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Household Debt, Leverage Ratio and Consumption—Evidence from China

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• Household consumption spending is crucial for business cycles and macroeconomy.

• Traditional theories of consumption suggest that income and wealth are important determinants of household spending (Fisher, 1930; Friedman, 1957). In contrast, household debt is regarded as not a typical independent determinant.

• Both household debt and wealth are important components of household balance sheets and household debt may alter the relationship between consumption and income and affect households' ability to smooth consumption. 2

• The literature studying the relationship between household debt and consumption presented mixed results.

• Household indebtedness can depress consumption (King, 1994; Kim and Hwang, 2016).

• The growth of household debt promotes the growth of goods and services expenditures (Bachetta and Gerlach, 1997; Ludvigson, 1999).

• The median household debt-to-GDP ratio among emerging market economies rose from 15 percent in 2008 to 21 percent in 2016, and among advanced economies' it increased from 52 percent to 63 percent(The IMF's Fall 2017 Global Financial Stability Report).

• When the level of household indebtedness exceeds 30 percent of GDP, the association between increases in debt and future real GDP growth turns negative, and when household debt exceeds 65 percent of GDP, the relationship predicates the extreme nature of crises (IMF, 2017).

Much attention has paid to household leverage ratio's influence

• One strand of the literature has focused on the macroeconomic and financial impacts of household leverage.

• The rise in household leverage is the main driver of the recession that began in December 2007 and intensified the subsequent recession .

Mishkin (1976, 1977 and 1978) ; Mian and Sufi (2009, 2011, 2018) ; Mian et al. (2017) ; Schularick and Taylor (2012) and Jordà et al. (2016)

Much attention has paid to leverage ratio's influence

- Another strand of the literature explored the role of household leverage ratio in household consumption based on micro data.
- High debt-asset ratio had adverse effects on household consumptions.
 Japan : Ogawa and Wan (2007) ; U.S : Dynan et al. (2012) ;
 Denmark : Andersen et al. (2016) ; Korea : Kim and Hwang (2016) , Song (2018)
- New Zealand : Shaar and Yao (2018) found that household indebtedness, especially via mortgage debt, plays a significant role in determining consumption spending through the collateral channel of the housing wealth effect.
- China : Pan and Liu (2018) concluded that the family leverage would promote the survival consumption expenditure and alleviate the development-and-enjoyment-oriented consumption expenditure, but its effect on the total consumption expenditure of a household is insignificant.



Data Source: Wind Information Database.

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Household Debt, Leverage Ratio and Consumption—Evidence from China

• Research Purpose:

• For the better understanding of the law of family consumption in China, this paper aims to assess the impacts of the elevated household debt and leverage ratio, defined here as the ratio of household debt to household assets, on family consumption based on household micro data.

• In particular, this paper examines the effects of household leverage ratio on consumption by classifying total consumption into expenditures of different types and differentiating between urban households and rural households.

- The panel dataset in this research is obtained from "China Family Panel Studies (CFPS)" in 2012, 2014 and 2016.
- In sum, the dataset composed of 8913 households, including 2468 urban households and 6445 rural households.

Variables

dependent	InTotalC	IC The logarithm of total household consumption expenditure		
variables	lnSurviveC	The logarithm of household basic survival consumption expenditure		
	lnE&DC	The logarithm of household enjoyment-and-development-oriented consumption expenditure		
Explanatory	lnHL	The logarithm of housing loans		
variables	lnOL	The logarithm of the sum of outstanding loans except for housing loans, and loans from all sources to the private non-financial sectors		
	Lev	Household leverage (debt-to-asset ratio)		
	lnFA	The logarithm of the financial asset		
	lnNFA	The logarithm of the non-financial asset		
	Lev*lnAsset	the interaction between household leverage and logarithm of household asset		
	lnIncome	The logarithm of household income		
	Lev*lnIncome	the interaction between household leverage and logarithm of household income		
	lnTotalCt-1	The logarithm of the consumption expenditure in the previous period		
Control	Age	The age of the head of household		
variables	Gender	The Gender of the head of household. female=1, male=0		
	Marriage	The marital status of the head of household. marriage=1, otherwise=0		
	M-insurance	The participation in medical insurance. Participating in at least one kind of medical insurance=1, otherwise=0		
	E-insurance	The participation in endowment insurance. Participating in at least one kind of endowment insurance=1, otherwise=0		

