Revisions of Estimation Methods for Cash Holdings by Households and Corporations in Japan’s Flow of Funds Accounts

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The views expressed in these slides are not necessarily those of the Bank of Japan.
The amount of currency outstanding has diverged across countries, reflecting differences in institutions, interest rates, and other social factors…

Source: Rogoff (2016), UN, Denmark National Bank
Current Estimation Method

Figure 2: Cash and Deposits in Balance Sheet by Sector (Simple Illustration)

Cash holdings of households: \( C_{HH} = a \cdot (C_{CB} - C_{BK}) \)
Cash holdings of NFCs: \( C_{NFC} = (1-a) \cdot (C_{CB} - C_{BK}) \)

where \( a = \) ratio of transferable deposits for HHs = 0.7

(Note: CB=Central Bank, BK=Commercial Bank, NFC=Non-Financial Corporation, HH=Household; A=Assets, L=Liabilities, C=Cash, D=Deposits)

(Problem)

Applying the ratio between HHs and NFCs for transferable deposits to the ratio for cash
Questions

• Are cash and deposits recorded separately in the financial accounts in your country?

• What method do you use to estimate cash holdings (or cash and deposits) by sector?

• Which data are more reliable, households or corporations?
Alternative Estimation Method 1

• making use of two different data sources: 1) corporation survey; and 2) bank deposit data for NFCs

Cash holdings of NFCs: \( C_{\text{NFC}} = [C_{\text{NFC}} + D_{\text{NFC}}] - D'_{\text{NFC}} \)

Potential estimation errors due to…
1) insufficient adjustments of differences in definitions between data sources; and
2) estimation errors inherited in corporation survey
Alternative Estimation Method 2

- making use of:
  1) cash-sales ratio from survey for sole proprietorship, assuming a proportional relationship between sales proceeds and cash holdings; and
  2) applying the ratio for sole proprietorship to sales for corporations in “cash-oriented” industries

\[
\text{Cash holdings of NFCs by industry: } iC_{NFC} = i(C/S)_{SP} \times iS_{NFC};
\]
\[
\text{Cash holdings of NFCs on aggregate: } C_{NFC} = \sum_i C_{NFC},
\]

where \( S=\text{Sales}, \ SP=\text{Sole Proprietorship}, \ i=\text{“cash-oriented” industry.} \)

Note: “cash-oriented” industries include retail trade, accommodations and food services, and amusement services; “non cash-oriented” industries include manufacturing, construction, utilities, and, information and communication.

(Problem)

Potential estimation bias due to…

1) cash-sales ratio likely higher for sole proprietorship, and cash reported including checks (upward bias); and
2) excluding “non cash-oriented” industries likely to underestimate (downward bias).
Alternative Estimation Method 3

• making use of data from cash collection and delivery services (CCDS) companies, providing information about cash holdings of NFCs without directly surveying individual NFCs

  (1) Pre-Deposited Sales Proceeds
  (2) Cash Retained in the Register

Sales proceeds (cash) \[\xrightarrow{\text{CCDS company}}\] Bank (deposits)

\[\text{n days (sales proceeds collection interval)}\]

\[\text{sales proceeds per day times n days (n = about 3.3 for industry average)}\]

40% of sales proceeds (cash) per day

Cash holdings of NFCs: \(C_{\text{NFC}} = [(1) + (2)]\), aggregated for “cash-oriented” industries

(Problem)

Potential estimation bias due to…
1) excluding “non cash-oriented” industries likely to underestimate (downward bias);
2) selection of companies with relatively large cash transactions (upward bias).
Estimation Results

• 3 mutually independent methods turned out to yield similar estimation results!

• The share of households in cash holdings revised up from 70% to 90%; that for NFCs revised down from 30% to 10%.

In 2015,
Cash holdings of households = 80 trillion yen;
Cash holdings of NFCs = 9 trillion yen
Remaining Issues

- Estimation errors with households due to a residual, as alternative methods directly estimating corporations
  - e.g., the assumption of no overseas’ cash holdings is likely to overestimate households
  - Yet, estimating overseas’ cash holdings poses a challenge due to data limitations
- Still, direct survey for households is unreliable
Verdict

• Among 3 methods, alternative estimation method 2 is chosen.
  – The other methods poses practical challenges.
    ✓ Method 3 using CCDS companies incurs reporting burden and survey costs for estimation updates.
    ✓ Method 1 using subtraction of two statistics results in large estimation errors.
  – Method 2 using published statistics makes periodical updates less costly.
References

The End

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