Household Debt and Food Expenditure: Evidence from urban China

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Outline

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Introduction

- The reasons for the variation in food expenditure or food expenditure share :

  income level (Engel, 1895; Working, 1943; Leser, 1963)

  Income gap (Wang and Xie, 2013)

  price fluctuations (Chai and Moneta, 2010)

  social welfare policies (Banks et al. 1997)

- The perspective of household debt is scarce.

Introduction

- In the few papers, the effect of debt on food expenditure has not yet reached a consistent conclusion.
- Positive : consumer credit may relax the budget constraints of household consumption, smooth the impact of income shocks, and promote the growth of consumer spending, including food consumption (Kirby and Capps, 1994).
- Negative: housing debt repayment crowd out food spending(Fan and Yavas, 2018).

- Scarce empirical evidence testing influence mechanisms.

Basic facts : 1. Household debt is growing rapidly in China, mainly housing debt.

	Numerical value (unit: trillion)	Average annual growth rate	Percentage
2013-2018 total household sector loan growth	32.96	17.7%	100%
Growth in consumer loans in the household sector	28.82	21.5%	87.44%
Growth of medium and long-term consumer loans in the household sector	22.12	21.0%	67.12%
Including: Growth of personal housing loan	17.65	26.0%	55.58%
Growth of short-term consumer loans in the household sector	6.70	23.3%	20.32%
Growth in operating loans for the household sector	4.14	14.3%	12.56%

Data source: People's Bank of China (2019) , the data is of August 2019; the data of the growth of personal housing loan is from 2013 to 2015.

Basic facts : 2 .The actual debt burden of indebted household is heavier, especially for low-income group.

- The actual household debt is underestimated.

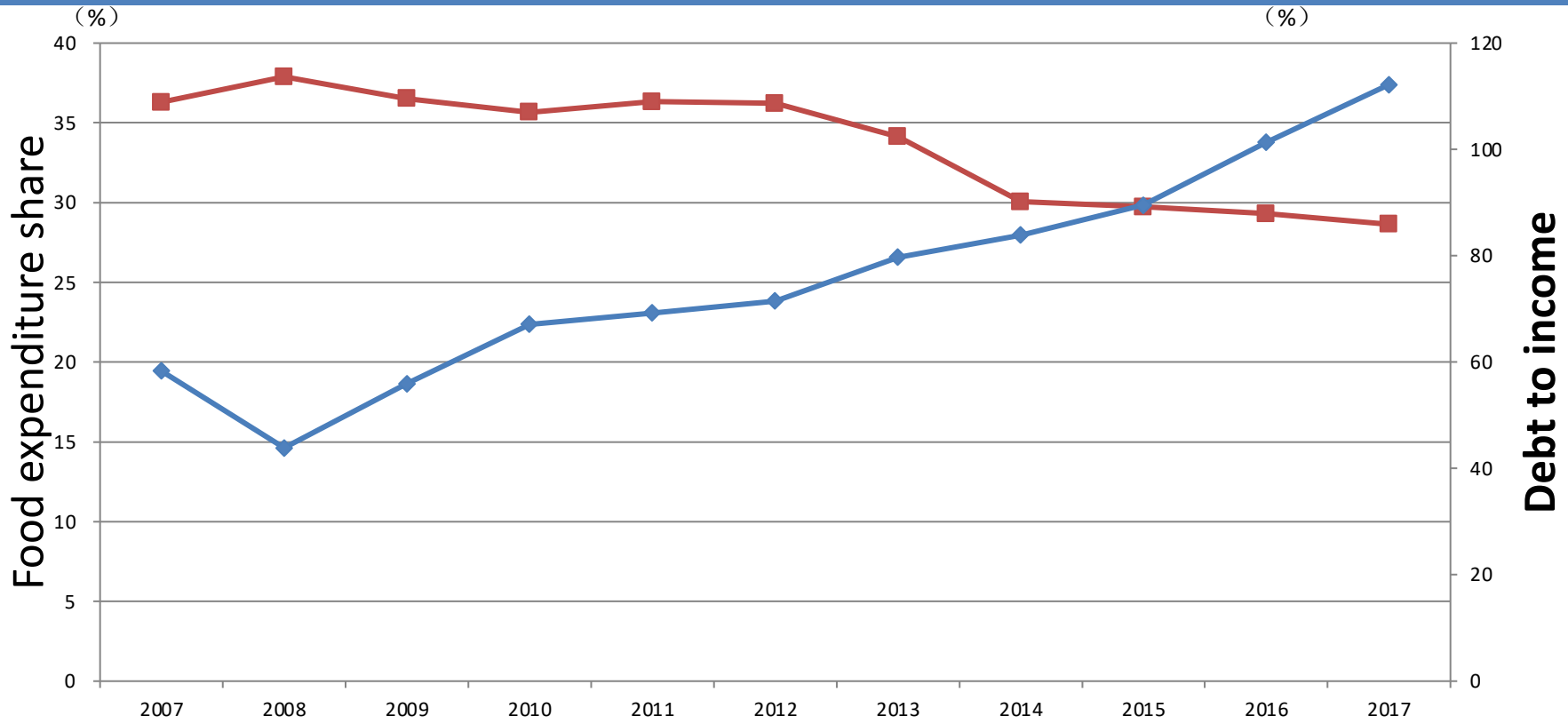
the inability to count the of P2P borrowing and private lending through informal channels.

