

QPM Model

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1: Quarterly Projection Model ---MADE BY SIDATI NOUHI
2: %-----
3: !transition_variables
4: 'Real GDP (100*log)'                L_GDP
5: 'Output Gap (in %)'                 L_GDP_GAP
6: 'Trend in Real GDP (100*log)'        L_GDP_BAR
7: 'Quarterly Growth in Real GDP(in % pa)' DLA_GDP
8: 'Real GDP Growth YoY (in % pa)'      D4L_GDP
9: 'Real GDP Trend Growth QoQ annualized (in % pa)' DLA_GDP_BAR
10: 'Real Monetary Condition Index (in % pa)' MCI
11:
12: 'Core Inflation (level, 100*log)'    CORE_INF
13: 'Core CPI Inflation QoQ annualized (in % pa)' DLA_CORE_INF
14: 'Expected Core CPI Inflation QoQ annualized (in % pa)' E_DLA_CORE_INF
15: 'Core Inflation YoY (in % pa)'      D4L_CORE_INF
16: 'Inflation Target (in % pa)'        D4L_CORE_INF_TAR
17: 'Real Marginal Cost (in %)'          RMC
18:
19: 'Nominal Policy Interest Rate (in % pa)' RS
20: 'Nominal Policy Neutral Interest Rate (in % pa)' RSNEUTRAL
21: 'Real Interest Rate (in % pa)'      RR
22: 'Real Interest Rate Gap (in %)'      RR_GAP
23: 'Trend Real Interest Rate (in % pa)' RR_BAR
24:
25: 'Nominal Exchange Rate (LCY/FCY, 100*log)' L_S
26: 'Nominal Exch. Rate Depreciation QoQ annualized (in % pa)' DLA_S
27: 'Nominal Exch. Rate Depreciation YoY (in % pa)' D4L_S
28: 'Country Risk Premium (in % pa)'      PREM
29:
30: 'Real Exchange Rate (level, 100*log)' L_Z
31: 'Real Exchange Rate Gap (in %)'      L_Z_GAP
32: 'Trend Real Exchange Rate (level, 100*log)' L_Z_BAR
33: 'Real Exchange Rate Depreciation QoQ annualized (in % pa)' DLA_Z
34: 'Trend Real Exchange Rate Depreciation QoQ annualized(in % pa)' DLA_Z_BAR
35:
36: 'Foreign Output Gap (in %)'          L_GDP_RW_GAP
37: 'Foreign Nominal Interest Rate (in % pa)' RS_RW
38: 'Foreign Real Interest Rate (in % pa)' RR_RW

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39: 'Foreign Real Interest Rate Trend (in % pa)'          RR_RW_BAR
40: 'Foreign Real Interest Rate Gap (in %)'              RR_RW_GAP
41: 'Foreign CPI (level, 100*log)'                        L_CPI_RW
42: 'Foreign Inflation QoQ annualized (in % pa)'          DLA_CPI_RW
43: %-----
44: !transition_shocks SHK_D4L_CORE_INF< $\sigma=1$ >
45: 'Shock: Output gap (demand)'                          SHK_L_GDP_GAP< $\sigma=0.8821$ >
46: 'Shock: Core CPI inflation (cost-push)'               SHK_DLA_CORE_INF< $\sigma=0.6912$ >
47: 'Shock: Exchange rate (UIP)'                          SHK_L_S< $\sigma=0.3628$ >
48: 'Shock: Interest rate (monetary policy)'              SHK_RS< $\sigma=0.1525$ >
49:
50:
51: 'Shock: Real interest rate'                            SHK_RR_BAR< $\sigma=0.7$ >
52: 'Shock: Real exchange rate depreciation'              SHK_DLA_Z_BAR< $\sigma=0.1$ >
53: 'Shock: Potential GDP growth'                        SHK_DLA_GDP_BAR< $\sigma=0.2205$ >
54: 'Shock: Core Inflation target'                       SHK_D4L_CORE_INF_TAR< $\sigma=2$ >
55:
56: 'Shock: Foreign output gap'                          SHK_L_GDP_RW_GAP< $\sigma=0.4231$ >
57: 'Shock: Foreign nominal interest rate'                SHK_RS_RW< $\sigma=0.5371$ >
58: 'Shock: Foreign inflation'                            SHK_DLA_CPI_RW< $\sigma=1.4813$ >
59: 'Shock: Foreign real interest rate'                   SHK_RR_RW_BAR< $\sigma=0.18$ >
60: %-----
61: !parameters
62: b1<0.31>, b2<0.3>, b3<0.5>, b4<0.32>
63: a1<0.6>, a2<0.5>, a3<0.5>,
64: e1<0.4>
65: g1<0.84>, g2<1.82>, g3<0.57>
66:
67: rho_D4L_CORE_INF_TAR<0.5>
68: rho_DLA_Z_BAR<0.8>
69: rho_RR_BAR<0.8>
70: rho_DLA_GDP_BAR<0.8>
71:
72: rho_L_GDP_RW_GAP<0.8>
73: rho_RS_RW<0.8>
74: rho_DLA_CPI_RW<0.8>
75: rho_RR_RW_BAR<0.8>
76:
77: ss_D4L_CORE_INF_TAR<1.5>
78: ss_DLA_Z_BAR<0.07>
79: ss_RR_BAR<1.3729>

