Indonesia 86/2 (A quarterly model of Indonesia (a model of the monetary sector))
Source: Simatupang, P., An econometric model of the Indonesian economy, Dissertation, Iowa State University, Ames, 1986

(i) General structure of the model

(1) CCR = CCR(IFE, GDPR, LAG(CCR), S1, S2, S3)

(2) DDBR = DDBR (IFE, GDPR, LAG(DDBR), S1, S2, S3)

(3) STR = STR(IFE, DRN, MAR, LAG(STR), S1, S2, S3)

(4) FDBR = FDBR(EDE, D, LIB, MAR, LAG(FDBR))

(5) M2R = M2R(IFA, LIB, BASER, GDPR, LAG(M2R), S1, S2, S3)

(6) LOANR = LOANR(IFA, (DDBR+STR+FDBR+BGD / CPI+CBC / CPI), GDPR, LAG(LOANR))

(7) NOXPD = NOXPD(PWNO / CPI, GDP)

(8) EXSVD = EXSVD(FNP, LAG(EXSVD))

(9) IMPD = IMPD(PWIM / CPI, GDP)

(10) OITID = OTTID(OXPD, LAG(OITID))

(11) TIPD = TIPD(IMPD, GDP-TAX)

(12) OIMSVD = OimSVD(IMPD, LAG(OIMSVD))

(13) TPCR = TPCR(EDE, LIB, (OXPD+NOXPD-IMPD / CPI, GDPR, LTSLR)

(14) DGC = DGC(BOP, DIF(CBC), DIF(CDC), DIF(OCDC))

(15) PWNO = PWNO(CPIW*EXC, LAG(PWNO))

(16) PWIM = PWIM(CPIW*EXC, LAG(PWIM))

(17) INVR = INVR(DIF(GDPR), (DIF(LOAN+CDC)+FDID) / CPI, LAG(INVR))

(18) GDPR = CDPR(KPS, GES / CPI)

(19) TAX = TAX(GDP, LAG(OXPD))

(20) M2R ≡ CCR+DDBR+STR

(21) CPI ≡ LAG(CPI)+IFA

(22) BOP ≡ OXPD+NOXPD+EXSVD+TPCR*CPI+FDID+AID-IMPD -TIPD-OITID-OIMSVD+RESB

(23) BASE ≡ BOP-DGC+DIF(CBC)+DIF(CDC)+DIF(OCDC)+LAG(BASE)