 $\ln TotalC_{it} = cons_t + \beta_1 \ln TotalC_{it-1} + \beta_2 HL_{it} + \beta_3 OL_{it} + \beta_4 FA_{it} + \beta_5 NFA_{it} + \beta_6 \ln Income_{it} + \beta_7 X_{it} + \varepsilon_{it} t(1)$

 $\ln TotalC_{it} = cons_t + \beta_1 \ln TotalC_{it-1} + \beta_2 Lev_{it} + \beta_3 \ln FA_{it} + \beta_4 \ln NFA_{it} + \beta_5 \ln Lev_{it} * \ln Asset_{it} + \beta_6 \ln Income_{it} + \beta_7 Lev_{it} \times \ln Income_{it} + \beta_8 X_{it} + \varepsilon_{it} (2)$

 $\ln SurviveC_{it} = cons_t + \beta_1 Lev_{it} + \beta_2 \ln FA_{it} + \beta_3 \ln NFA_{it} + \beta_4 LR_{it} * \ln Asset_{it} + \beta_5 \ln Income_{it} + \beta_6 Lev_{it} \times \ln Income_{it} + \beta_7 X_{it} + \varepsilon_{it} (3)$

 $\ln E \& DC_{it} = cons_t + \beta_1 Lev_{it} + \beta_2 \ln FA_{it} + \beta_3 \ln NFA_{it} + \beta_4 Lev_{it} * \ln Asset_{it} + \beta_5 \ln Income_{it} + \beta_6 Lev_{it} \times \ln Income_{it} + \beta_7 X_{it} + \varepsilon_{it}(4)$

 $\ln TotalC_{it} = cons_t + \beta_1 \ln TotalC_{it-1} + \beta_2 HL_{it} + \beta_3 OL_{it} + \beta_4 FA_{it} + \beta_5 NFA_{it} + \beta_6 \ln Income_{it} + \beta_7 X_{it} + \varepsilon_{it} t(1)$

	Total sample	Urban sample	Rural sample
	lnTotalC	lnUrbanTC	lnRuralTC
InTotalCt-1	-0.0269***	-0.0417***	-0.0265**
	(-3.14)	(-2.96)	(-2.46)
lnHL	0.0253***	0.0260***	0.0295***
	(7.16)	(3.73)	(7.41)
lnOL	0.0384***	0.0360***	0.394***
	(8.54)	(3.49)	(7.97)
lnFA	0.0181***	0.0187***	0.0135***
	(5.51)	(3.01)	(3.51)
InNFA	0.105***	0.0885***	0.105***
	(7.89)	(3.79)	(6.52)
InIncome	0.0988***	0.0790**	0.0943***
	(6.81)	(2.02)	(6.06)
_cons.	7.471***	8.190***	7.530***
	(30.38)	(16.12)	(26.09)
Ν	17344	4794	12550

 $\ln TotalC_{it} = cons_t + \beta_1 \ln TotalC_{it-1} + \beta_2 Lev_{it} + \beta_3 \ln FA_{it} + \beta_4 \ln NFA_{it} + \beta_5 \ln Lev_{it} * \ln Asset_{it} + \beta_6 \ln Income_{it} + \beta_7 Lev_{it} \times \ln Income_{it} + \beta_8 X_{it} + \varepsilon_{it} (2)$

	Total sample	Urban sample	Rural sample
	lnTotalC	lnUrbanTC	InRuralTC
InTotalCt-1	-0.0268***	-0.0389***	-0.0249***
	(-3.06)	(-2.68)	(-1.94)
Lev	-0.0802***	-0.0759***	-0.208***
	(-1.76)	(-2.08)	(-1.67)
lnFA	0.0125***	0.0149***	-0.108***
	(3.86)	(2.48)	(2.99)
InNFA	0.155***	0.118***	0.365***
	(9.22)	(4.29)	(2.07)
Lev*lnAsset	0.0112***	0.0125***	0.0411
	(2.02)	(2.90)	(1.99)
lnIncome	0.0932***	0.0743***	0.103***
	(6.33)	(1.94)	(5.73)
Lev*lnIncome	0.00296	0.00184	-0.00337
	(1.22)	(0.97)	(-0.57)
_cons.	7.135***	8.024***	5.128***
	(25.22)	(14.79)	(2.52)
Ν	17306	4722	12534

