Introduction to the Monetary Sector Accounts in the Thailand FPP Framework

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Lecture Outline

- Key monetary concepts
  - Demand for money
  - Supply of money
  - Money multiplier
  - Velocity of money
- Forecasting the monetary accounts

Demand for Money

- Why do people hold money?
  - Transactions motive (related to real output & prices): hold money to smooth differences between income and expenditure
  - Portfolio motive (related to return on money and return on other assets): hold money as one among many assets in portfolio

- Money demand (nominal): $M^D = f(Y, P, r)$

- Demand for real balances: $M^D/P = f(Y, r)$

Supply of money

$$mm = \frac{M}{RM} = \frac{CY + D}{CY + R}$$

$$M = \frac{(c+1)}{(c+r)} RM$$

$$mm = \frac{c+1}{c+r}$$

$$\boxed{M = mmRM}$$

Money Supply depends on

- Reserve money
- Money multiplier
  - Reserve requirement set by monetary authorities
  - Commercial banks that decide how much excess reserves to hold
  - Non bank public which determines composition of money stock

Therefore money supply function (M=mmRM) depends on MAs, DMBs and the public behavior

Money Supply: General

- Monetary authorities try to control money supply
- Goal is to set supply equal to demand
- Achieving the goal is hard because
  - Authorities control only "high powered" (reserve) money
  - Total money supply depends on public's use of money (money multiplier)
  - Capital inflows can affect reserve money

Forecasting Monetary Accounts

- Forecasting broad money
  - Forecasting narrow money and quasi-money
- Forecasting Net Foreign Assets
- Forecasting Capital and other items
- Forecasting Domestic Credit

Forecasting Broad Money

- Assumptions

- Money Demand = Money Supply
- Demand for money is a stable and predictable relationship

- Two methods for forecasting the demand for money:

  (1) Using trends in the velocity of money
  (2) Using regressions

(1) Using trends in the velocity of money

Quantity Theory of Money:

$M \cdot V = P \cdot Y$

M= Money stock; Y= real output;

P= price level;

V= income velocity of money, i.e. the number of times M turns over in a given period in financing PY.

$\Rightarrow$ You can forecast M2 using the formula:

$M2 = P \cdot Y / V$

- Forecasts for P and Y$\rightarrow$ from real sector forecasts (nominal GDP)
- Velocity $\rightarrow$ forecast based on past trends

Example on how to forecast the velocity V

	Nominal GDP (1)	Broad money (2)	Velocity (1)/(2)
1992	2,827.1	2,117.7	1.33
1993	3,163.8	2,507.8	1.26
1994	3,600.4	2,830.0	1.27
1995	4,173.0	3,310.0	1.26
1996	4,665.4	3,726.6	1.25

Which M2 to use – end of period? Average?

- To forecast the sub-items of broad money (narrow money and quasi-money), look at past trends or at the weight of each component of broad money in the past (e.g. consider the ratio of narrow money to broad money in the past).

Forecasting Net Foreign Assets

- You have to forecast NFA of the monetary authorities and NFA of deposit money banks separately.

- From the BOP obtain the **change in NFA** (**ΔNFA**), i.e. the new flow of NFA, for 1997:

(i) Change in NFA of the monetary authorities → from the change in reserves in the BOP.

(i) Change in NFA of deposit money banks → from the BOP

- Once you have the **change** in NFA of monetary authorities and the change in NFA of banks from the BOP **in US$**, you can construct the **stock** of NFA of monetary authorities and the **stock** of NFA of commercial banks in the Monetary Survey, in **local currency**, following the procedure described below:

(i) Consider the stock of NFA of monetary authorities and the stock of NFA of commercial banks in the Monetary Survey at the end of 1996. These figures are expressed in baht. Convert them into US$, using the 1996 **end of period** exchange rate.

(ii) Add respectively the **change** in NFA of monetary authorities and the **change** in NFA of banks from the BOP (which are in US$) over 1997.

