

Debts in the Shadows: Informal Borrowing and Mental Health in Australia

Chi Minh Ho (PhD)

Professor David Gilchrist, Professor Jacqueline Birt, Dr Duc Vo, & Dr Lai Hoang

Outline:

Research objectives

Motivation

Literature review & Hypothesis

Data & Methodology

Results

Conclusions & Implications



Research objectives:



Informal borrowing is borrowing from:

- Individuals,
- Friends,
- Relatives who are not living in the same household, and
- Other institutions that are not formal lenders.

Motivation:

1 in 5 Australians



aged 16–85 (22%, or 4.3 million) experienced a mental disorder.

17% of Australians experienced an Anxiety disorder



8% experienced an Affective disorder and 3% a Substance use disorder.

1 in 7 children and adolescents



aged 4–17 years experienced a mental illness.

Australian Institute of Health and Welfare. (2025, May 20). *Prevalence and impact of mental illness—Mental health*. Australian Institute of Health and Welfare. <https://www.aihw.gov.au/mental-health/overview/prevalence-and-impact-of-mental-illness>



THE UNIVERSITY OF
**WESTERN
AUSTRALIA**

Motivation:

Spending on mental health-related services



increased from \$12.7 billion in 2019–20 to \$14.5 billion.

Over \$1.5 billion



was spent on mental health-related Medicare services and \$747 million on mental health-related pharmaceutical services.

\$9.1 billion



was spent on state and territory specialised mental health services.

Australian Institute of Health and Welfare. (2025a, February 25). *Expenditure—Mental health*. Australian Institute of Health and Welfare. <https://www.aihw.gov.au/mental-health/topic-areas/facilities-resources/expenditure>



THE UNIVERSITY OF
**WESTERN
AUSTRALIA**

Motivation:



Image is generated by AI



THE UNIVERSITY OF
WESTERN
AUSTRALIA

Motivation:

Socioeconomic Factors:

Socioeconomic disadvantage,
Financial stress,
Income loss,
Employment circumstances

Environmental and Life Events:

Social isolation,
Financial insecurity, and
Major disruptions to healthcare access

Developmental Stems (Childhood & Adolescence): Experiencing poor mental health during childhood acts as a strong determinant for negative health, social, educational, and economic outcomes in adulthood

Demographic Vulnerabilities:

Age,
Gender,
Residing in rural or remote communities

Mental Health

Motivation:



Informal borrowing is borrowing from:

- Individuals,
- Friends,
- Relatives who are not living in the same household, and
- Other institutions that are not formal lenders.

Literature review

Why does informal borrowing exist?

- The formal financial services is absent or inefficient because of moral hazard, adverse selection, limited commitment, or inefficient courts.
- Borrowers have *low quality of credit history, insecure property titles, or are financial illiteracy.*

(Karaivanov & Kessler, 2018)



Literature review

Why is informal borrowing important?

- Reduce the agency problems
- Contribute to financial inclusion
- Provide financial assistance
- Have social penalties
- Might pose a risk to financial stability as operating outside of the regulatory

See Turvey et al. (2010) in case of China

H₁: Informal debt is adversely associated with borrowers' mental health.

Some facts:

- Inconsistent interest rate or payment schedule.
- Changes the relationship from friends to creditor & debtor.
- Informal borrowing can be harmful to borrower credit rating.
- The cost of default is more painful or expensive for lenders.

(Braverman, 2018; Chanda et al., 2025; Lufkin, 2021; The Australian National Debt Helpline, 2025)

