when controlling for unobserved heterogeneity

Dependent variable: self-rated health	OLS Full sample	FE Full sample	FE Alw. empl.	OLS Full sample	FE Full sample	FE Alw. empl.
Consumer debt/ HH-Income	0.187*** (0.022)	0.039** (0.018)	0.058** (0.025)			
Housing debt/ HH-Income	0.089*** (0.018)	0.033* (0.019)	0.044* (0.026)			
Overindebted				0.035*** (0.006)	0.013** (0.005)	0.021** (0.009)
<i>Observations</i>	<i>111,786</i>	<i>111,786</i>	<i>49,014</i>	<i>111,786</i>	<i>111,786</i>	<i>49,014</i>

Note. Standard errors in parentheses; * $p < 0:1$, ** $p < 0:05$, *** $p < 0:01$; Source: SOEP, 2002-2008.

REGRESSION RESULTS

2 Mental health score and household indebtedness

- ✓ Mental health negatively associated with debt (OLS)
- ✓ Mental status negatively affected by debt (fixed-effects)

Strength of effects vary with debt measure and subsample

Dependent variable: mental health score	OLS Full sample	FE Full sample	FE Alw. empl.	OLS Full sample	FE Full sample	FE Alw. empl.
Consumer debt/ HH-Income	7.474*** (0.833)	1.491** (0.760)	2.815*** (0.994)			
Housing debt/ HH-Income	2.473*** (0.653)	2.717*** (0.777)	3.845*** (0.993)			
Overindebted				1.075*** (0.261)	0.754*** (0.229)	0.677* (0.346)
<i>Observations</i>	62,946	62,946	27,921	62,946	62,946	27,921

Note. Standard errors in parentheses; * $p < 0:1$, ** $p < 0:05$, *** $p < 0:01$; Source: SOEP, 2002-2008.

REGRESSION RESULTS

3 Obesity and household indebtedness

- ✓ Negative association between with health and debt (OLS)
- ✓ Insignificant debt coefficients when using fixed-effects

Dependent variable: Obesity	OLS Full sample	FE Full sample	FE Alw. empl.	OLS Full sample	FE Full sample	FE Alw. empl.
Consumer debt/ HH-Income	0.150*** (0.020)	-0.006 (0.017)	0.002 (0.026)			
Housing debt/ HH-Income	0.018 (0.015)	0.001 (0.017)	-0.007 (0.024)			
Overindebted				0.014** (0.006)	-0.006 (0.005)	-0.007 (0.008)
<i>Observations</i>	<i>64,319</i>	<i>64,319</i>	<i>28,437</i>	<i>64,319</i>	<i>64,319</i>	<i>28,437</i>

Note. Standard errors in parentheses; * $p < 0:1$, ** $p < 0:05$, *** $p < 0:01$; Source: SOEP, 2002-2008.

ROBUSTNESS CHECKS

1 Health measures

Overweight and BMI as dependent variables

Doctor visits (controlling for overall health status)

2 Financial decision-making

Focus on household heads

3 Debt measures

Exclusion of HH with income changes driving changes in relative indebtedness



- **Results are qualitatively unchanged**
- **Indebted individuals are more likely to attend a doctor**

CONCLUSION

Main results

1

Indebted are more often sick (overall and mental health)
Indebted are more often overweight

2

Debt causes worse health (overall and mental health)
Debt problems do not cause overweight



Robust to both measures of debts



Mental stress seems to be the channel

(not too little money for healthy food or doctor visits)



Income gradient of health via household indebtedness!?

CONCLUSION

Policy implications

- Health problems and resulting poverty traps**
 - ➔ Improve debt literacy
 - ➔ Support debt counselling

- Non-neutrality of debt with respect to health**
 - ➔ Discuss credit constraints

- Household debt and expenditure for healthy lifestyle**
 - ➔ No need for direct action

APPENDIX
