

**Reforming the International Monetary System:
A Stock-Flow-Consistent Approach**

S. Valdecantos Halporn
Université Paris Nord

G. Zezza

*Dipartimento di Economia e Giurisprudenza, Cassino (IT) and
Levy Economics Institute*

Table 1. Matrices of transactions

	Households	Firms	United States			Central Bank
			Current	Capital	Com.Banks	Government
Consumption	$-C_t^{US}$	C_t^{US}				Capital
Investment		I_t^{US}		$-I_t^{US}$		
Gov.Spending		G_t^{US}			$-G_t^{US}$	
Net Exports		NX_t^{US}				
Wages	W_t^{US}	$-W_t^{US}$				
Taxes	$-Th_t^{US}$	$-Tf_t^{US}$			T_t^{US}	
Int.Deposits	$r\mathcal{U}_{t-1}^{US}.M_{t-1}^{US}$			$-rd_{t-1}^{US}.M_{t-1}^{US}$		
Int.Loans			$-rl_{t-1}^{US}.L_{t-1}^{US}$	$rl_{t-1}^{US}.L_{t-1}^{US}$		
Int.Reserves				$rs_{t-1}^{US}.R_{t-1}^{US}$	$-rs_{t-1}^{US}.P_{t-1}^{US}$	
Int.Advances				$-r_{t-1}^{US}.A_{t-1}^{US}$	$r_{t-1}^{US}.A_{t-1}^{US}$	
Int.Bonds ^{US}				$rb_{t-1}^{US}.Bd, b_{US_{t-1}}^{US}$	$-rb_{t-1}^{US}.Bs_{t-1}^{US}$	
Int.Bonds ^{RW}				$rb_{t-1}^{RW}.Bs, b_{US_{t-1}}^{RW}/E4$		
Int.Bonds ^{CH}				$rb_{t-1}^{CH}.Bs, b_{US_{t-1}}^{CH}/E2$		
Int.Bonds ^{EZ}				$rb_{t-1}^{EZ}.Bs, b_{US_{t-1}}^{EZ}/E1$		
Profits	Pb^{US}	$-Pf^{US}$	Pf^{US}	$-Pb^{US}$	Pcb^{US}	$-Pcb^{US}$
$\Delta Cash$	$-\Delta H^{US}$				ΔH^{US}	
$\Delta Deposits$				ΔM^{US}		
$\Delta Loans$			ΔL^{US}		$-\Delta L^{US}$	
$\Delta Reserves$				ΔR^{US}		
$\Delta Advances$				ΔA^{US}		
$\Delta Bonds^{US}$				$-\Delta Bd, b_{US}^{US}$	ΔBs^{US}	
$\Delta Bonds^{RW}$				$-\Delta Bd, b_{US}^{RW}$		
$\Delta Bonds^{CH}$				$-\Delta Bd, b_{US}^{CH}$		
$\Delta Bonds^{EZ}$				$-\Delta Bd, b_{US}^{EZ}$		
Total	0	0	0	0	0	0

Continues on next page

				Rest of the World					
				Households	Firms	Com. Banks	Government	Central Bank	
				Current	Capital	Current	Capital	Current	Capital
Consumption	$-C_t^{RW}$	C_t^{RW}							
Investment		I_t^{RW}			$-I_t^{RW}$				
Gov.Spending		G_t^{RW}				$-G_t^{RW}$			
Net Exports		NX_t^{RW}							
Wages	W_t^{RW}		$-W_t^{RW}$						
Taxes	$-Th_t^{RW}$		$-Tf_t^{RW}$						
Int.Deposits	$rd_{t-1}^{RW}.M_{t-1}^{RW}$					$-rd_{t-1}^{RW}.M_{t-1}^{RW}$			
Int.Loans			$-rl_{t-1}^{RW}.L_{t-1}^{RW}$			$rl_{t-1}^{RW}.L_{t-1}^{RW}$			
Int.Reserves						$rs_{t-1}^{RW}.R_{t-1}^{RW}$			
Int..Advances						$-r_{t-1}^{RW}.A_{t-1}^{RW}$			
$Int.Bonds^{US}$						$rb_{t-1}^{RW}.Bs, b_{RW_{t-1}}^{US}.E4$			
$Int.Bonds^{RW}$						$rb_{t-1}^{RW}.Bd, b_{RW_{t-1}}^{RW}$			
$Int.Bonds^{CH}$						$rc_{t-1}^{CH}.Bs, b_{RW_{t-1}}^{CH}/E5$			
$Int.Bonds^{EZ}$						$re_{t-1}^{EZ}.Bs, b_{RW_{t-1}}^{EZ}.E6$			
Profits	Pb_t^{RW}		$-Pf_t^{RW}$			$-Pb_t^{RW}$		$-Pcb_t^{RW}$	
$\Delta Cash$		$-\Delta H^{RW}$						ΔH^{RW}	
$\Delta Deposits$		$-\Delta M^{RW}$							
$\Delta Loans$			ΔL^{RW}						
$\Delta Reserves$						$-\Delta L^{RW}$			
$\Delta Advances$						$-\Delta R^{RW}$			
$\Delta Bonds^{US}$							ΔA^{RW}		
$\Delta Bonds^{RW}$								$-\Delta Bd, cb_{RW}^{US}$	
$\Delta Bonds^{CH}$								$-\Delta Bd, cb_{RW}^{RW}$	
$\Delta Bonds^{EZ}$								$-\Delta Bd, cb_{RW}^{CH}$	
Total	0	0	0	0	0	0	0	0	0