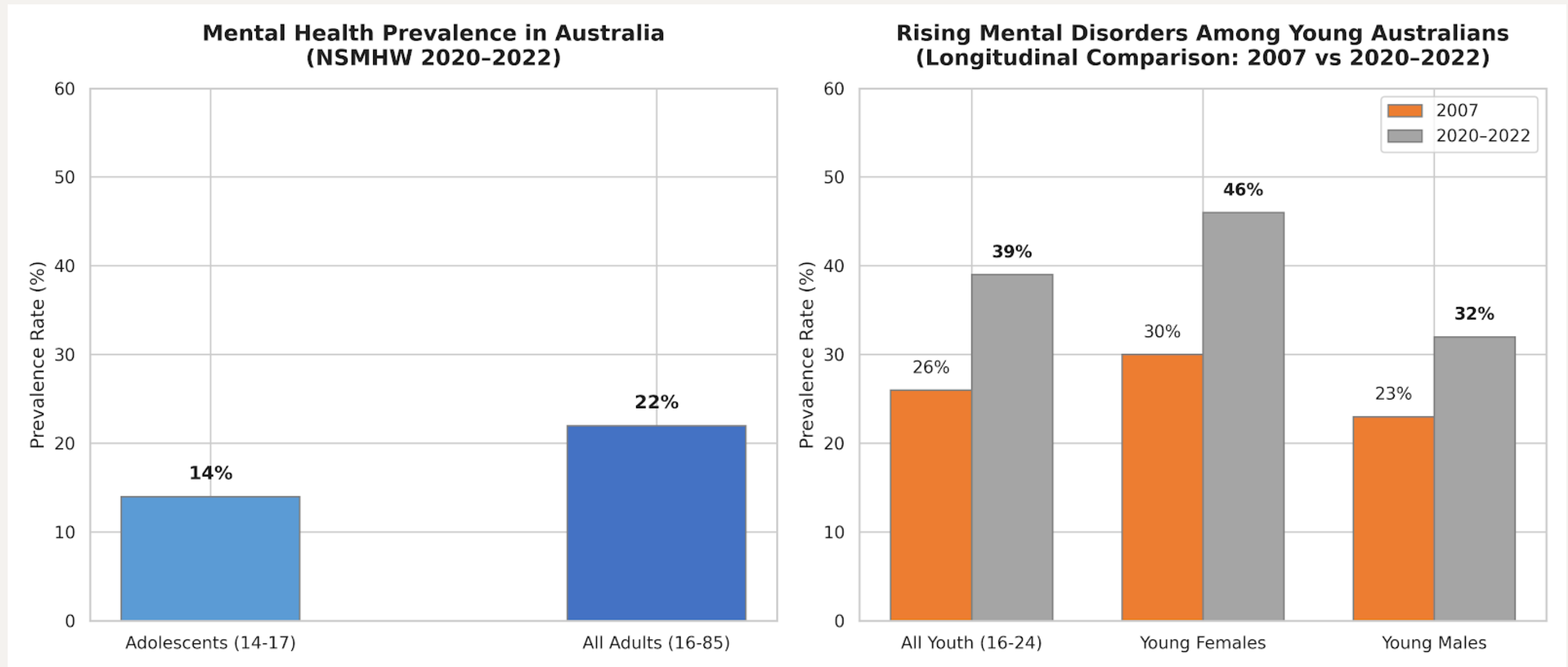
Literature review

Gender gap in mental health

Personal finance

- Women typically have lower savings and emergency liquidity, greater debt stress, and lower debt literacy, which together amplify vulnerability to mental health deterioration following the economic shocks (Matemane et al., 2025)
- Women experience higher levels of debt-related psychological distress than men, even at comparable levels of indebtedness (Dunn & Mirzaie, 2016, 2023; Hamilton et al., 2019)
- Women's psychological responses to indebtedness and income volatility are often larger than men's, reflecting both structural labour-market inequalities and differential household responsibilities (Cui et al., 2025; Dunn & Mirzaie, 2023)
- Women disproportionately internalize financial responsibility and emotional labour, leading to stronger mental health responses to financial strain (Cui et al., 2025; Louie et al., 2023)

The Australian Context



National Study of Mental Health and Wellbeing (NSMHW) in 2007 and 2020-2022

Hypothesis

H₂: The negative impact of informal borrowing on mental health is stronger for women than for men.

Literature review

Marital status

Mental health issues

Married or cohabitating households:



- Married or cohabitating households benefit from risk-pooling, dual incomes, and economies of scale (Musick & Bumpass, 2012; Zimmermann & Easterlin, 2006).



- Spillover effect of informal borrowing among married or cohabitating couples (Cui et al., 2025).



Non-married households:



- Single, divorced, or widowed individuals lack immediate risk-pooling capability, leaving them significantly more vulnerable to liquidity constraints, economic hardship, and resulting depressive symptoms (Hewitt et al., 2012).



- Single parents rely more frequently on informal social safety nets for liquidity, then face higher rates of mental health disorders due to the chronic stress of sole financial responsibility (Crosier et al., 2007a; Radey et al., 2020; Waston & Kalkat, 2024).



Hypothesis

H₁: Informal debt is adversely associated with borrowers' mental health.

H₂: The negative impact of informal borrowing on mental health is stronger for women than for men.

H₃: Being not married exacerbates the adverse effect of informal borrowing on mental health status.



Data & Methodology

Data

- This study utilizes data from the Household, Income and Labour Dynamics in Australia (HILDA) Surveys, which has been conducted annually since 2001.
- The HILDA survey is a nationally representative longitudinal study administered by the Melbourne Institute of Applied Economic and Social Research.



Data & Methodology

Mental Health measurement

The HILDA Survey includes nine items assessing respondents' emotional well-being over the past four weeks. These items are:

- (1) feeling full of life,
- (2) being a nervous person,
- (3) feeling so low that nothing could cheer them up,
- (4) feeling calm and peaceful,
- (5) having a lot of energy,
- (6) feeling down,
- (7) feeling worn out,
- (8) being a happy person, and
- (9) feeling tired.

