

25th Voorburg Group Meeting

Mini Presentation on

Reference Rate and Negative Prices

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Current CSPI for Japan

- Corporate Services Price Index (CSPI) in Japan incorporates only explicit charges for financial services (see the table below).
- Introduction of implicit charges for deposits and loans could be one of the issues for consideration for the next base-year revision of CSPI (base2010).

Financial services	42.7
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Domestic money transmission and receipt	5.0
International money transmission and receipt	0.8
Account services	4.1
Securities brokerage services	9.3
Underwriting services	3.1
Securities selling services	8.4
Securities issuance, transfer and related services	3.7
Financial agency services	0.6
Safe deposit box services	0.3
Credit guarantee	3.9
Credit card interchange fees	2.2
ATM interchange fees	1.3

Introducing FISIM to GDP

- The Cabinet Office of the government, which is responsible for producing SNA statistics in Japan, is planning to formally introduce FISIM to GDP in the next base-year revision (base 2005).
- The Bank of Japan is closely co-operating with them as;
 - the main producer of financial statistics, such as money stocks, flow of funds, etc. ,and
 - an expert on financial markets and interest rates.
- During this process, we have encountered the issue of the choice of the reference rate and negative FISIM.

The reference rate

- ❁ In the international standard for SNA:
 - A rate from which the risk premium has been eliminated to the greatest extent possible and which does not include any intermediation services (1993 SNA).
 - The reference rate should contain no service element and reflect the risk and maturity structure of deposits and loans. The rate prevailing for inter-bank borrowing and lending may be a suitable choice as a reference rate (2008 SNA).
 - It is assumed that the single reference rate should be applied both to deposits and loans.
- ❁ Theoretically, the “risk-free” market interest rate with an appropriate maturity should be used as the reference rate.
- ❁ It is not easy to actually find a market interest rate that fulfills these conditions.

Candidates for the reference rate

- Following market interest rates are considered as the candidates for the reference rate.
- Interest rates on government securities;
 - 10-year JGB rate
 - 3-month Treasury Bills rate
- Interest rates in interbank markets;
 - The Call rate (Overnight interbank market rate, similar to FF or EONIA)
 - 3-month TIBOR (Similar to LIBOR)
 - Yen-yen Swaps rates with various maturities



Difficulties with the candidates

- ❁ Interest rates on government securities:
 - Theoretically, most close to the notion of “risk-free” market interest rate.
 - 10-year maturity (JGB) is much longer than the average maturity of bank loans (3-4 years), which would lead to negative prices (hence, negative FISIM) on loans.
 - 3-month maturity (T-Bills) is shorter than the average maturity of deposits (about 1 year), which would lead to negative prices (hence, negative FISIM) on deposits.
 - Transactions are concentrated on these representative rates, and market rates with other maturities are less stable to be used for the reference rate.

Difficulties with the candidates

- ❁ Interest rates in interbank markets:
 - The Call rate (overnight maturity) is apparently too short.
 - 3-month TIBOR is still too short compared with the average maturity of deposits (about 1 year), which would lead to negative prices on deposits.
 - Swaps rates with various maturities are available, but the choice of the appropriate maturity is the key issue.
 - Whether 1-year rate, which corresponds to the average maturity of deposits, or 3 to 4-years rate, which corresponds to the average maturity of loans, should be used?

Difficulties with the candidates

- Additional difficulties with interbank interest rates
 - Short-term interbank interest rates are often affected by monetary policy and tend to show sudden movements in a very short period.
 - A lag in the adjustment of banks' deposit rates would often result in negative prices on deposits.
 - Interbank interest rates are not “risk-free”.
 - A very rapid increase in the risk premium on banks could occur (as actually observed during financial crisis period) .
 - A lag in the adjustment of banks' loan rates (especially, long-term loan rates) could result in negative prices on bank loans.

Our solution to FISIM

- ❁ Given the current international standard for SNA, which requires the “single reference rate” applied both to loans and deposits, a simple choice of a certain market interest rate as “the reference” could not exclude the possibility of negative FISIM.
- ❁ Alternative solution to introducing FISIM to GDP
 - Use some “mid-point” rate, i.e. some interest rate between average loan rate and average deposit rate (simple average or weighted average) might be one possibility, but lacking theoretical basis.
 - We decided to use the average interest rate on financial institutions’ borrowing from other financial institutions as the reference rate for calculating FISIM.
 - Negative FISIM has been eliminated for the period since the 1980s.
 - This is likely to be the final choice of the reference rate for introducing FISIM to GDP in the next base-year revision of SNA (base 2005) in Japan.