Continues on next page

	China						
	Households	Firms	Com.Banks	Government	Central Bank	Capital	
	Current	Capital	Current	Capital	Current	Capital	
Consumption	$-C_t^{CH}$	C_t^{CH}					
Investment		I_t^{CH}	$-I_t^{CH}$				
Gov.Spending		G_t^{CH}					$-G_t^{CH}$
Net Exports		NX_t^{CH}					
Wages	W_t^{CH}	$-W_t^{CH}$					
Taxes	$-Th_t^{CH}$	$-Tf_t^{CH}$					
Int.Deposits	$rd_{t-1}^{CH}.M_{t-1}^{CH}$		$-rd_{t-1}^{CH}.M_{t-1}^{CH}$				
Int.Loans		$-rl_{t-1}^{CH}.L_{t-1}^{CH}$	$rl_{t-1}^{CH}.L.d_{t-1}^{CH}$				
Int.Reserves			$rs_{t-1}^{CH}.R_{t-1}^{CH}$				$-rs_{t-1}^{CH}.R_{t-1}^{CH}$
Int.Advances			$-r_{t-1}^{CH}.A_{t-1}^{CH}$				$r_{t-1}^{CH}.A_{t-1}^{CH}$
$Int.Bonds^{US}$			$rb_{t-1}^{US}.Bs, b_{CH_{t-1}}^{US}.E2$				$rb_{t-1}^{US}.Bs, b_{CH_{t-1}}^{US}.E2$
$Int.Bonds^{RW}$			$rb_{t-1}^{RW}.Bs, b_{CH_{t-1}}^{RW}.E5$				$rb_{t-1}^{RW}.Bs, b_{CH_{t-1}}^{RW}.E5$
$Int.Bonds^{CH}$			$rb_{t-1}^{CH}.Bd, b_{CH_{t-1}}^{CH}.E3$				$rb_{t-1}^{CH}.Bd, b_{CH_{t-1}}^{CH}.E3$
$Int.Bonds^{EZ}$			$rb_{t-1}^{EZ}.Bs, b_{CH_{t-1}}^{EZ}.E3$				$rb_{t-1}^{EZ}.Bs, b_{CH_{t-1}}^{EZ}.E3$
Profits	Pb_t^{CH}	$-Pf_t^{CH}$	Pf_t^{CH}	$-Pb_t^{CH}$	Pdb_t^{CH}	$-Pdb_t^{CH}$	
$\Delta Cash$	$-\Delta H^{CH}$					ΔH^{CH}	
$\Delta Deposits$		$-\Delta M^{CH}$				ΔM^{CH}	
$\Delta Loans$			ΔL^{CH}			$-\Delta L^{CH}$	
$\Delta Reserves$					$-\Delta R^{CH}$	ΔR^{CH}	
$\Delta Advances$					ΔA^{CH}	$-\Delta A^{CH}$	
$\Delta Bonds^{US}$					$-\Delta Bd, b_{CH}^{US}$	$\Delta Bd, b_{CH}^{US}$	
$\Delta Bonds^{RW}$					$-\Delta Bd, b_{CH}^{RW}$	$\Delta Bd, b_{CH}^{RW}$	
$\Delta Bonds^{CH}$					$-\Delta Bd, b_{CH}^{CH}$	ΔBs^{CH}	$-\Delta Bd, b_{CH}^{CH}$
$\Delta Bonds^{EZ}$					$-\Delta Bd, b_{CH}^{EZ}$		$-\Delta Bd, b_{CH}^{EZ}$
Total	0	0	0	0	0	0	0

Continues on next page

		Households	Firms	Conn.Banks	Government	Central Bank	Total
		Current	Capital	Current	Capital	Current	Capital
C	$-C_t^{EZ}$	C_t^{EZ}					0
I		I_t^{EZ}	$-I_t^{EZ}$				0
G		G_t^{EZ}			$-G_t^{EZ}$		0
$X - IM$		NX_t^{EZ}					0
W	W_t^{EZ}	$-W_t^{EZ}$					0
T	$-Th_t^{EZ}$	$-Tf_t^{EZ}$					0
$r d M d$	$rd_{t-1}^{EZ}.M_{t-1}^{EZ}$	$-rd_{t-1}^{EZ}.M_{t-1}^{EZ}$					0
$r l.L$		$-rl_{t-1}^{EZ}.L_{t-1}^{EZ}$		$rl_{t-1}^{EZ}.L_{t-1}^{EZ}$			0
$r s.R$				$rs_{t-1}^{EZ}.R_{t-1}^{EZ}$	$-rs_{t-1}^{EZ}.R_{t-1}^{EZ}$		0
$r.A$				$-rt_{t-1}^{EZ}.A_{t-1}^{EZ}$	$rt_{t-1}^{EZ}.A_{t-1}^{EZ}$		0
$rb^U S.B^U S$				$rb_{t-1}^{US}.Bs,b_{EZ_{t-1}}^{US}.E1$	$rb_{t-1}^{US}.Bs,b_{EZ_{t-1}}^{US}.E1$		0
$rb^{RW} B^{RW}$				$rb_t^{RW}.Bs,b_{EZ_{t-1}}^{RW}/E6$	$rb_t^{RW}.Bs,b_{EZ_{t-1}}^{RW}/E6$		0
$rb^{CH} B^{CH}$				$rb_t^{CH}.Bs,b_{EZ_{t-1}}^{CH}/E3$	$rb_t^{CH}.Bs,b_{EZ_{t-1}}^{CH}/E3$		0
$rb^{EZ} B^{EZ}$				$rb_{t-1}^{EZ}.Bd,b_{EZ_{t-1}}^{EZ}$	$-rb_{t-1}^{EZ}.Bs_{t-1}^{EZ}$	$rb_{t-1}^{EZ}.Bd,cb_{EZ_{t-1}}^{EZ}$	0
Profits	Pb^{EZ}	$-Pf^{EZ}$	Pf^{EZ}	$-Pb^{EZ}$	Pcb^{EZ}	$-Pcb^{EZ}$	0
ΔH	$-\Delta H^{EZ}$					ΔH^{EZ}	0
ΔM	$-\Delta M^{EZ}$				ΔM^{EZ}		0
ΔL				ΔL^{EZ}	$-\Delta L^{EZ}$		0
ΔR					$-\Delta R^{EZ}$	ΔR^{EZ}	0
ΔA					ΔA^{EZ}	$-\Delta A^{EZ}$	0
$\Delta B^U S$					$-\Delta Bd,b_{EZ}^{US}$	$\Delta Bd,b_{EZ}^{US}$	0
ΔB^{RW}					$-\Delta Bd,b_{EZ}^{RW}$	$\Delta Bd,b_{EZ}^{RW}$	0
ΔB^{CH}					$-\Delta Bd,b_{EZ}^{CH}$	$\Delta Bd,b_{EZ}^{CH}$	0
ΔB^{EZ}					$-\Delta Bd,cb_{EZ}^{EZ}$	$\Delta Bd,cb_{EZ}^{EZ}$	0
Total	0	0	0	0	0	0	0