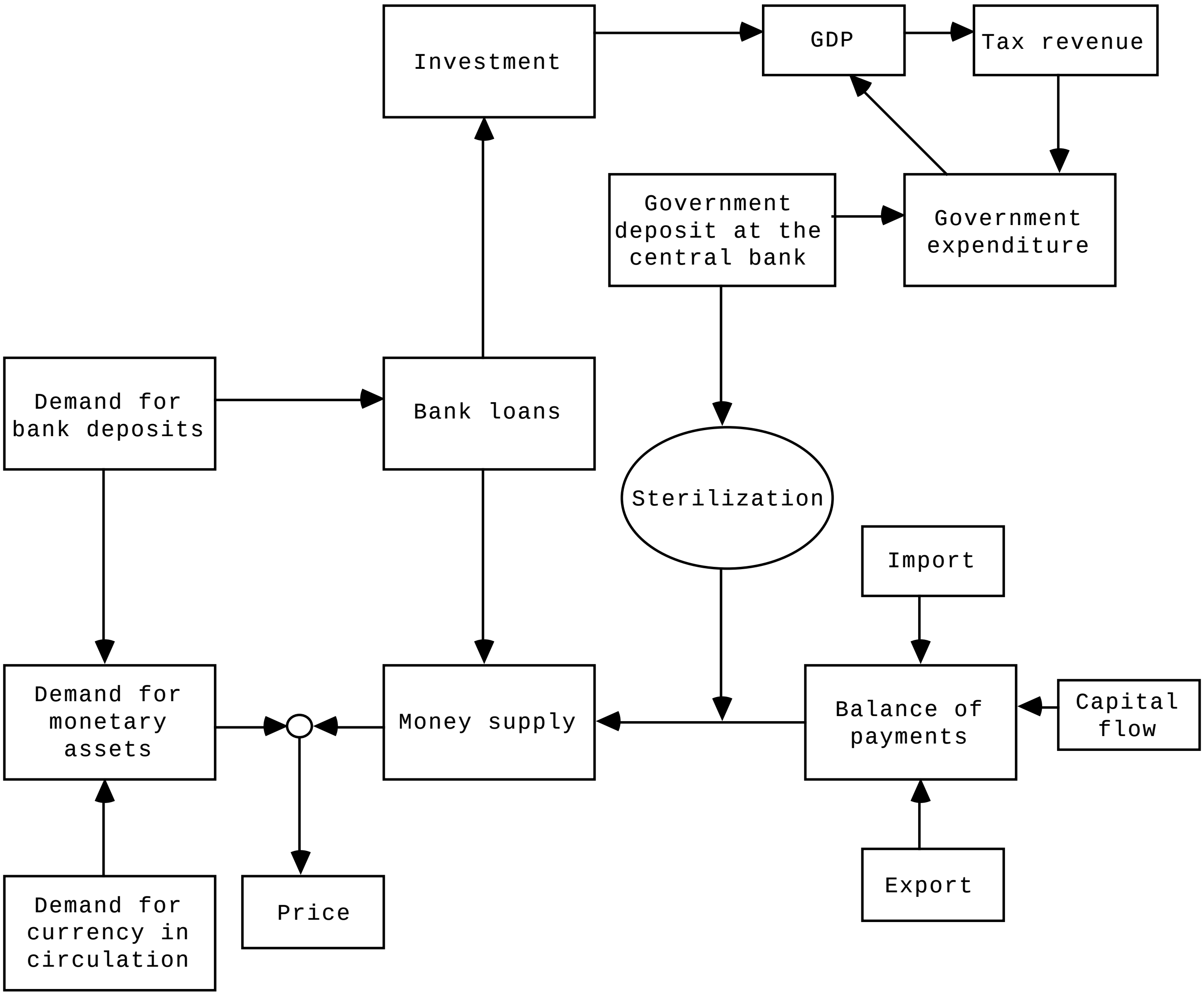
(24) GDP ≡ GDPR*CPI

(25) MAR ≡ CCR+DDBR+STR+FDBR

(26) LOAN ≡ LOANR*CPI

(27) GES ≡ TAX+AID-DGC+RESG

(ii) Flow diagram of main relations



(iii) List of equations (specific implementation)

Real currency in circulation

(1) $\log(CCR) = a_{1,1} + a_{1,2}\, IFA + a_{1,3} \log(GDPR) + a_{1,4}\, lag(\log(CCR)) + a_{1,5}\, S1 + a_{1,6}\, S2 + a_{1,7}\, S3$

Real demand deposits with commercial banks

(2) $\log(DDBR) = a_{2,1} + a_{2,2}\, IFA + a_{2,3} \log(GDPR) + a_{2,4}\, lag(\log(DDBR)) + a_{2,5}\, S1 + a_{2,6}\, S2 + a_{2,7}\, S3$

Real saving and time deposits

(3) $\log(STR) = a_{3,1} + a_{3,2}\, IFA + a_{3,3}\, DRN + a_{3,4} \log(MAR) + a_{3,5}\, lag(\log(STR)) + a_{3,6}\, S1 + a_{3,7}\, S2 + a_{3,8}\, S3$

Real dollar deposits with commercial banks

(4) $\log(FDBR) = a_{4,1} + a_{4,2}\, EDE + a_{4,3}\, LIB + a_{4,4}\, D + a_{4,5} \log(MAR) + a_{4,6}\, lag(\log(FDBR))$

Real broad money

(5) $M2R = a_{5,1} + a_{5,2}\, IFA + a_{5,3} \frac{BASE}{CPI} + a_{5,4}\, lag(M2R) + a_{5,5}\, S1 + a_{5,6}\, S2 + a_{5,7}\, S3$

Real loans

(6) $LOANR = a_{6,1} + a_{6,2} (DDBR + STR + FDBR + \frac{BGD}{CPI} + \frac{CBC}{CPI}) + a_{6,3}\, IFA + a_{6,4}\, lag(LOANR)$

Non-oil merchandise exports

(7) $\log(NOXPD) = a_{7,1} + a_{7,2} \log(\frac{PWNO}{CPI}) + a_{7,3} \log(GDP)$

Export of services

(8) $\log(EXSVD) = a_{8,1} + a_{8,2} \log(FNP) + a_{8,3}\, lag(\log(EXSVD))$

Merchandise exports

(9) $\log(IMPD) = a_{9,1} + a_{9,2} \log(\frac{PWIM}{CPI}) + a_{9,3} \log(GDP)$

Oil investment income transfers abroad

(10) $\log(OITID) = a_{10,1} + a_{10,2} \log(OXPD) + a_{10,3}\, lag(\log(OITID))$

Transportation and merchandise insurance payments

(11) $TIPD = a_{11,1} + a_{11,2}\, IMPD + a_{11,3} (GDP - TAX)$

Other imports of services

(12) $\log(OIMSVD) = a_{12,1} + a_{12,2} \log(IMPD) + a_{12,3}\, lag(\log(OIMSVD))$