the availability of loans for residents is poor, and the actual debt burden of indebted households is underestimated.

- The actual debt burden is heavier for low-income group.

CHFS (2015-2017)shows that among indebted households who purchase new houses from 2015 to 2017, the low-income households had a leverage ratio of 13.7, contracts to 1.8 of the highest households.

Basic facts: 3. The food expenditure share and household debt have a negative correlation.



Based on the above background, this article attempts to explore whether the decline in the share of food expenditure is related to the steady increase in the leverage ratio of Chinese residents? What is

Main contributions:

- The changes in the food expenditure share is explained from the perspective of household debt in China, which may enriches the empirical research of Engel's coefficient in developing countries.

- we analysis the mechanisms through asset-income effects, liquidity constraints and debt distress effects, which may deepen the understanding of the food expenditure theory.

- Also, we find an interesting phenomenon that the Engel coefficient and income in urban China show an inverted U-shaped relationship, which provides empirical evidence for Banks et al. (1997), Maki and Ohira (2014).

Main findings:

- Household debt significantly reduces the share of food expenditures in urban China, and formal borrowing and housing debt significantly reduce the share of food expenditures at home.

- Mechanism analysis shows that low-income households face liquidity constraints due to debt, which leads to a decline in food expenditure share and erodes family welfare. For middle-income and middle-low-income households, debt has an asset-income effect, declines the food expenditure share , but weakens the effect as a negative asset.

- Food expenditures of risk-averse households and one-suit households are more sensitive to changes in debt.

Literature review and hypothesis

How household debt affects the share of food expenditure?

- **Asset-income effect**

Household debt may increase current income and accumulate wealth, relaxes budget constraints, and reduce food expenditures shares according to Engel's law.

income effect

If households use borrowing to smooth consumption, debt does not directly affect consumption, but rather income and consumption through income effects (Johnson and Li, 2007).

asset effect

If household borrowing is mainly used to purchase assets, it will increase household wealth, thereby reducing the share of food expenditure according to wealth effect.

Literature review and hypothesis

- **Liquidity constraints.**

Accumulation of household debt means household vulnerabilities (Debelle, 2007), which makes lenders more cautious in lending. Rigid expenditures such as debt repayment have led to tighter household liquidity, lower consumption, and food expenditure .