Table Matrix of stocks of the US

	Households	Firms	Com. Banks	Government	Central Bank
Cash	H^{US}				$-H^{US}$
Deposits	M^{US}		$-M^{US}$		
Loans		$-L^{US}$	L^{US}		
Reserves			R^{US}		$-R^{US}$
Advances			$-A^{US}$		A^{US}
Bonds US			Bd, b_{US}^{US}	$-Bs_{US}^{US}$	Bd, cb_{US}^{US}
Bonds EZ			Bd, b_{US}^{EZ}		
Bonds China			Bd, b_{US}^{CH}		
Bonds RoW			Bd, b_{US}^{RW}		

Exchange Rates Definition

Since the bilateral exchange rates will be used from the beginning of the model it is worth starting off by defining the six bilateral exchange rates that are considered in the model.

$$1 \$ = E1 \text{ €} = E2 \text{ ¥} = E4 \text{ #}$$

$$1 \text{ €} = E6 \text{ #} = E3 \text{ ¥}$$

$$1 \text{ #} = E5 \text{ ¥}$$

Thus, the interpretation regarding appreciation or depreciation movements is the traditional one:

If E1 goes up the euro depreciates against the dollar

If E2 goes up the renmenbi depreciates against the dollar

If E3 goes up the renmenbi depreciates against the euro

If E4 goes up the currency of the rest of the world depreciates against the dollar

If E5 goes up the renmenbi depreciates against the currency of the rest of the world

If E6 goes up the currency of the rest of the world depreciates against the euro

The model

$$Y_t^i = C_t^i + I_t^i + G_t^i + X_t^i - IM_t^i \quad \forall i = US, EZ, CH, RW \quad (1-4)$$

$$G_t^i = Go_t^i + (1 + w^i) \cdot G_{t-1}^i \quad \forall i = US, EZ, CH, RW \quad (5-8)$$

$$\log(IM_{EZ_t}^{US}) = \mu 0^{US} + \mu 1^{US} \cdot \log(Y_t^{US}) + \mu 2^{US} \cdot \log(E1_t) + \mu 3^{US} \cdot \log((1/E2_t) \cdot (\frac{1}{E4_t})) \quad (9)$$

$$\log(IM_{CH_t}^{US}) = \mu 4^{US} + \mu 5^{US} \cdot \log(Y_t^{US}) + \mu 6^{US} \cdot \log(E2_t) + \mu 7^{US} \cdot \log((1/E4_t) \cdot (\frac{1}{E1_t})) \quad (10)$$

$$\log(IM_{RW_t}^{US}) = \mu 8^{US} + \mu 9^{US} \cdot \log(Y_t^{US}) + \mu 10^{US} \cdot \log(E4_t) + \mu 11^{US} \cdot \log((1/E2_t) \cdot (\frac{1}{E1_t})) \quad (11)$$

$$\log(IM_{US_t}^{EZ}) = \mu 0^{EZ} + \mu 1^{EZ} \cdot \log(Y_t^{EZ}) + \mu 2^{EZ} \cdot \log(\frac{1}{E1_t}) + \mu 3^{EZ} \cdot \log((1/E3_t) \cdot (\frac{1}{E6_t})) \quad (12)$$

$$\log(IM_{CH_t}^{EZ}) = \mu 4^{EZ} + \mu 5^{EZ} \cdot \log(Y_t^{EZ}) + \mu 6^{EZ} \cdot \log(E3_t) + \mu 7^{US} \cdot \log((E1) \cdot (\frac{1}{E6_t})) \quad (13)$$

$$\log(IM_{RW_t}^{EZ}) = \mu 8^{EZ} + \mu 9^{EZ} \cdot \log(Y_t^{EZ}) + \mu 10^{EZ} \cdot \log(E6_t) + \mu 11^{US} \cdot \log((E1_t) \cdot (\frac{1}{E3_t})) \quad (14)$$

$$\log(IM_{EZ_t}^{CH}) = \mu 0^{CH} + \mu 1^{CH} \cdot \log(Y_t^{CH}) + \mu 2^{CH} \cdot \log(\frac{1}{E3_t}) + \mu 3^{CH} \cdot \log((E2_t) \cdot (E5)) \quad (15)$$

$$\log(IM_{US_t}^{CH}) = \mu 4^{CH} + \mu 5^{CH} \cdot \log(Y_t^{CH}) + \mu 6^{CH} \cdot \log(\frac{1}{E2_t}) + \mu 7^{CH} \cdot \log((E3_t) \cdot (E5)) \quad (16)$$

$$\log(IM_{RW_t}^{CH}) = \mu 8^{CH} + \mu 9^{CH} \cdot \log(Y_t^{CH}) + \mu 10^{CH} \cdot \log(\frac{1}{E5_t}) + \mu 11^{CH} \cdot \log((E2_t) \cdot (E3)) \quad (17)$$

$$\log(IM_{EZ_t}^{RW}) = \mu 0^{RW} + \mu 1^{RW} \cdot \log(Y_t^{RW}) + \mu 2^{RW} \cdot \log(\frac{1}{E6_t}) + \mu 3^{RW} \cdot \log((E4_t) \cdot (1/E5)) \quad (18)$$

$$\log(IM_{US_t}^{RW}) = \mu 4^{RW} + \mu 5^{RW} \cdot \log(Y_t^{RW}) + \mu 6^{RW} \cdot \log(\frac{1}{E4_t}) + \mu 7^{RW} \cdot \log((E6_t) \cdot (1/E5)) \quad (19)$$

$$\log(IM_{CH_t}^{RW}) = \mu 8^{RW} + \mu 9^{RW} \cdot \log(Y_t^{RW}) + \mu 10^{RW} \cdot \log(E5_t) + \mu 11^{RW} \cdot \log((E4_t) \cdot (E6)) \quad (20)$$

