Development of Statistics for Aggregate Household Debt Service Ratio in Korea

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Ⅰ. Aggregate Household DSR

Trends in Household Debt

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- Households' debt-to-income ratio has risen at a fast pace since 2002 in Korea

  • Korean banks which were wary of corporate credit risk after 1997 Asian foreign exchange crisis, focused their business on the expansion of loans to households, whose credit risk is lower than that of enterprises

  • Generally favorable income growth and low interest rates have made mortgages more affordable, supporting significant increases in mortgage debt

	2002	…	2006	2007	2008	…	2012	2013
Households and NPISHs Debt-to-Income ratio(%)	121	…	129	136	140	…	159	161

Sources: Flow of funds statistics

Expanding & Supplementing Household Debt Statistics

● There is an increasing need for more extensive household debt data for policy formulation as the household debt problem is likely to worsen

● The Bank of Korea undertook the task of expanding household debt statistics

  • Pilot surveys on maturity and repayment type of banks' loan have been conducted

  • Aggregate household debt service ratio has been calculated to assess debt burden more accurately

Concept of Aggregate Household DSR

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● Debt service ratio is calculated as the ratio of
  required debt payments (interest and principal)
  to maximum disposable income

  • An often-used summary measure of household debt is the
    household debt to income ratio. But the household debt to
    income ratio does not express the debt burden accurately

  • Household DSR is one of the encouraged indicators
    in the current IMF Financial Soundness Indicators datasets

  ► $DSR = \sum DS_i / I$

DS_i : debt payment for loan type i
I : disposable income
DSR : debt service ratio

Use of Household DSR Data

● An increase in Aggregate Household DSR could have
   a negative effect on both the real economy and
   the financial system

   • From a macroeconomic perspective
      : When the DSR is high, it is very likely to constrain
        household consumption activities.

   • From a macroprudential perspective
      : A deterioration in household DSR is expected to
        increase defaults and could impair banks' asset soundness

Use of Household DSR Data – (continued)

● The DSR produces a very reliable early warning signal
   ahead of systemic banking crises

   ► This is based on Drehmann & Juselius(BIS, 2012)

   • DSRs tend to peak just before crises materialize,
     reaching levels that are surprisingly similar across countries

   • At horizons of around one year before crises,
     the quality of the early warning signal given by the DSR
     is more accurate than that provided by the credit-to-GDP gap

► This is based on Dynan, Johnson, and Pence(FRB, 2003)

● This ratio expresses the debt service obligations of
the population as a whole but not necessarily the obligations
of the typical household

● It treats financial activities with similar economic substance
differently

• For example, automobile loans are within the scope of the
DSR while automobile leases are not. The concept
of debt repayment in the DSR is more restricted
than the general concept of debt repayment

Ⅱ. Estimation Method

Estimation Method

● Payments of principal and interest are estimated
 separately

● Estimation methods differ according to the type of loan
 and repayment

- Banks, Mutual savings banks, Credit cooperatives,
  Insurance companies, Credit-specialized financial companies

- Residential mortgages, Other loans

- Amortized repayment loan, Single repayment loan,
  Revolving debt

Amortized Repayment Loan

● The following formula for principal and interest payments

  is applied for each type of amortized repayment loan

- Principal payment

  ▶ $PP_i = \dfrac{r_i d_i}{(1+r_i)^{m_i}-1}$

- Interest payment

  ▶ $IP_i = r_i d_i$

DS$_i$: debt payment for loan type i

d$_i$: average stock of debt

r$_i$: average interest rate on the stock

m$_i$: average remaining maturity

I : disposable income

$\Rightarrow DSi = PP_i + IP_i = \dfrac{r_i d_i}{1-(1+r_i)^{-m_i}}$

Single Repayment Loan

● Single repayment loans or bullet repayment loans are quite common in Korea

● When the single repayment falls due, some loans are not rolled over, but paid off with a large single payment

- Principal payment

  ► $PP_i = d_i(\frac{1}{om_i})(1\text{-}ro_i)$

- Interest payment

  ► $IP_i = r_i d_i$

$\Rightarrow DSi = PP_i + IP_i$

> DS_i : debt payment for loan type i
>
> d_i : average stock of debt
>
> r_i : average interest rate on the stock
>
> om_i : the average original maturity
>
> ro_i : ratio of roll-overs

Revolving Debt

● Revolving debt is composed of credit card debt only

● Principal payment is calculated by multiplying the minimum required payment rate by the stock of revolving debt

- Principal payment

  ▶ $PP_i = (d_i)(mp_i)$

- Interest payment

  ▶ $IP_i = r_i d_i$

$\Rightarrow DSi = PP_i + IP_i$

DS_i : debt payment for loan type i

d_i : average stock of debt

r_i : average interest rate on the stock

mp_i : minimum required payment rate

Disposable Income

- Disposable income is disposable income before interest payments as calculated in US

- Household disposable income includes the income of non-profit institutions serving households, which is still difficult to estimate

- Disposable income data are currently published annually

Ⅲ. Data Sources

Repayment Type Data

● Need information on repayment type to calculate

  principal repayment

  • Banks : from reporting institutions

  • Other institutions : from Credit bureaus

● Information on other financial institutions' repayment type

  is received from credit bureaus because it is difficult to get

  data directly from other financial institutions for various

  reasons

Maturity Data

● Need information on Original and Remaining Maturity
  to assess the household debt structure

    • Banks : from reporting institutions

    • Other institutions : from credit bureaus

● Financial institutions sometimes confuse their reporting of
  two completely different sets of data
  (Original and Remaining Maturities)

Interest Rate Data

● Need interest rate data on outstanding loans

● Difficult to get data from credit bureaus because they tend to consider information on interest rates as highly confidential

- Banks : from reporting institutions

- Credit cooperatives : from federations of credit cooperatives

- Credit-specialized financial institutions
  : calculated from financial statements

IV. Way Forward

Data Collection

- Some institutions such as public financial corporations are reluctant to report raw data for reasons of non-disclosure of confidential information

- Private credit bureaus are reluctant to give detailed information to central bank

- Need to promote this type of data sharing as much as possible

A Broad Measure

● Research on a broader measure of household liabilities, the Financial Obligations Ratio is on progress

● The Financial Obligations Ratio (FOR) as published in US adds recurring obligations that has not traditionally been included in the calculation of the DSR

- Rent

- Automobile leases

- Property taxes

References

- Dey, S., R. Djoudad, and Y. Terajima, "A Tool for Assessing Financial Vulnerabilities in the Household Sector," Bank of Canada Review, Summer 2008, pp45−54.

- Drehmann, M. and M. Juselius, "Do debt service costs affect macroeconomic and financial stability?", BIS Quarterly Review, September 2012, pp21-35.

- Dynan, K., K. Johnson, and K. Pence, "Recent Changes to a Measure of U.S. Household Debt Service," Federal Reserve Bulletin, vol. 89, October 2003, pp417-26.

- Faruqui, U., "Indebtedness and the Household Financial Health: An Examination of the Canadian Debt Service Ratio Distribution," Bank of Canada Working Paper 2008-46, December 2008.

- IMF, "The Financial Crisis and Information Gaps: Progress Report," May 2010.