The household asset and debt are mainly concentrated in housing in China. Housing has poor liquidity, so households are more likely to face liquidity constraints. In particular, low-income groups face a higher proportion of liquidity constraints in China (Gan et al., 2018)

Literature review and hypothesis

- **Debt distress effect.**

As every household has a certain amount of borrowing based on its income or asset, high leverage may make the household feel crisis-prone and may voluntarily restrict consumption for precaution reasons(Kukk,2016).

Research results show that both mortgage debt repayment and new mortgage debt significantly reduce the food consumption rate for household in urban China, and households with greater debt repayment pressure have lower consumption propensity (Fan and Yavas, 2018).

Based on the above analysis, we propose a theoretical hypothesis: **household debt is an important factor affecting the food consumption , and the increase in household debt will reduce the**

Statistical facts

Table 1 Debt and food expenditure share（2012—2016)

	2012		2014		2016	
	indebted household	non-indebted household	indebted household	non-indebted household	indebted household	non-indebted household
food1	0.423	0.470	0.394	0.481	0.400	0.465
food2	0.386	0.429	0.352	0.429	0.349	0.406
Sample size	1644	1436	1653	1455	1832	1580

Table 2 Distribution of debt and food expenditure share in different income groups

	debt			*food*1			*food*2		
	2012	2014	2016	2012	2014	2016	2012	2014	2016
low-income household	4.783	6.240	6.084	0.397	0.330	0.328	0.434	0.369	0.374
middle-low-income household	1.187	1.624	1.517	0.397	0.361	0.359	0.435	0.405	0.411
middle-income household	0.797	1.001	1.599	0.409	0.387	0.380	0.447	0.435	0.436
middle-high-income household	0.582	0.916	0.964	0.377	0.356	0.348	0.414	0.398	0.398
high-income household	0.724	0.967	1.078	0.343	0.333	0.334	0.377	0.373	0.383

Model

An econometric model of household debt affecting on food expenditure share is constructed as follows:

$$food_{it} = \alpha debt_{it} + \beta_1 income_{it} + \beta_2 income_{it}^2 + \gamma' X_{it} + \mu_i + \nu_t + \varepsilon_{it}$$

food, the ratio of the actual food expenditure of household i in year t.

debt, debt-to-income ratio.

data：CFPS（2012-2016）

sample size: 3436 households balanced panel data

Empirical results: Baseline results

Model number	(1)	(2)	(3)	(4)	(5)
Model form	OLS	OLS	RE	FE	2SLS
debt1	-0.0026***	-0.0026***	-0.0023***	-0.0014***	-0.0087***
	(-6.3651)	(-6.2689)	(-5.7634)	(-2.7840)	(-3.6516)
Household characteristics	Yes	Yes	Yes	Yes	Yes
Householder characteristics	Yes	Yes	Yes	Yes	Yes
Region characteristics	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes
time fixed effect	No	Yes	Yes	Yes	Yes
Observations	9,186	9,186	9,186	9,186	9037
R-aquared	0.1619	0.1646	0.1182	0.1243	0.0914
F value of First stage					85.11
t value of IV					9.23

Robustness checks

	（1）	（2）	（3）	（4）	（5）	（6）	（7）
	food2	food1	△ food1	food_h	food_nh	food_h	food_nh
debt1	-0.0016*** (-2.8019)						
debt2		-0.0014*** (-2.7661)					
△debt1			-0.0029*** (-3.9667)				
debt1_f				-0.0030 (-0.5187)	-0.0018 (-0.7227)		
debt1_inf				-0.0018** (-1.9668)	0.0002 (0.4709)		
debt1_h						-0.0028+ (-1.6330)	0.0002 (0.2949)
debt1_nh						-0.0020 (-1.2093)	-0.0005 (-0.7357)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observat	9,186	9,397	5395	6,151	6,163	6,151	6,163