The five-item Mental Health Inventory (MHI-5), a subscale of the Short Form 36 (SF-36), which corresponds to items 2, 3, 4, 6, and 8.

Each question is measure from 1 (“all of the time”) to 6 (“none of the time”).

Data & Methodology

Informal borrowing measurement:

The HILDA Survey includes three question to identify informal borrowing:

- “Loans from friends or relatives not living in this household”
- “Did you (or any other members of this household) borrow from anyone else, such as a friend, relative, solicitor, or community organization, to help pay for this home?”
- “Amount owed on loans from other types of lenders”

The survey ask these three question in every four year since 2006. Therefore, our data covers 5 waves including 2006, 2010, 2014, 2018, and 2022

Data & Methodology

Empirical model:

$$MH_{i,t} = IB_{i,t} + IC_{i,t} + HC_{i,t} + e_{i,t} \quad (1)$$

where: $MH_{i,t}$ is a person's mental health index; $IB_{i,t}$ is household's informal borrowing; $IC_{i,t}$ represents individual characteristics including gender, age, marital status, educational level, employment status, and job satisfaction; $HC_{i,t}$ is household characteristics including household size, household income, and household net worth; and $e_{i,t}$ is the error term.

Analysis strategy:

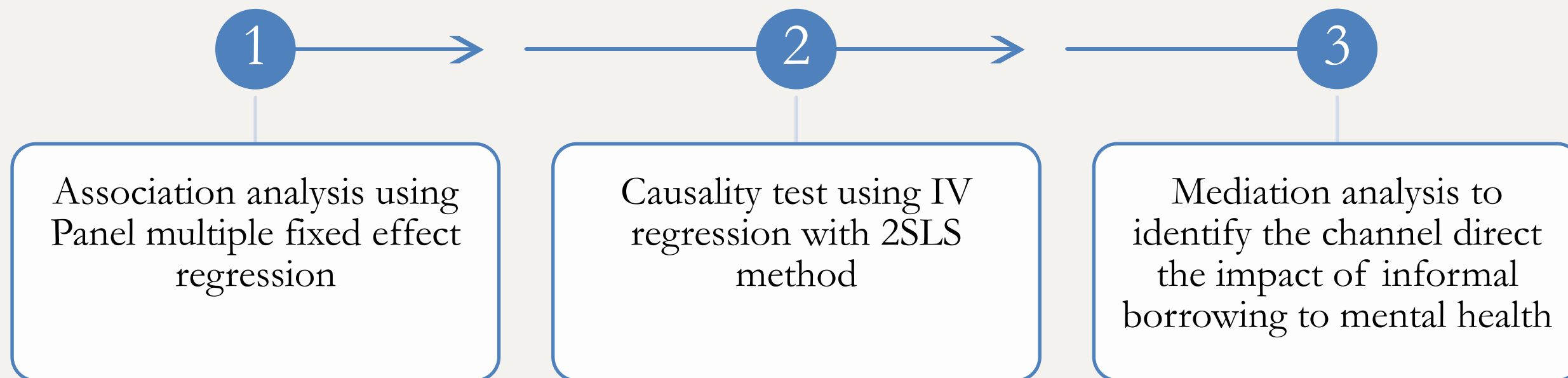


Table 1:
Summary
statistics

20

Variable		Observations	Mean	Median	Standard Deviation	Min	Max
Mental Health Index 2 (measured by 5 questions)		34,562	74.108	76.000	16.346	0.000	100.000
Dummy of owning an informal debt		34,562	0.043	0.000	0.203	0.000	1.000
Value of informal borrowing		34,562	2,507.932	0.000	33,710.378	0.000	2,300,000.000
Dummy of being a female		34,562	0.498	0.000	0.500	0.000	1.000
Age		34,562	38.992	38.000	14.045	15.000	89.000
Marital Status							
	Married	34,562	0.464	0.000	0.499	0.000	1.000
	Separated	34,562	0.030	0.000	0.170	0.000	1.000
	Divorced	34,562	0.084	0.000	0.277	0.000	1.000
	Widowed	34,562	0.010	0.000	0.099	0.000	1.000
	Never married but living with some one	34,562	0.155	0.000	0.362	0.000	1.000
	Never married and not living with some one	34,562	0.258	0.000	0.437	0.000	1.000
Educational level							
	Postgraduate	34,562	0.057	0.000	0.232	0.000	1.000
	Graduated diploma	34,562	0.067	0.000	0.250	0.000	1.000
	Bachelor	34,562	0.169	0.000	0.374	0.000	1.000
	Adv diploma	34,562	0.098	0.000	0.298	0.000	1.000
	Certificate III or IV	34,562	0.241	0.000	0.428	0.000	1.000
	Year 12	34,562	0.173	0.000	0.378	0.000	1.000
	Year 11 and below	34,562	0.195	0.000	0.396	0.000	1.000
Frequency of getting socially with friends/relatives		34,562	3.567	3.000	1.413	1.000	7.000
Frequency of feel rushed or pressed for time		34,562	2.598	3.000	0.893	1.000	5.000
Do any work in the last 7 days		34,562	0.950	1.000	0.217	0.000	1.000
Have more than one job		34,562	0.082	0.000	0.275	0.000	1.000
Overall job satisfaction		34,561	7.733	8.000	1.577	0.000	10.000
Number of children less than 5 years-old		34,561	0.198	0.000	0.514	0.000	3.000
Number of children from 5 to 9 years-old		34,562	0.193	0.000	0.510	0.000	5.000
Number of children from 10 to 14 years-old		34,562	0.191	0.000	0.509	0.000	4.000
Household size		34,562	117,540.047	99,873.500	96,901.822	-216,048.000	2,984,440.000
Household disposable total income		34,562	934,210.873	517,100.000	1,435,789.163	-3,840,000.000	28,950,000.000
Household net worth		34,562	1.849	1.800	0.578	0.000	5.600
Household total assets		34,562	934,210.873	517,100.000	1,435,789.163	-3,840,000.000	28,950,000.000
Household total debts		34,562	1.849	1.800	0.578	0.000	5.600