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80: ss_DLA_GDP_BAR<3.3874>
81: ss_DLA_CPI_RW<1.4068>
82: ss_RR_RW_BAR<-0.2622>
83: %-----
84: !transition_equations
85: % === IS curve ===
86: L_GDP_GAP = b1<0.31>*L_GDP_GAP{-1} - b2<0.3>*MCI + b3<0.5>*L_GDP_RW_GAP + SHK_L_GDP_GAP< $\sigma=0.8821$ >;
87: MCI = b4<0.32>*RR_GAP + (1-b4<0.32>)*(- L_Z_GAP);
88:
89: % === Phillips Curve ===
90: DLA_CORE_INF = a1<0.6>*DLA_CORE_INF{-1} + (1-a1<0.6>)*DLA_CORE_INF{+1} + a2<0.5>*RMC + SHK_DLA_CORE_INF< $\sigma=0.6912$ >;
91: RMC = a3<0.5>*L_GDP_GAP + (1-a3<0.5>)*L_Z_GAP;
92: E_DLA_CORE_INF = DLA_CORE_INF{+1};
93:
94: % === Monetary Policy Reaction Function===
95: RS = g1<0.84>*RS{-1} + (1-g1<0.84>)*(RSNEUTRAL + g2<1.82>*(D4L_CORE_INF{+4} - D4L_CORE_INF_TAR{+4})) + g3<0.57>*L_GDP_GAP + SHK_RS< $\sigma=0.1$ >;
96: RSNEUTRAL = RR_BAR + D4L_CORE_INF{+1};
97:
98: % === Modified UIP condition ===
99: L_S = (1-e1<0.4>)*L_S{+1} + e1<0.4>*(L_S{-1} + 2/4*(D4L_CORE_INF_TAR - ss_DLA_CPI_RW<1.4068> + DLA_Z_BAR)) + (- RS + RS_RW + PREM)/4 +
100:
101: % === Definitions ===
102: RR = RS - D4L_CORE_INF{+1};
103: L_Z = L_S + L_CPI_RW - CORE_INF;
104:
105: % === Identities ===
106: DLA_GDP_BAR = 4*(L_GDP_BAR - L_GDP_BAR{-1});
107: DLA_Z_BAR = 4*(L_Z_BAR - L_Z_BAR{-1});
108: DLA_Z = 4*(L_Z - L_Z{-1});
109: DLA_GDP = 4*(L_GDP - L_GDP{-1});
110: DLA_CORE_INF = 4*(CORE_INF - CORE_INF{-1});
111: DLA_S = 4*(L_S - L_S{-1});
112:
113: D4L_CORE_INF = CORE_INF - CORE_INF{-4};
114: D4L_GDP = L_GDP - L_GDP{-4};
115: D4L_S = L_S - L_S{-4};
116:
117: % === Gaps ===
118: L_GDP_GAP = L_GDP - L_GDP_BAR;
119: RR_GAP = RR - RR_BAR;
120: L_Z_GAP = L_Z - L_Z_BAR;