 $\ln SurviveC_{it} = cons_t + \beta_1 Lev_{it} + \beta_2 \ln FA_{it} + \beta_3 \ln NFA_{it} + \beta_4 LR_{it} * \ln Asset_{it} + \beta_5 \ln Income_{it} + \beta_6 Lev_{it} \times \ln Income_{it} + \beta_7 X_{it} + \varepsilon_{it}(3)$

	Total sample	Urban sample	Rural sample
	lnSurviveC	lnUrbanSC	lnRuralSC
Lev	-0.263***	0.184	-0.644***
	(-2.78)	(1.22)	(-5.06)
lnFA	0.0359***	0.0345***	0.0277***
	(8.19)	(4.09)	(5.44)
InNFA	0.190***	0.116**	0.241***
	(24.98)	(11.06)	(22.77)
Lev*lnAsset	0.0516***	0.0573***	0.0772***
	(8.76)	(5.13)	(9.58)
InIncome	0.220***	0.292***	0.177***
	(22.99)	(14.42)	(16.53)
Lev*lnIncome	-0.00674	-0.0607***	0.0154*
	(-0.88)	(-3.57)	(1.65)
_cons.	4.085***	4.370***	3.954***
	(31.19)	(18.48)	(23.80)
Ν	14207	4150	10423

 $\ln E \& DC_{it} = cons_t + \beta_1 Lev_{it} + \beta_2 \ln FA_{it} + \beta_3 \ln NFA_{it} + \beta_4 Lev_{it} * \ln Asset_{it} + \beta_5 \ln Income_{it} + \beta_6 Lev_{it} \times \ln Income_{it} + \beta_7 X_{it} + \varepsilon_{it} (4)$

	Total sample	Urban sample	Rural sample
	lnE&DC	lnUrbanE&DC	lnRuralE&DC
Lev	-0.103	0.00748	-0.600***
	(-0.58)	(0.04)	(-1.77)
lnFA	0.127***	0.145***	0.0977***
	(17.55)	(11.80)	(11.41)
lnNFA	0.208***	0.149***	0.224***
	(17.56)	(9.63)	(12.96)
Lev*lnAsset	0.0608***	0.0447***	0.0819***
	(7.07)	(3.15)	(6.40)
InIncome	0.369***	0.476***	0.288***
	(22.73)	(15.54)	(14.92)
Lev*lnIncome	-0. 0304*	-0.0306	0.00435
	(-1.82)	(-1.28)	(0.14)
_cons.	0.740***	0.322	1.547***
	(3.55)	(0.91)	(5.70)
Ν	11258	3792	7768

• Being in debt is not bad for households and economy because it influences consumption in the positive way, but the increase in leverage ratio or liability-side vulnerability of households would put great downward pressure on the private overall consumption level.

• It is the household debt relative to the value of the assets held rather than the absolute debt level matters for the microeconomic implications of household indebtedness on consumption.

Findings

- The depressive effects of households' leverage on consumer spending may be heterogeneous, while they are more concentrated for rural groups than for urban groups and more stronger for basic survive consumption than for enjoyment-and-entertainment-oriented consumption.
- Consumption expenditures of rural households is more vulnerable to debt burden or high leverage ratio than urban household, and the adjustments in consumption spending by household were stronger for basic survive consumption than enjoyment-and-development-oriented consumption.
- The latter findings indicate that the consumption structure of China's households is in the process of optimization and upgrading, and enjoyment-and-development-oriented consumption is becoming a stable component of the consumption structure of household.

Findings

• Asset and income are main factors affecting current consumption.

- The influence coefficients of household income on total consumption and various types of consumption are positive.
- Both household financial and non-financial assets have significant and positive effect on residents' consumption in general, with the exception that the response of total consumption to leverage ratio in rural group is significantly negative.
- Leverage ratio can drive the consumption of households through "effect of wealth", but the impacts of leverage ratio on income-consumption effect are mixed across consumer groups and consumer spending types. 18

Policy Implications

- The increased household leverage ratio should be gradually lowered. Macro-prudential monetary and financial policies should make attempt to prevent rapid credit expansions or too much leverage to keep households' balance sheets sound.
- A moderately easy policy that guarantees abundant liquidity should be adopted.
- Effective measures should be taken to promote the steady growth of household incomes, including ensuring stable economic growth and employment, reducing burdens of tax and fee, and improving incomes of skilled workers and farmers as well as other employees.
- Macroeconomic policy is needed to focus on the upgrade of consumption content, and especially, efforts should be made to better stimulate consumption by people in rural areas, enabling more of them to get access to high-quality products and services.

Thanks