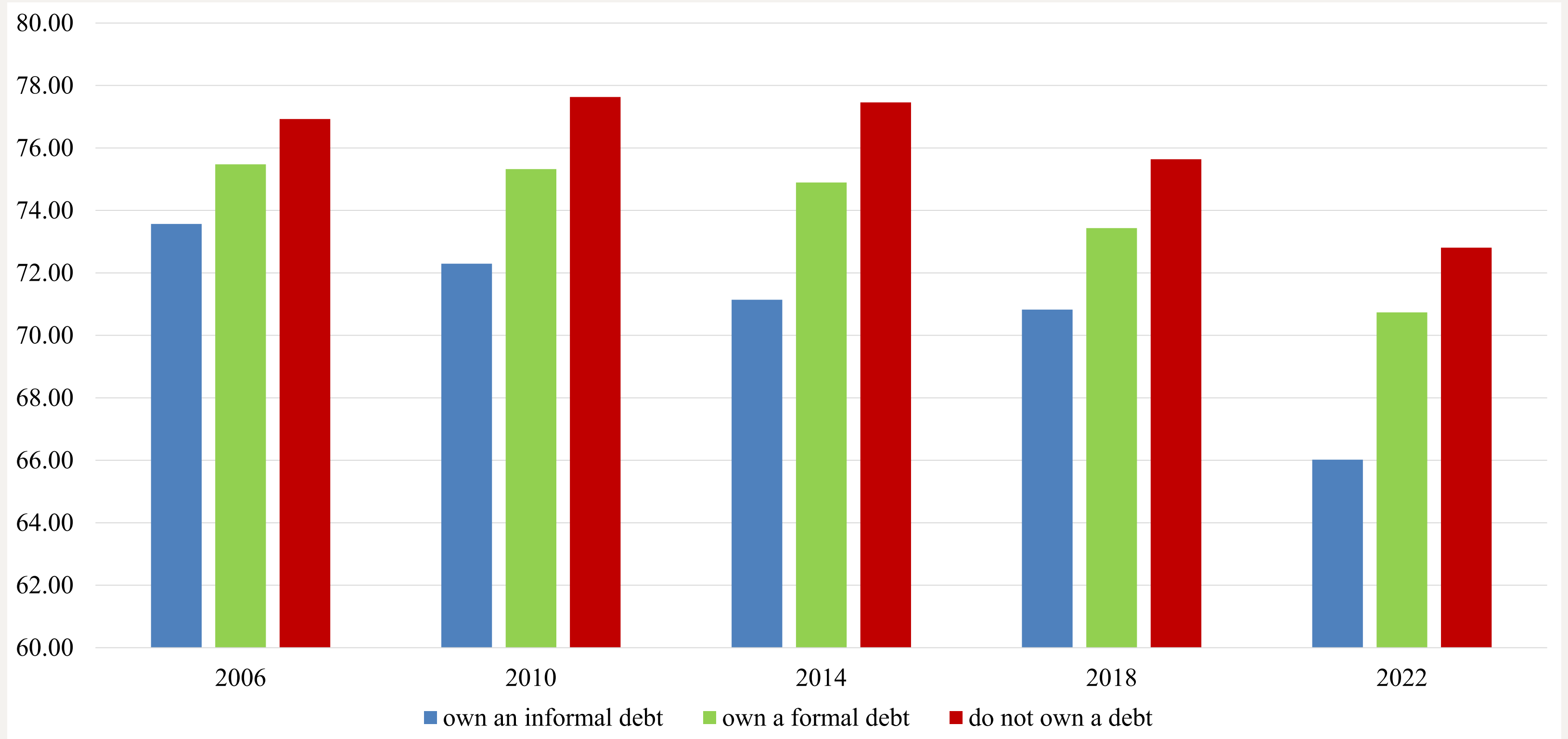


Figure 1. Mental health index between groups of individuals with informal debt ownership, from 2006 to 2022.