Mechanism checks

	full sample	low-income household	middle-low - income household	middle -income household	middle-high - income household	high-income household
Panel A: asset-income effect						
debt1	-0.0124***	-0.0063	-0.0302***	-0.0372**	0.0067	-0.0088
	(-3.5955)	(-1.3887)	(-4.3685)	(-2.5756)	(0.4725)	(-0.6090)
asset	-0.0051**	-0.0015	-0.0130**	-0.0164***	0.0004	-0.0047
	(-2.3438)	(-0.3702)	(-2.5637)	(-3.3963)	(0.0984)	(-0.9439)
debt1× asset	0.0009***	0.0004	0.0024***	0.0027**	-0.0005	0.0006
	(3.2599)	(1.1202)	(4.1866)	(2.5225)	(-0.4633)	(0.5924)
Observations	9,186	1,805	1,834	1,877	1,883	1,787
R^2	0.1257	0.1401	0.1368	0.1115	0.1928	0.2059
Panel B：liquidity constraint						
Dependent variable is food1						
debt1	-0.0026***	-0.0019***	-0.0011	-0.0027***	-0.0019	-0.0016
	(6.4685)	(-2.8023)	(1.2903)	(2.5740)	(1.5459)	(1.1430)
Dependent variable is LC						
debt1	0.0057***	0.0047***	0.0049*	0.0025	0.0129**	0.0125***
	(5.1907)	(2.6699)	(2.0472)	(0.8267)	(3.6285)	(3.3193)
Dependent variable is food1						
debt1	-0.0025***	-0.0018***	-0.0010	-0.0027***	-0.0020	-0.0014
	(-6.3050)	(-2.6623)	(-1.2467)	(-2.5791)	(-1.5783)	(-1.0115)
LC	-0.0106***	-0.0205**	-0.0072	0.0025	0.0037	-0.0141
	(-2.7995)	(-2.2107)	(-0.8744)	(0.3123)	(0.4498)	(-1.6185)
Observations	9,186	1,805	1,834	1,877	1,883	1,787
R-squared	0.1653	0.1188	0.1763	0.1496	0.2571	0.2669
Sobel test	-0.0001**	-0.0001*	-0.0000	-0.0000	-0.0000	-0.0002

Mechanism check

Panel C： debt distress effect						
debt1	-0.0016***	-0.0016**	-0.0015	-0.0022*	-0.0002	-0.0016***
	(-3.0345)	(-2.0092)	(-1.3664)	(-1.8872)	(-0.1516)	(-3.0345)
debt2	0.0143	0.0572	0.0529	0.0197	0.0023	0.0143
	(0.9808)	(1.4476)	(1.3883)	(0.7173)	(0.0788)	(0.9808)
Observations	9,162	1,801	1,830	1,868	1,879	1,784
R-squared	0.1244	0.1417	0.1294	0.1070	0.1927	0.2055

Heterogeneity results

	debt-income ratio	t statistics	observations	R-squared
Panel A: Group households by risk preference				
Risk-preferred	0.0026	(0.9286)	136	0.3931
Risk-neutral	-0.0035***	(-2.7295)	1609	0.1705
Risk-averse	-0.0028**	(-2.1477)	3347	0.0636
Panel B: Group households by the number of housing				
Renter	0.0049	(1.4206)	383	0.1184
One-suite household	-0.0023**	(-2.2897)	2042	0.1252
Multi-suite household	0.0006	(0.6348)	711	0.2812

Conclusion

- Household debt has significantly reduced the share of food expenditures in urban China, and formal borrowing and housing debt have significantly reduced the share of food consumed at home.
- Mechanism analysis shows that low-income households face liquidity constraints due to debt, which leads to a decline in food expenditure share and erodes family welfare. For middle-income and middle-low-income households, debt has an asset-income effect, declines the food expenditure share , but weakens the effect as a negative asset.
- Heterogeneity analysis shows that the food expenditure of households with one-suit or risk averse households are more sensitive to changes in debts.

Policy implications

- The government may increase the income of low-income groups through multiple channels such as preferential employment policies and increasing transfer payments.

- Support the development of the credit market and broaden the availability of credit for low-income groups.

- The scale and growth rate of household debt should be reasonably controlled.

Thanks!