Real private capital inflow

(13) $TPCR = a_{13,1} + a_{13,2}\, EDE + a_{13,3}\, LIB + a_{13,4}\, lag(\frac{OXPD + NOXPD - IMPD}{CPI}) + a_{13,5}\, GDPR + a_{13,6}\, LTSLR + a_{13,7}\, lag(RES)$

Change in the government deposit at the central bank

(14) $DGC = a_{14,1} + a_{14,2}\, BOP + a_{14,3}\, DIF(CBC) + a_{14,4}\, DIF(CDC) + a_{14,5}\, DIF(OCDC) + a_{14,6}\, lag(RES)$

Wholesale price index of imported goods

(15) $\log(PWIM) = a_{15,1} + a_{15,2} \log(EXC \cdot CPIW) + a_{15,3}\, lag(\log(PWIM))$

Wholesale price index of exported goods

(16) $\log(PWNO) = a_{16,1} + a_{16,2} \log(EXC \cdot CPIW) + a_{16,3}\, lag(\log(PWNO)) + a_{16,4}\, lag(RES)$

Real investment

$$(17)\ \ INVR = a_{17,1}\ DIF(GDPR) + a_{17,2}\ \frac{DIF(LOAN\ + CDC) + FDID}{CPI} + a_{17,3}\ lag(INVR)$$

Real gross domestic product

$$(18)\ \ \log(GDPR) = a_{18,1} + a_{18,2}\ \log(KPS) + a_{18,3}\ \log(\frac{GES}{CPI})$$

Government non-aid revenue

$$(19)\ \ TAX = a_{19,1} + a_{19,2}\ GDP + a_{19,3}\ lag(OXPD) + a_{19,4}\ lag(RES)$$

Real broad money

$$(20)\ \ M2R \equiv CCR + DDBR + STR$$

Real capital stocks

$$(21)\ \ KPS \equiv \sum INVR$$

Consumer price index

$$(22)\ \ CPI \equiv lag(CPI) + IFA$$

Balance of payments

$$(23)\ \ BOP \equiv OXPD + NOXPD + EXSVD + TPCR \cdot CPI + FDID + AID - IMPD - OITID - OIMSVD + RESB$$

Monetary base

$$(24)\ \ BASE \equiv BOP - DGC + DIF(CBC) + DIF(CDC) + DIF(OCDC) + lag(BASE)$$

Government expenditure

$$(25)\ \ GES \equiv TAX + AID - DGC + RESG$$

Real monetary assets of the private sector

$$(26)\ \ MAR \equiv CCR + DDBR + STR + FDBR$$

Nominal gross domestic product

$$(27)\ \ GDP \equiv GDPR \cdot CPI$$

Commercial bank loan to private sector

$$(28)\ \ LOAN \equiv LOANR \cdot CPI$$

Broad money

$$(29)\ \ M2 \equiv M2R \cdot CPI$$

(iv) List of exogenous variables

AID	Government foreign borrowing
BGD	Government deposit at commercial banks
CBC	Central bank advances to commercial banks
CDC	Central bank direct credit
CPIW	Trade weighted foreign consumer price index (1975 = 100)
DRN	Weighted average of annual deposit rate
EXC	Exchange rate (Rp / $)
FDID	Foreign direct investment
FNP	Industial production index of the OECD countries (1975 =100)
GES	Government expenditures
LIB	London eurodollar deposit rate
LTSLR	Real total stock of foreign liabilities of the private sector
OCDC	Other central bank domestic credit
OXPD	Oil exports
RESB	Residual of the balance of payments identity
Si, i= 1,2,3	Seasonal dummies for quarter 1-3

(v) List of endogenous variables

BASE	Monetary base
BOP	Balance of payments
CCR	Real currency in circulation

CPI	Consumer price index (1975 = 100)
D	Dummy variable for managed peg regime starting from the 4th quarter of 1978
DDBR	Real demand deposits with commercial banks
DGC	Change in the government deposit at the central bank
EDE	Expected devaluation (%)
EXSVD	Export of services
FDBR	Real dollar deposits with commercial banks
GDP, GDPR	Nominal Gross domestic product, nominal, realIFA, IFE
	Inflation rate (%), actual, expected
IMPD	Merchandise exports
INVR	Real investment
KPS	Real capital stock
LOAN, LOANR	Commercial bank loan to private sector, nominal, real
MAR	Real monetary assets of the private sector
M2R	Real broad money
NOXPD	Non-oil merchandise exports
OITID	Oil investment income transfers abroad
OIMSVD	Other imports of services
PWIM	Wholesale price index of imported goods (1971 = 100)
PWNO	Wholesale price index of exported goods (1971 = 100)
STR	Real saving and time deposits
TAX	Government non-aid revenue
TIPD	Transportation and merchandise insurance payment
TPCR	Real private capital inflow