Figure 2. Mental health index measured by MHI-5 and average value of debt between female and male, from 2006 to 2022

Table 2: OLS regression with mental health measured by MHI-5

VARIABLES	Model 1	Model 2	Model 3
Informal borrowing (dummy)	-3.277*** (0.432)	-1.338*** (0.388)	-1.168*** (0.420)
Dummy of being a female		-1.645*** (0.162)	-1.609*** (0.215)
Marital status: Separated		-4.145*** (0.477)	-3.505*** (0.598)
Marital status: Divorced		-2.016*** (0.306)	-1.548*** (0.417)
Marital status: Widowed		-3.997*** (0.813)	-3.622*** (1.025)
Marital status: Never married but living with some one		-1.750*** (0.262)	-1.115*** (0.331)
Marital status: Never married and not living with some one		-5.003*** (0.271)	-4.328*** (0.366)
Observations	34,562	34,562	34,389
R-squared	0.002	0.206	0.277
Other control variables	NO	NO	YES
Fixed effect	NO	NO	YES



IV regression

Instrumental variables:

- (i) The frequency of paying the entire credit card balance

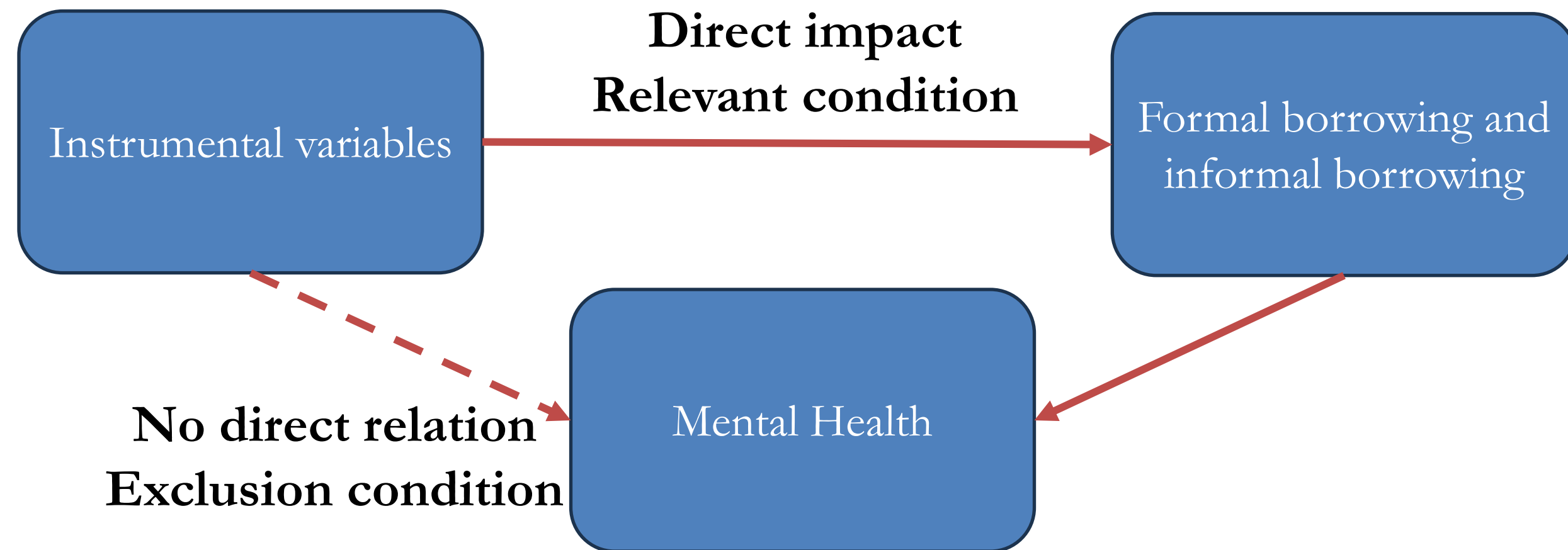


Table 3: 2SLS regression with instrumental variables, mental health is the dependent variable