$$IM_t^{US} = IM_{EZ_t}^{US} + IM_{CH_t}^{US} + IM_{RW_t}^{US} \quad (21)$$

$$IM_t^{EZ} = IM_{US_t}^{EZ} + IM_{CH_t}^{EZ} + IM_{RW_t}^{EZ} \quad (22)$$

$$IM_t^{CH} = IM_{US_t}^{CH} + IM_{EZ_t}^{CH} + IM_{RW_t}^{CH} \quad (23)$$

$$IM_t^{RW} = IM_{US_t}^{RW} + IM_{EZ_t}^{RW} + IM_{CH_t}^{RW} \quad (24)$$

$$X_{EZ_t}^{US} = IM_{US_t}^{EZ} \cdot (\frac{1}{E1_t}) \quad (25)$$

$$X_{CH_t}^{US} = IM_{US_t}^{CH} \cdot (\frac{1}{E2_t}) \quad (26)$$

$$X_{RW_t}^{US} = IM_{US_t}^{RW} \cdot (\frac{1}{E4_t}) \quad (27)$$

$$X_{US_t}^{EZ} = IM_{EZ_t}^{US} \cdot (E1_t) \quad (28)$$

$$X_{CH_t}^{EZ} = IM_{EZ_t}^{CH} \cdot (\frac{1}{E3_t}) \quad (29)$$

$$X_{RW_t}^{EZ} = IM_{EZ_t}^{RW} \cdot (\frac{1}{E6_t}) \quad (30)$$

$$X_{US_t}^{CH} = IM_{CH_t}^{US} \cdot (E2_t) \quad (31)$$

$$X_{EZ_t}^{CH} = IM_{CH_t}^{EZ} \cdot (E3_t) \quad (32)$$

$$X_{RW_t}^{CH} = IM_{CH_t}^{RW} \cdot (E5_t) \quad (33)$$

$$X_{US_t}^{RW} = IM_{RW_t}^{US} \cdot (E4_t) \quad (34)$$

$$X_{EZ_t}^{RW} = IM_{RW_t}^{EZ} \cdot (E6_t) \quad (35)$$

$$X_{CH_t}^{RW} = IM_{RW_t}^{CH} \cdot (\frac{1}{E5_t}) \quad (36)$$

$$X_t^{US} = X_{EZ_t}^{US} + X_{CH_t}^{US} + X_{RW_t}^{US} \quad (37)$$

$$X_t^{EZ} = X_{US_t}^{EZ} + X_{CH_t}^{EZ} + X_{RW_t}^{EZ} \quad (38)$$

$$X_t^{CH} = X_{US_t}^{CH} + X_{EZ_t}^{CH} + X_{RW_t}^{CH} \quad (39)$$

$$X_t^{RW} = X_{US_t}^{RW} + X_{EZ_t}^{RW} + X_{CH_t}^{RW} \quad (40)$$

$$W_t^i = \psi^i \cdot Y_t^i \quad \forall i = US, EZ, CH, RW \quad (41 - 44)$$

$$Th_t^i = \theta h^i \cdot (W_t^i + rd_{t-1}^i \cdot M_{t-1}^i + PNb_t^i) \quad \forall i = US, EZ, CH, RW \quad (45 - 48)$$

$$Yd_t^i = W_t^i + rd_{t-1}^i \cdot M_{t-1}^i + PNb_t^i - Th_t^i \quad \forall i = US, EZ, CH, RW \quad (49 - 52)$$

$$C_t^i = \alpha 1^i \cdot Yd_t^i + \alpha 2^i \cdot Vh_{t-1}^i \quad \forall i = US, EZ, CH, RW \quad (53 - 56)$$

$$\Delta Vh_t^i = Yd_t^i - C_t^i \quad \forall i = US, EZ, CH, RW \quad (57 - 60)$$

$$H_t^i = \lambda_t^i \cdot C_t^i \quad \forall i = US, EZ, CH, RW \quad (61 - 64)$$

$$M_t^i = Vh_t^i - H_t^i \quad \forall i = US, EZ, CH, RW \quad (65 - 68)$$

$$P_t^i = Y_t^i - W_t^i \quad \forall i = US, EZ, CH, RW \quad (69 - 72)$$

$$\begin{aligned}
Int_t^i &= rl_{t-1}^i \cdot L_{t-1}^i & \forall i = US, EZ, CH, RW & (73 - 76) \\
Tf_t^i &= \theta f^i \cdot (P_t^i - Int_t^i) & \forall i = US, EZ, CH, RW & (77 - 80) \\
PD_t^i &= (P_t^i - Int_t^i) \cdot (1 - \theta f^i) & \forall i = US, EZ, CH, RW & (81 - 84) \\
\frac{I_t^i}{K_{t-1}^i} &= z0^i + z1^i \cdot \frac{PD_t^i}{K_{t-1}^i} - z2^i \cdot \frac{rl_{t-1}^i \cdot L_{t-1}^i}{K_{t-1}^i} + z3^i \cdot u_{t-1}^i & \forall i = US, EZ, CH, RW & (85 - 88) \\
u_t^i &= \left(\frac{Y_t^i}{K_t^i} \right) \cdot v^i & \forall i = US, EZ, CH, RW & (89 - 92) \\
K_t^i &= (1 - \delta^i) \cdot K_{t-1}^i + I_t^i & \forall i = US, EZ, CH, RW & (93 - 96) \\
\Delta L_t^i &= I_t^i - PD_t^i & \forall i = US, EZ, CH, RW & (97 - 100) \\
Vf_t^i &= K_t^i - Ld_t^i & \forall i = US, EZ, CH, RW & (101 - 104) \\
T_t^i &= Th_t^i + Tf_t^i & \forall i = US, EZ, CH, RW & (105 - 108) \\
\Delta Bs_t^i &= G_t^i - T_t^i + r_{t-1}^i \cdot Bs_{t-1}^i - Pcb_t^i \quad \forall i = US, EZ, CH, RW & (109 - 112) \\
Bd, b_{EZ_t}^{US} &= [(1 - \xi^{EZ}) \cdot M_t^{EZ}] \cdot (\gamma 10^{EZ} + \gamma 11^{EZ} \cdot r^{US} + \gamma 12^{EZ} \cdot r^{EZ} + \gamma 13^{EZ} \cdot r^{CH} + \gamma 14^{EZ} \cdot r^{RW}) & (113) \\
Bd, b_{EZ_t}^{CH} &= [(1 - \xi^{EZ}) \cdot M_t^{EZ}] \cdot (\gamma 20^{EZ} + \gamma 21^{EZ} \cdot r^{US} + \gamma 22^{EZ} \cdot r^{EZ} + \gamma 23^{EZ} \cdot r^{CH} + \gamma 24^{EZ} \cdot r^{RW}) & (114) \\
Bd, b_{EZ_t}^{RW} &= [(1 - \xi^{EZ}) \cdot M_t^{EZ}] \cdot (\gamma 30^{EZ} + \gamma 31^{EZ} \cdot r^{US} + \gamma 32^{EZ} \cdot r^{EZ} + \gamma 33^{EZ} \cdot r^{CH} + \gamma 34^{EZ} \cdot r^{RW}) & (115) \\
Bd, b_{EZ_t}^{EZ} &= [(1 - \xi^{EZ}) \cdot M_t^{EZ}] - Bd, b_{EZ_t}^{US} - Bd, b_{EZ_t}^{CH} - Bd, b_{EZ_t}^{RW} & (116) \\
Bd, b_{US_t}^{EZ} &= [(1 - \xi^{US}) \cdot M_t^{US}] \cdot (\gamma 10^{US} + \gamma 11^{US} \cdot r^{US} + \gamma 12^{US} \cdot r^{EZ} + \gamma 13^{US} \cdot r^{CH} + \gamma 14^{US} \cdot r^{RW}) & (117) \\
Bd, b_{US_t}^{CH} &= [(1 - \xi^{US}) \cdot M_t^{US}] \cdot (\gamma 20^{US} + \gamma 21^{US} \cdot r^{US} + \gamma 22^{US} \cdot r^{EZ} + \gamma 23^{US} \cdot r^{CH} + \gamma 24^{US} \cdot r^{RW}) & (118) \\
Bd, b_{US_t}^{RW} &= [(1 - \xi^{US}) \cdot M_t^{US}] \cdot (\gamma 30^{US} + \gamma 31^{US} \cdot r^{US} + \gamma 32^{US} \cdot r^{EZ} + \gamma 33^{US} \cdot r^{CH} + \gamma 34^{US} \cdot r^{RW}) & (119) \\
Bd, b_{US_t}^{US} &= [(1 - \xi^{US}) \cdot M_t^{US}] - Bd, b_{US_t}^{EZ} - Bd, b_{US_t}^{CH} - Bd, b_{US_t}^{RW} & (120) \\
Bd, b_{CH_t}^{EZ} &= [(1 - \xi^{CH}) \cdot M_t^{CH}] \cdot (\gamma 10^{CH} + \gamma 11^{CH} \cdot r^{US} + \gamma 12^{CH} \cdot r^{EZ} + \gamma 13^{CH} \cdot r^{CH} + \gamma 14^{CH} \cdot r^{RW}) & (121) \\
Bd, b_{CH_t}^{US} &= [(1 - \xi^{CH}) \cdot M_t^{CH}] \cdot (\gamma 20^{CH} + \gamma 21^{CH} \cdot r^{US} + \gamma 22^{CH} \cdot r^{EZ} + \gamma 23^{CH} \cdot r^{CH} + \gamma 24^{CH} \cdot r^{RW}) & (122) \\
Bd, b_{CH_t}^{RW} &= [(1 - \xi^{CH}) \cdot M_t^{CH}] \cdot (\gamma 30^{CH} + \gamma 31^{CH} \cdot r^{US} + \gamma 32^{CH} \cdot r^{EZ} + \gamma 33^{CH} \cdot r^{CH} + \gamma 34^{CH} \cdot r^{RW}) & (123) \\
Bd, b_{CH_t}^{CH} &= [(1 - \xi^{CH}) \cdot M_t^{CH}] - Bd, b_{CH_t}^{EZ} - Bd, b_{CH_t}^{US} - Bd, b_{CH_t}^{RW} & (124)
\end{aligned}$$