(iii) Now you have the stock of NFA of monetary authorities and the stock of NFA of commercial banks in end-1997, in US$. Simply convert these figures in baht, using the 1997 **end of period** exchange rate.

Forecasting NFA

Example: NFA of Central Bank

- Convert 1996 stock from B to $:
  - In B billion: 990.7
  - In $ billion: 990.7 / 25.61 = 38.7
  - End-96 ER (B/$): 25.61
- Add 1997 flow in US$ (−ΔRES from BOP):
  - In $ billion: 1.0 (suppose)
- Convert 1997 stock from $ to B:
  - In $ billion: 38.7 + 1.0 = 39.7
  - In B billion: 39.7 × 26.00 = 1,032.4
  - End-97 ER (B/$): 26.00 (suppose)
- Valuation adjustment = $A_{96}(E_{97}–E_{96}) + \Delta A_{97}(E_{97}–E_{97}^*)$
  - In B billion: 38.7×(26.00–25.61)+1.0×(26.00–25.81)=15.3
  - Avg-97 ER (B/$): (25.61+26.00)/2 = 25.81

Forecasting Other Items Net

Look at past trends, past growth. Consider also the factors that influence the movements of this variable:

- Capital of banks
- Profits and losses of the banking system
- Valuation changes in the NFA of DMBs and MAs as a result of changes in the exchange rate. (see Appendix)

Forecasting Domestic Credit

- In the monetary survey

  Total Assets = Total Liabilities

  NFA + NDC +OIN = M2

- Given the forecasts for NFA (NFA^f), OIN (OIN^f) and M2 ($M2^f$)

  $\Rightarrow NDC^f = M2^f - NFA^f - OIN^f$

Forecasting Domestic Credit (Cont.)

NDC= NDC to govern. + NDC to non-govern. sector

- NDC to government has to be consistent with the forecasts from the fiscal accounts
- NDC to non-government sector has to be consistent with real investment and real consumption growth in the private sector, alternatively with real GDP growth.
- The breakdown of Net Domestic Credit to the non-government sector into its components (credit to public enterprises, firms and households and other financial institutions) can be done on the basis of past shares, or past trends.

Appendix: Valuation Adjustment

Valuation Adjustment (or valuation change)

- Consider the stock of net foreign assets at the end of period t, denominated in local currency (NFA^{L}_{t})

- The change in the stocks of net foreign assets, denominated in local currency, between t and t-1 can be decomposed into two parts: changes due to transaction flows and changes due to fluctuations in the exchange rate (valuation change):

  Change in stocks of net foreign assets, denominated in local currency = transaction flows + valuation changes

Valuation Adjustment (Cont.)

- Total change in stocks of net foreign assets, denominated in <u>local</u> currency: $NFA^{L}_{t} - NFA^{L}_{t-1}$
- Transaction flows (expressed in terms of local currency): $E^{AV}_{t} \times (NFA^{\$}_{t} - NFA^{\$}_{t-1})$

Total change in stocks = transaction flows + valuation change

$$NFA^{L}_{t} - NFA^{L}_{t-1} = E^{AV}_{t} \times (NFA^{\$}_{t} - NFA^{\$}_{t-1}) + \text{valuation change}$$

Therefore:

$$\text{Valuation change} = (NFA^{L}_{t} - NFA^{L}_{t-1}) - E^{AV}_{t} \times (NFA^{\$}_{t} - NFA^{\$}_{t-1})$$

Valuation Adjustment (Cont.)

- NFA^{L}_{t} = net foreign assets denominated in <u>local</u> currency at the end of period t
- NFA^{L}_{t-1} = net foreign assets denominated in <u>local</u> currency at the end of period t-1
- $NFA^{\$}_{t}$ = net foreign assets denominated in <u>foreign</u> currency at the end of period t
- $NFA^{\$}_{t-1}$ = net foreign assets denominated in <u>foreign</u> currency at the end of period t-1
- E^{AV}_{t} = average exchange rate in period t