VARIABLES	Model 1		Model 2		Model 3	
	1 st stage	2 nd stage	1 st stage	2 nd stage	1 st stage	2 nd stage
Paying credit-card balance	-0.008*** (0.001)		-0.007*** (0.001)		-0.006*** (0.001)	
Informal borrowing (dummy)		-132.360*** (16.720)		-78.418*** (13.646)		-89.363*** (19.895)
Observations	19,362	19,362	19,362	19,362	19,147	19,147
R-squared		-2.684		-0.731		-1.050
Fixed effect	NO	NO	NO	NO	YES	YES
Underidentification test (Kleibergen-Paap rk LM statistic)		82.13		58.77		36.03
p-value		[0.000]		[0.000]		[0.000]
Weak identification test (Cragg-Donald Wald F statistic)		82.47		58.88		42.91

IV regression – reversed causality

Instrumental variables:

- (i) Dead of a friend is the instrumental variable for mental health

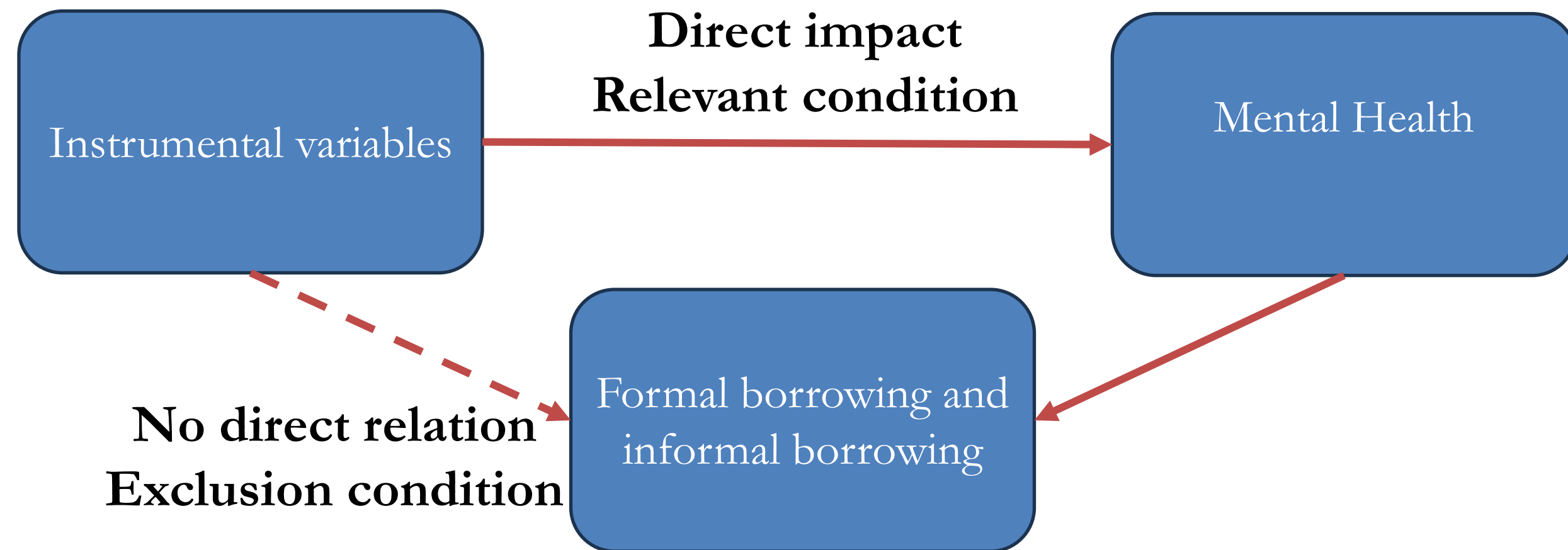
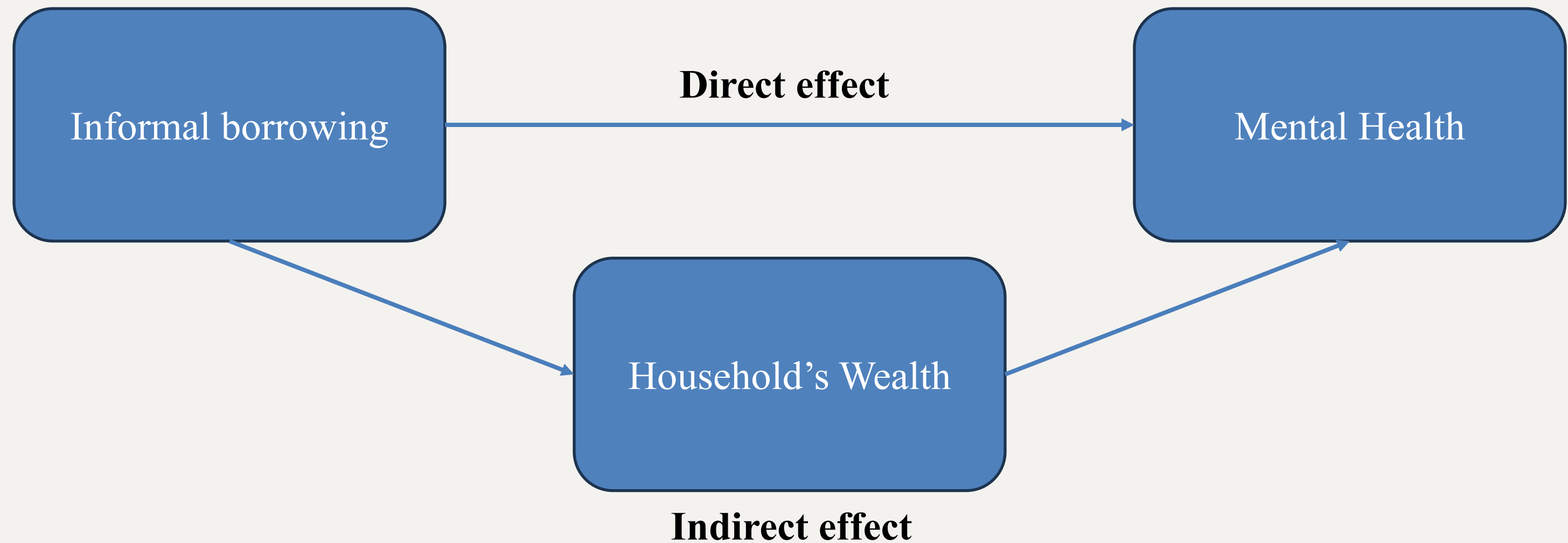