$$Bd, b_{RW_t}^{EZ} = [(1 - \xi^{RW}). M_t^{RW}] . (\gamma 10^{RW} + \gamma 11^{RW}.r^{US} + \gamma 12^{RW}.r^{EZ} + \gamma 13^{RW}.r^{CH} + \gamma 14^{RW}.r^{RW}) \quad (125)$$

$$Bd, b_{RW_t}^{US} = [(1 - \xi^{RW}). M_t^{RW}] . (\gamma 20^{RW} + \gamma 21^{RW}.r^{US} + \gamma 22^{RW}.r^{EZ} + \gamma 23^{RW}.r^{CH} + \gamma 24^{RW}.r^{RW}) \quad (126)$$

$$Bd, b_{RW_t}^{CH} = [(1 - \xi^{RW}). M_t^{RW}] . (\gamma 30^{RW} + \gamma 31^{RW}.r^{US} + \gamma 32^{RW}.r^{EZ} + \gamma 33^{RW}.r^{CH} + \gamma 34^{RW}.r^{RW}) \quad (127)$$

$$Bd, b_{RW_t}^{RW} = [(1 - \xi^{RW}). M_t^{RW}] - Bd, b_{RW_t}^{EZ} - Bd, b_{RW_t}^{US} - Bd, b_{RW_t}^{CH} \quad (128)$$