Solution to SPPI for banking?

- Is it possible to apply the same method for SPPI for banking? (CSPI for our case)
- Calculating the average interest rates for deposits and loans, and the average interest rate for financial institutions' borrowing from other financial institutions (as the reference rate) needs banks' B/S and P/L statement data.
 - P/L statement is necessary to obtain data for payments and receipts of interests.
- Banks' B/S and P/L data are only available with a certain lag, which is usually too long for price indices.

Possible solution for SPPI: preliminary thoughts

❁ Prices for deposit services:

- Chose several representative deposits, such as demand deposits, 3-month time deposits, etc....
- Rates applicable for deposits newly credited with banks (not the average of the stock of deposits) should be used.
- Chose the appropriate reference rate for each representative deposit (not the single reference rate for all deposits).
- The maturity of each representative deposit and the corresponding reference rate should be the same.
- For demand deposits with no maturity, an average remaining period could be used.
- Then, the price for each representative deposit can be calculated as:
(the reference rate)-(deposit interest rate)
- Average them with appropriate weights to obtain the price index for deposit services.

Possible solution for SPPI: preliminary thoughts

❁ Prices for loan services:

- Chose some representative loan rates, such as short-term prime rate, long-term prime rate, standard mortgage rate, etc.
- Rates applicable to new loans (not the average of the stock of loans) should be used.
- Chose the appropriate reference rate for each representative loan rate (not the single reference rate for all loans).
- The maturity of each representative loan rate and the corresponding reference rate should be the same.
- Then the price for each representative loan can be calculated as; $(\text{loan rate}) - (\text{the reference rate})$
- Average them with appropriate weights to obtain the price index for loan services.

Choice of the reference rates

- If interest rates on government securities with wide range of maturities (e.g. from 1-month to 10 or 20-years) are observable in the market, they would be the best choice for the reference rates.
- If they are not, interbank interest rates with various maturities could be used.
- Theoretically, using multiple reference rates with different maturities would correspond to eliminating so-called “term-premium” component from FISIM, which is now on agenda for further revising the definition of FISIM.

Prices adjusted for quality changes

- Using average interest rates for calculating SPPI for deposits or loans might lead to prices which are not adjusted for quality changes.
- Simple numerical example:
 - period 0:
 - Current deposits: balance \100, with interest rate 0%
 - Time deposits: balance \100, with interest rate 3%
 - The reference rate: 5%
 - period 1:
 - Current deposits: balance \50, with interest rate 0%
 - Time deposits: balance \150, with interest rate 4%
 - The reference rate: 5%

Prices adjusted for quality changes

- Calculating prices with average interest rate:
 - period 0 :
 - Average deposit rate: $(0+3)/(100+100) = 1.5\%$
 - Price for deposits: $5 - 1.5 = 3.5\%$
 - period 1 :
 - Average deposit rate: $(0+6)/(50+150) = 3\%$
 - Price for deposits: $5 - 3 = 2\%$
 - A change (fall) in the prices level: $2 - 3.5 = -1.5\%$
- This fall in prices actually reflects the shift of funds from current deposits to time deposits.
- Since time deposits provide lower monetary services than current deposits, part of this fall in price simply reflects a decrease in quality of services.

Prices adjusted for quality changes

- Calculating price index with the Laspeyres formula:
 - period 0 :
 - Current deposits: price 5-0 = 5%, quantity \100
 - Time deposits: price 5-3 = 2%, quantity \100
 - Average price for deposits: 3.5%
 - period 1 :
 - Current deposits: price 5-0 = 5%, quantity \50
 - Time deposits: price 5-4 = 1%, quantity \150
 - Price level change: $(5*100+1*100)/(5*100+2*100) = 6/7$
 - Average price for deposits: $3.5*6/7 = 3\%$
 - A change (fall) in the prices level: $3-3.5 = -0.5\%$
- The difference of 1% point can be seen as mis-inclusion of quality changes (overestimation of the fall in prices) in the measurement of deposit prices.

To conclude,

- ❁ FISIM in SNA and SPPI for indirect charges of banking services are quite close, but they should be different in certain aspects (the purpose, need for promptness, and required frequency, etc.).
- ❁ SPPI for banking should not be overly constrained by the SNA definition of FISIM.
- ❁ It should pursue its own way of properly measuring the indirect charges of banking services within the framework of price index.

❁ **Thank you !**