Table 3: 2SLS regression with instrumental variables, informal debt ownership is the dependent variable

VARIABLES	Model 1		Model 2		Model 3	
	1 st stage	2 nd stage	1 st stage	2 nd stage	1 st stage	2 nd stage
Dead of a friend	-0.680** (0.344)		-1.125*** (0.310)		-1.234*** (0.342)	
Mental health (MHI-5 index)		-0.002 (0.007)		-0.006 (0.004)		-0.004 (0.004)
Observations	19,362	19,362	19,362	19,362	19,147	19,147
R-squared		-0.006		-0.146		-0.041
Fixed effect	NO	NO	NO	NO	YES	YES
Underidentification test (Kleibergen-Paap rk LM statistic)		3.921		13.14		13.71
p-value		0.0477		0.000289		0.000214
Weak identification test (Cragg-Donald Wald F statistic)		3.921		13.14		15.16

Mediation analysis



Mediation analysis

$$\text{Mental}_i = \beta_0 + \beta_1 \text{Wealth}_i^h + \beta_2 \text{Informal}_i^h + \sum \beta_k Z_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$\text{Wealth}_i^h = \alpha_0 + \alpha_1 \text{Informal}_{i,t}^h + \sum \beta_k Z_{i,t} + e_i \quad (3)$$

$$\text{Mental}_{i,t} = \gamma_0 + \gamma_1 \text{Informal}_{i,t}^h + \sum \gamma_k Z_{i,t} + \theta_{i,t} \quad (4)$$

Controlled direct effect: β_2 .
 Indirect effect: $\alpha_1 \times \beta_1$.
 Total effect: $\gamma_1 = \beta_2 + \alpha_1 \times \beta_1$

Table 4: Mediation analysis with mediator is the household asset, mental health is measured by MHI-5

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3
Indirect	-0.526*** (0.041)	-0.164*** (0.018)	-0.170*** (0.040)
Direct	-2.751*** (0.243)	-1.341*** (0.291)	-1.167*** (0.311)
Total	-3.277*** (0.275)	-1.505*** (0.295)	-1.337*** (0.331)
Observations	34,562	34,562	34,389
Control variable	NO	YES	YES
Fixed Effects	NO	NO	YES

Table 5: Fixed effect regression between informal borrowing (with different measurements) and mental health in various sub-samples

VARIABLES	All sample	Female	Male	Married	Not-Married
Informal borrowing (dummy)	-1.168*** (0.420)	-1.363** (0.577)	-1.180* (0.607)	-1.183* (0.607)	-1.239** (0.594)
Observations	34,389	16,968	17,137	16,909	17,277
R-squared	0.277	0.306	0.313	0.304	0.289
Log of informal loan	-0.078* (0.040)	-0.103* (0.056)	-0.073 (0.057)	-0.091 (0.056)	-0.074 (0.060)
Observations	34,389	16,968	17,137	16,909	17,277
R-squared	0.277	0.306	0.313	0.304	0.289
Ratio of informal loan in household income	-0.180 (0.172)	-0.368* (0.209)	-0.013 (0.248)	-0.308* (0.160)	0.126 (0.433)
Observations	34,373	16,965	17,124	16,908	17,262
R-squared	0.274	0.304	0.309	0.303	0.285



Table 5: Fixed effect regression between informal borrowing (with different measurements) and mental health in various sub-samples