$$Bs, b_{EZ_t}^{EZ} = Bd, b_{EZ_t}^{EZ} \quad (129)$$

$$Bs, b_{EZ_t}^{US} = \frac{Bd, b_{EZ_t}^{US}}{E1_t} \quad (130)$$

$$Bs, b_{EZ_t}^{CH} = Bd, b_{EZ_t}^{CH} . E3_t \quad (131)$$

$$Bs, b_{EZ_t}^{RW} = Bd, b_{EZ_t}^{RW} . E6_t \quad (132)$$

$$Bs, b_{US_t}^{US} = Bd, b_{US_t}^{US} \quad (133)$$

$$Bs, b_{US_t}^{EZ} = Bd, b_{US_t}^{EZ} . E1_t \quad (134)$$

$$Bs, b_{US_t}^{CH} = Bd, b_{US_t}^{CH} . E2_t \quad (135)$$

$$Bs, b_{US_t}^{RW} = Bd, b_{US_t}^{RW} . E4_t \quad (136)$$

$$Bs, b_{CH_t}^{CH} = Bd, b_{CH_t}^{CH} \quad (137)$$

$$Bs, b_{CH_t}^{EZ} = \frac{Bd, b_{CH_t}^{EZ}}{E3_t} \quad (138)$$

$$Bs, b_{CH_t}^{US} = \frac{Bd, b_{CH_t}^{US}}{E2_t} \quad (139)$$

$$Bs, b_{CH_t}^{RW} = \frac{Bd, b_{CH_t}^{RW}}{E5_t} \quad (140)$$

$$Bs, b_{RW_t}^{RW} = Bd, b_{RW_t}^{RW} \quad (141)$$

$$Bs, b_{RW_t}^{EZ} = \frac{Bd, b_{RW_t}^{EZ}}{E6_t} \quad (142)$$

$$Bs, b_{RW_t}^{US} = \frac{Bd, b_{RW_t}^{US}}{E4_t} \quad (143)$$

$$Bs, b_{RW_t}^{CH} = Bd, b_{RW_t}^{CH} . E5_t \quad (144)$$

$$\begin{aligned} Pb_t^{US} &= r_{t-1}^{US} . Bd, b_{US_{t-1}}^{US} + r_{t-1}^{EZ} . Bd, b_{US_{t-1}}^{EZ} + r_{t-1}^{CH} . Bd, b_{US_{t-1}}^{CH} + r_{t-1}^{RW} . Bd, b_{US_{t-1}}^{RW} + \\ &Bs, b_{US_{t-1}}^{EZ} . \Delta\left(\frac{1}{E1}\right) + Bs, b_{US_{t-1}}^{CH} . \Delta\left(\frac{1}{E2}\right) + Bs, b_{US_{t-1}}^{RW} . \Delta\left(\frac{1}{E4}\right) + rs_{t-1}^{US} . R_{t-1}^{US} + \\ &rl_{t-1}^{US} . L_{t-1}^{US} - rd_{t-1}^{US} . M_{t-1}^{US} - r_{t-1}^{US} . A_{t-1}^{US} \end{aligned} \quad (145)$$

$$Pb_t^{EZ} = r_{t-1}^{EZ} \cdot Bd, b_{EZ_{t-1}}^{EZ} + r_{t-1}^{US} \cdot Bd, b_{EZ_{t-1}}^{US} + r_{t-1}^{CH} \cdot Bd, b_{EZ_{t-1}}^{CH} + r_{t-1}^{RW} \cdot Bd, b_{EZ_{t-1}}^{RW} + \\ Bs, b_{EZ_{t-1}}^{US} \cdot \Delta(E1) + Bs, b_{EZ_{t-1}}^{CH} \cdot \Delta\left(\frac{1}{E3}\right) + Bs, b_{EZ_{t-1}}^{RW} \cdot \Delta\left(\frac{1}{E6}\right) + rs_{t-1}^{EZ} \cdot R_{t-1}^{EZ} + \\ rl_{t-1}^{EZ} \cdot L_{t-1}^{EZ} - rd_{t-1}^{EZ} \cdot M_{t-1}^{EZ} - r_{t-1}^{EZ} \cdot A_{t-1}^{EZ} \quad (146)$$

$$Pb_t^{CH} = r_{t-1}^{CH} \cdot Bd, b_{CH_{t-1}}^{CH} + r_{t-1}^{EZ} \cdot Bd, b_{CH_{t-1}}^{EZ} + r_{t-1}^{US} \cdot Bd, b_{CH_{t-1}}^{US} + r_{t-1}^{RW} \cdot Bd, b_{CH_{t-1}}^{RW} + \\ Bs, b_{CH_{t-1}}^{EZ} \cdot \Delta(E3) + Bs, b_{CH_{t-1}}^{US} \cdot \Delta(E2) + Bs, b_{CH_{t-1}}^{RW} \cdot \Delta(E5) + rs_{t-1}^{CH} \cdot R_{t-1}^{CH} + \\ rl_{t-1}^{CH} \cdot L_{t-1}^{CH} - rd_{t-1}^{CH} \cdot M_{t-1}^{CH} - r_{t-1}^{CH} \cdot A_{t-1}^{CH} \quad (147)$$

$$Pb_t^{RW} = r_{t-1}^{RW} \cdot Bd, b_{RW_{t-1}}^{RW} + r_{t-1}^{EZ} \cdot Bd, b_{RW_{t-1}}^{EZ} + r_{t-1}^{CH} \cdot Bd, b_{RW_{t-1}}^{CH} + r_{t-1}^{US} \cdot Bd, b_{RW_{t-1}}^{US} + \\ Bs, b_{RW_{t-1}}^{EZ} \cdot \Delta(E6) + Bs, b_{RW_{t-1}}^{CH} \cdot \Delta\left(\frac{1}{E5}\right) + Bs, b_{RW_{t-1}}^{US} \cdot \Delta(E4) + rs_{t-1}^{RW} \cdot R_{t-1}^{RW} + \\ rl_{t-1}^{RW} \cdot L_{t-1}^{RW} - rd_{t-1}^{RW} \cdot M_{t-1}^{RW} - r_{t-1}^{RW} \cdot A_{t-1}^{RW} \quad (148)$$

$$A_t^{EZ} = Bd, b_{EZ_t}^{EZ} + Bd, b_{EZ_t}^{US} + Bd, b_{EZ_t}^{CH} + Bd, b_{EZ_t}^{RW} + L_t^{EZ} + R_t^{EZ} - M_t^{EZ} - Vb_t^{EZ} \quad (149)$$

$$A_t^{US} = Bd, b_{US_t}^{US} + Bd, b_{US_t}^{EZ} + Bd, b_{US_t}^{CH} + Bd, b_{US_t}^{RW} + L_t^{US} + R_t^{US} - M_t^{US} - Vb_t^{US} \quad (150)$$

$$A_t^{CH} = Bd, b_{CH_t}^{CH} + Bd, b_{CH_t}^{EZ} + Bd, b_{CH_t}^{US} + Bd, b_{CH_t}^{RW} + L_t^{CH} + R_t^{CH} - M_t^{CH} - Vb_t^{CH} \quad (151)$$

$$A_t^{RW} = Bd, b_{RW_t}^{RW} + Bd, b_{RW_t}^{EZ} + Bd, b_{RW_t}^{US} + Bd, b_{RW_t}^{CH} + L_t^{RW} + R_t^{RW} - M_t^{RW} - Vb_t^{RW} \quad (152)$$

$$\Delta Vb_t^i = 0 \quad \forall i = US, EZ, CH, RW \quad (153 - 156)$$

Central Bank with fixed exchange rates

$$\Delta Bd, cb_{US_t}^{US} = \Delta H_t^{US} + \Delta R_t^{US} - \Delta A_t^{US} \quad (157)$$

$$\Delta Bd, cb_{EZ_t}^{EZ} = \Delta H_t^{EZ} + \Delta R_t^{EZ} - \Delta A_t^{EZ} \quad (158)$$

$$\Delta Bs, cb_{CH_t}^{US} = \frac{(\Delta H_t^{CH} + \Delta R_t^{CH} - \Delta A_t^{CH} - \Delta Bd, cb_{CH_t}^{CH})}{E2_t} \quad (159)$$

$$\Delta Bs, cb_{RW_t}^{US} = \frac{(\Delta H_t^{RW} + \Delta R_t^{RW} - \Delta A_t^{RW} - \Delta Bd, cb_{RW_t}^{RW})}{E4_t} \quad (160)$$