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121:
122: % === Trends ===
123: DLA_GDP_BAR = rho_DLA_GDP_BAR(0.8)*DLA_GDP_BAR{-1} + (1-rho_DLA_GDP_BAR(0.8))*ss_DLA_GDP_BAR(3.3874) + SHK_DLA_GDP_BAR(σ=0.2205);
124: D4L_CORE_INF_TAR = rho_D4L_CORE_INF_TAR(0.5)*D4L_CORE_INF_TAR{-1} + (1-rho_D4L_CORE_INF_TAR(0.5))*ss_D4L_CORE_INF_TAR(1.5) + SHK_D4L_CORE_INF_TAR(σ=0.1);
125: DLA_Z_BAR = rho_DLA_Z_BAR(0.8)*DLA_Z_BAR{-1} + (1-rho_DLA_Z_BAR(0.8))*ss_DLA_Z_BAR(0.07) + SHK_DLA_Z_BAR(σ=0.1);
126: RR_BAR = rho_RR_BAR(0.8)*RR_BAR{-1} + (1-rho_RR_BAR(0.8))*ss_RR_BAR(1.3729) + SHK_RR_BAR(σ=0.7);
127: DLA_Z_BAR{+1} = RR_BAR - RR_RW_BAR - PREM;
128:
129: % === Foreign Sector===
130: L_GDP_RW_GAP = rho_L_GDP_RW_GAP(0.8)*L_GDP_RW_GAP{-1} + SHK_L_GDP_RW_GAP(σ=0.4231);
131: RS_RW = rho_RS_RW(0.8)*RS_RW{-1} + (1-rho_RS_RW(0.8))*(RR_RW_BAR + DLA_CPI_RW) + SHK_RS_RW(σ=0.5371);
132: DLA_CPI_RW = rho_DLA_CPI_RW(0.8)*DLA_CPI_RW{-1} + (1-rho_DLA_CPI_RW(0.8))*ss_DLA_CPI_RW(1.4068) + SHK_DLA_CPI_RW(σ=1.4813);
133: RR_RW_BAR = rho_RR_RW_BAR(0.8)*RR_RW_BAR{-1} + (1-rho_RR_RW_BAR(0.8))*ss_RR_RW_BAR(-0.2622) + SHK_RR_RW_BAR(σ=0.18);
134: RR_RW = RS_RW - DLA_CPI_RW;
135: RR_RW_GAP = RR_RW - RR_RW_BAR;
136: DLA_CPI_RW = 4*(L_CPI_RW - L_CPI_RW{-1});
137: %-----
138: !measurement_variables
139: OBS_L_GDP
140: OBS_CORE_INF
141: OBS_RS
142: OBS_L_S
143: OBS_D4L_CORE_INF_TAR
144:
145: OBS_L_GDP_RW_GAP
146: OBS_RS_RW
147: OBS_DLA_CPI_RW
148: %-----
149: !measurement_equations
150: OBS_L_GDP=L_GDP;
151: OBS_CORE_INF= CORE_INF;
152: OBS_RS = RS;
153: OBS_L_S = L_S;
154: OBS_D4L_CORE_INF_TAR = D4L_CORE_INF_TAR;
155:
156: OBS_L_GDP_RW_GAP= L_GDP_RW_GAP;
157: OBS_RS_RW = RS_RW;
158: OBS_DLA_CPI_RW = DLA_CPI_RW;
159: %-----
160: Legend
161: _GAP          cyclical deviation from a trend

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162: _BAR	trend (equilibrium)
163: ss_	steady-state value
164: DLA_	q-o-q change
165: D4L_	y-o-y change
166: _RW	foreign variable
167:	

Steady state

Variable	Description	Value
L_GDP_GAP	Output Gap (in %)	0
DLA_GDP	Quarterly Growth in Real GDP(in % pa)	3.39
D4L_GDP	Real GDP Growth YoY (in % pa)	3.39
DLA_GDP_BAR	Real GDP Trend Growth QoQ annualized (in % pa)	3.39
MCI	Real Monetary Condition Index (in % pa)	0
DLA_CORE_INF	Core CPI Inflation QoQ annualized (in % pa)	1.5
E_DLA_CORE_INF	Expected Core CPI Inflation QoQ annualized (in % pa)	1.5
D4L_CORE_INF	Core Inflation YoY (in % pa)	1.5
D4L_CORE_INF_TAR	Inflation Target (in % pa)	1.5
RMC	Real Marginal Cost (in %)	0
RS	Nominal Policy Interest Rate (in % pa)	2.87
RSNEUTRAL	Nominal Policy Neutral Interest Rate (in % pa)	2.87
RR	Real Interest Rate (in % pa)	1.37
RR_GAP	Real Interest Rate Gap (in %)	0
RR_BAR	Trend Real Interest Rate (in % pa)	1.37
DLA_S	Nominal Exch. Rate Depreciation QoQ annualized (in % pa)	0.163
D4L_S	Nominal Exch. Rate Depreciation YoY (in % pa)	0.163
PREM	Country Risk Premium (in % pa)	1.57
L_Z_GAP	Real Exchange Rate Gap (in %)	0
DLA_Z	Real Exchange Rate Depreciation QoQ annualized (in % pa)	0.07
DLA_Z_BAR	Trend Real Exchange Rate Depreciation QoQ annualized(in % pa)	0.07
L_GDP_RW_GAP	Foreign Output Gap (in %)	0
RS_RW	Foreign Nominal Interest Rate (in % pa)	1.14
RR_RW	Foreign Real Interest Rate (in % pa)	-0.262
RR_RW_BAR	Foreign Real Interest Rate Trend (in % pa)	-0.262
RR_RW_GAP	Foreign Real Interest Rate Gap (in %)	0
DLA_CPI_RW	Foreign Inflation QoQ annualized (in % pa)	1.41