VARIABLES	All sample	Female	Male	Married	Not-Married
<i>Sample of Household Head</i>					
Informal borrowing (dummy)	-1.763*** (0.611)	-1.692** (0.844)	-1.391 (0.921)	-1.629* (0.901)	-2.291*** (0.844)
Observations	15,990	8,792	6,916	6,881	8,843
R-squared	0.312	0.354	0.390	0.374	0.336
Log of informal loan	-0.132** (0.060)	-0.128 (0.084)	-0.091 (0.087)	-0.140* (0.083)	-0.178** (0.088)
Observations	15,990	8,792	6,916	6,881	8,843
R-squared	0.312	0.353	0.390	0.374	0.336
Ratio of informal loan in household income	-0.278 (0.340)	-0.815 (0.601)	0.347 (0.279)	-0.749* (0.402)	-0.157 (0.590)
Observations	15,977	8,790	6,906	6,881	8,830
R-squared	0.309	0.352	0.386	0.373	0.331



Table 7: Fixed effect regression between informal borrowing (with different measurements) and mental health **within indebted households**

VARIABLES	All sample	Female	Male	Married	Not-Married
Informal borrowing (dummy)	-1.166*** (0.423)	-1.250** (0.615)	-1.375** (0.602)	-1.479** (0.579)	-1.093* (0.618)
Observations	29,749	14,757	14,784	14,736	14,699
R-squared	0.277	0.307	0.287	0.311	0.318
Log of informal loan	-0.077* (0.040)	-0.097* (0.057)	-0.086 (0.061)	-0.115** (0.056)	-0.061 (0.058)
Observations	29,749	14,757	14,784	14,736	14,699
R-squared	0.276	0.307	0.286	0.311	0.317
Ratio of informal loan in household income	-0.163 (0.176)	-0.285* (0.167)	0.021 (0.436)	-0.403** (0.200)	0.086 (0.258)
Observations	29,736	14,756	14,772	14,734	14,688
R-squared	0.274	0.306	0.282	0.309	0.314



Table 8: Fixed effect regression between informal borrowing (with different measurements) and mental health **within households owning an informal debt**

VARIABLES	All sample	Female	Male	Married	Not-Married
Log of informal loan	1.377*** (0.343)	1.191 (0.843)	1.844*** (0.501)	1.250** (0.519)	1.764*** (0.625)
Observations	1,212	456	567	458	455
R-squared	0.531	0.600	0.587	0.619	0.619
Ratio of informal loan in household income	0.108 (0.319)	0.418 (0.496)	0.679 (0.824)	0.677 (0.620)	0.299 (0.539)
Observations	1,211	456	566	458	454
R-squared	0.515	0.595	0.561	0.607	0.601

Conclusions & Implications

Hypothesis confirmation:

H1: Informal debt is adversely associated with borrowers' mental health.

- Confirmed in most cases, except within the sample of households who have already borrowed from informal sources.
- We thought that debts from informal sources are “low-cost” financing solution, but it is not.



Conclusions & Implications

Hypothesis confirmation:

H2: The negative impact of informal borrowing on women than for men.

- Partly confirmed.
- A woman who owns an informal debt has significant lower mental quality than the woman who does not own such debt.
- The result is not robust for group of men, and the Chi-square test does not confirm the difference between the two groups.

Female	Male
-1.363** (0.577) 16,968 0.306	-1.180* (0.607) 17,137 0.313
-0.103* (0.056) 16,968 0.306	-0.073 (0.057) 17,137 0.313
-0.368* (0.209) 16,965 0.304	-0.013 (0.248) 17,124 0.309

Conclusions & Implications

Hypothesis confirmation:

H3: Being not married exacerbates the adverse effect of informal borrowing on mental health status.

- We cannot confirm the hypothesis.
- We do find that being not married results as poorer mental health than the married in the based line regression.
- However, in *sub-sample of indebted households*, the negative effect of informal borrowing on mental health is only significant in *groups of married households*.

Conclusions & Implications

Other findings:

Wealth accumulation channel that helps explain the pathway through which informal borrowing affects mental health:

Informal borrowing is expected to facilitates household wealth accumulation



The increase in household wealth indirectly and positively contributes to debtors' mental health



The results is not that way!

Informal borrowing reduce wealth;
Even wealth improve mental health;
Total effect is negative to mental health.



Conclusions & Implications

1. Should carefully consider the broader psychological and social costs associated with informal borrowing (including relational strain, social obligations, or legally ambiguous agreements).
2. Policymakers and relevant agencies in Australia should consider designing public awareness campaigns to inform both borrowers and lenders about the potential negative consequences of informal borrowing.
3. Understanding the motivations behind informal borrowing is essential for promoting sustainable financial behavior .



Thank you very much for
your attention

Mr. Chi Minh Ho



HILDA Survey Research Conference 2026
1st & 2nd October 2026