$$Bs, cb_{US_t}^{US} = Bd, cb_{US_t}^{US} \quad (161)$$

$$Bs, cb_{EZ_t}^{EZ} = Bd, cb_{EZ_t}^{EZ} \quad (162)$$

$$\Delta Bd, cb_{CH_t}^{US} = Bs, cb_{CH_{t-1}}^{US} \Delta E2_t + \Delta Bs, cb_{CH_t}^{US} E2_t \quad (163)$$

$$\Delta Bd, cb_{RW_t}^{US} = Bs, cb_{RW_{t-1}}^{US} \Delta E4_t + \Delta Bs, cb_{RW_t}^{US} E4_t \quad (164)$$

$$E1_t = \frac{Bs_t^{EZ} - Bs, b_{EZ_t}^{EZ} - Bs, cb_{EZ_t}^{EZ} - Bs, b_{CH_t}^{EZ} - Bs, b_{RW_t}^{EZ}}{Bd, b_{US_t}^{EZ}} \quad (165)$$

$$E2_t = \overline{E2} \quad (166)$$

$$Bd, cb_{CH_t}^{CH} = Bs_t^{CH} - Bs, b_{CH_t}^{CH} - Bs, b_{EZ_t}^{CH} - Bs, b_{US_t}^{CH} - Bs, b_{RW_t}^{CH} \quad (167)$$

$$Bs, cb_{CH_t}^{CH} = Bd, cb_{CH_t}^{CH} \quad (168)$$

$$E4_t = \overline{E4} \quad (169)$$

$$Bd, cb_{RW_t}^{RW} = Bs_t^{RW} - Bs, b_{RW_t}^{RW} - Bs, b_{EZ_t}^{RW} - Bs, b_{CH_t}^{RW} - Bs, b_{US_t}^{RW} \quad (170)$$

$$Bs, cb_{RW_t}^{RW} = Bd, cb_{RW_t}^{RW} \quad (171)$$

$$Bd, cb_{US_t}^{US} = Bs_t^{US} - Bs, b_{US_t}^{US} - Bs, b_{EZ_t}^{US} - Bs, b_{CH_t}^{US} - Bs, b_{RW_t}^{US} - Reserves_t \quad (172)$$

$$Reserves_t = Bs, cb_{EZ_t}^{US} + Bs, cb_{CH_t}^{US} + Bs, cb_{RW_t}^{US}$$

$$E3_t = \frac{E2_t}{E1_t} \quad (173)$$

$$E5_t = \frac{E2_t}{E4_t} \quad (174)$$

$$E6_t = \frac{E4_t}{E1_t} \quad (175)$$

$$R_t^i = \xi^i \cdot M_t^i \quad \forall i = US, EZ, CH, RW \quad (176 - 179)$$

$$Pcb_t^{US} = r_{t-1}^{US} \cdot Bd, cb_{US_{t-1}}^{US} - rs_{t-1}^{US} \cdot Rd_{t-1}^{US} + r_{t-1}^{US} \cdot A_{t-1}^{US} \quad (180)$$

$$Pcb_t^{EZ} = r_{t-1}^{EZ} \cdot Bd, cb_{EZ_{t-1}}^{EZ} + r_{t-1}^{US} \cdot Bd, cb_{EZ_{t-1}}^{US} + Bs, cb_{EZ_{t-1}}^{US} \cdot \Delta(E1) - rs_{t-1}^{EZ} \cdot R_{t-1}^{EZ} + r_{t-1}^{EZ} \cdot A_{t-1}^{EZ} \quad (181)$$

$$Pcb_t^{CH} = r_{t-1}^{CH} \cdot Bd, cb_{CH_{t-1}}^{CH} + r_{t-1}^{US} \cdot Bd, cb_{CH_{t-1}}^{US} + Bs, cb_{CH_{t-1}}^{US} \cdot \Delta(E2) - rs_{t-1}^{CH} \cdot R_{t-1}^{CH} + r_{t-1}^{CH} \cdot A_{t-1}^{CH} \quad (182)$$

$$Pcb_t^{RW} = r_{t-1}^{RW} \cdot Bd, cb_{RW_{t-1}}^{RW} + r_{t-1}^{US} \cdot Bd, cb_{RW_{t-1}}^{US} + Bs, cb_{RW_{t-1}}^{US} \cdot \Delta(E4) - rs_{t-1}^{RW} \cdot R_{t-1}^{RW} + r_{t-1}^{RW} \cdot A_{t-1}^{RW} \quad (183)$$

$$rl_t^i = rd_t^i = rq_t^i = rs_t^i = r_t^i \quad \forall i = US, EZ, CH, RW \quad (184 - 199)$$

Central Bank with flexible exchange rates

$$E2_t = \frac{Bs_t^{CH} - Bs, b_{CH_t}^{CH} - Bs, cb_{CH_t}^{CH} - Bs, b_{EZ_t}^{CH} - Bs, b_{RW_t}^{CH}}{Bd, b_{US_t}^{CH}} \quad (166a)$$

$$E4_t = \frac{Bs_t^{RW} - Bs, b_{RW_t}^{RW} - Bs, cb_{RW_t}^{RW} - Bs, b_{EZ_t}^{RW} - Bs, b_{CH_t}^{RW}}{Bd, b_{US_t}^{EZ}} \quad (169a)$$

$$Bs, cb_{CH_t}^{US} = \overline{Bs, cb_{CH}^{US}} \quad (159a)$$

$$Bs, cb_{RW_t}^{US} = \overline{Bs, cb_{RW}^{US}} \quad (160a)$$

$$\Delta Bd, cb_{CH_t}^{CH} = \Delta Hd, h_{CH_t}^{CH} + \Delta Rd, h_{CH_t}^{CH} - \Delta Ad_t^{CH} \quad (167a)$$

$$\Delta Bd, cb_{RW_t}^{RW} = \Delta Hd, h_{RW_t}^{RW} + \Delta Rd, h_{RW_t}^{RW} - \Delta Ad_t^{RW} \quad (170a)$$

The SDR model

$$\Delta SDR, d_t^{CH} = \Delta H_t^{CH} + \Delta R_t^{CH} - \Delta A_t^{CH} - \Delta Bd, cb_{CH_t}^{CH} \quad (159b)$$

$$\Delta SDR, d_t^{RW} = \Delta H_t^{RW} + \Delta R_t^{RW} - \Delta A_t^{RW} - \Delta Bd, cb_{RW_t}^{RW} \quad (160b)$$

$$SDR, s_t^{CH} = \frac{SDR, d_t^{CH}}{E9_t} \quad (163b)$$

$$SDR, s_t^{RW} = \frac{SDR, d_t^{RW}}{E10_t} \quad (164b)$$

$$Bd, cb_{US_t}^{US} = Bs_t^{US} - Bs, b_{US_t}^{US} - Bs, b_{EZ_t}^{US} - Bs, b_{CH_t}^{US} - Bs, b_{RW_t}^{US} - Reserves_t - Bs_{IMF_t}^{US} \quad (172b)$$

$$E7_t = 0.5 E1_t + 0.5 \quad (200b)$$

$$E8_t = \frac{E1_t}{E7_t} \quad (201b)$$

$$E9_t = \frac{E2_t}{E7_t} \quad (202b)$$

$$E10_t = \frac{E4_t}{E7_t} \quad (203b)$$

$$Pcb_t^{US} = r_{t-1}^{US} \cdot Bd, cb_{US_{t-1}}^{US} - rs_{t-1}^{US} \cdot R_{t-1}^{US} + r_{t-1}^{US} \cdot A_{t-1}^{US} + r_{t-1}^{SDR} \cdot SDR_{t-1}^{US} + SDR_{t-1}^{US} \cdot \Delta \left(\frac{1}{E7_t} \right) \quad (180b)$$

$$Pcb_t^{EZ} = r_{t-1}^{EZ} \cdot Bd, cb_{EZ_{t-1}}^{EZ} - rs_{t-1}^{EZ} \cdot R_{t-1}^{EZ} + r_{t-1}^{EZ} \cdot A_{t-1}^{EZ} + r_{t-1}^{SDR} \cdot SDR_{t-1}^{EZ} + SDR_{t-1}^{EZ} \cdot \Delta E8_t \quad (181b)$$

$$Pcb_t^{CH} = r_{t-1}^{CH} \cdot Bd, cb_{CH_{t-1}}^{CH} - rs_{t-1}^{CH} \cdot R_{t-1}^{CH} + r_{t-1}^{CH} \cdot A_{t-1}^{CH} + r_{t-1}^{SDR} \cdot SDR_{t-1}^{CH} + SDR_{t-1}^{CH} \cdot \Delta E9_t \quad (182b)$$

$$Pcb_t^{RW} = r_{t-1}^{RW} \cdot Bd, cb_{RW_{t-1}}^{RW} - rs_{t-1}^{RW} \cdot R_{t-1}^{RW} + r_{t-1}^{RW} \cdot A_{t-1}^{RW} + r_{t-1}^{SDR} \cdot SDR_{t-1}^{RW} + SDR_{t-1}^{RW} \cdot \Delta E10_t \quad (183b)$$

$$SDR, s_t = SDR, s_t^{US} + SDR, s_t^{EZ} + SDR, s_t^{CH} + SDR, s_t^{RW} \quad (204b)$$

$$P_t^{IMF} = r_{t-1}^{US} \cdot Bd_{IMF_{t-1}}^{US} - r_{t-1}^{SDR} \cdot SDR, s_t + Bs_{IMF_t}^{US} \cdot \Delta E7_t \quad (205b)$$

$$\Delta V_t^{IMF} = P_t^{IMF} \quad (206b)$$

$$Bd_{IMF_t}^{US} = SDR, s_t + V_t^{IMF} \quad (207b)$$

$$Bs_{IMF_t}^{US} = \frac{Bd_{IMF_t}^{US}}{E7_t} \quad (208b)$$

The Bancor model

Matrices of transactions

	United States					Central Bank	
	Households	Firms	Com.Banks	Government	Current	Capital	Capital
Consumption	$-C_t^{US}$	C_t^{US}					
Investment		I_t^{US}	$-I_t^{US}$				
Gov.Spending		G_t^{US}					$-G_t^{US}$
Net Exports		NX_t^{US}					
Wages	W_t^{US}	$-W_t^{US}$					
Taxes	$-Th_t^{US}$	$-Tf_t^{US}$					
Int.Deposits	$rd_{t-1}^{US}.M_{t-1}^{US}$		$-rd_{t-1}^{US}.M_{t-1}^{US}$				
Int.Loans		$-rl_{t-1}^{US}.L_{t-1}^{US}$	$rl_{t-1}^{US}.L_{t-1}^{US}$				
Int.Reserves			$rs_{t-1}^{US}.R_{t-1}^{US}$				$-rs_{t-1}^{US}.R_{t-1}^{US}$
Int.Advances			$-rt_{t-1}^{US}.A_{t-1}^{US}$				$rt_{t-1}^{US}.A_{t-1}^{US}$
$Int.Bonds^{US}$			$rb_{t-1}^{US}.Bd, b_{U_{S_{t-1}}}^{US}$				$-rb_{t-1}^{US}.Bd, b_{U_{S_{t-1}}}^{US}$
$Int.Bonds^{RW}$							
$Int.Bonds^{CH}$							
$Int.Bonds^{EZ}$							
$rb.Bancor$				$-rb_{t-1}.Bancor, s_{t-1}^{US}.E7$			
Profits	Pb_t^{US}	$-Pf_t^{US}$	Pf_t^{US}	$-Pb_t^{US}$	Pdb_t^{US}	$-Pdb_t^{US}$	Aid, s_{ICU}^{US}
$\Delta Cash$	$-\Delta H^{US}$						ΔH^{US}
$\Delta Deposits$		$-\Delta M^{US}$					ΔM^{US}
$\Delta Loans$							$-\Delta L^{US}$
$\Delta Reserves$							ΔR^{US}
$\Delta Advances$							$-\Delta A^{US}$
$\Delta Bonds^{US}$							$-\Delta Bd, b_U^{US}$
$\Delta Bonds^{RW}$							$-\Delta Bd, b_U^{US}$
$\Delta Bonds^{CH}$							
$\Delta Bonds^{EZ}$							
$\Delta Bancor$							$-\Delta Bancor^{US}$
Total	0	0	0	0	0	0	0

Continues on next page

	Households	Firms	Com.Banks	Government	Central Bank	
	Current	Capital	Current	Capital	Current	Capital
Rest of the World						
Consumption	$-C_t^{RW}$	C_t^{RW}				
Investment		I_t^{RW}	$-I_t^{RW}$			
Gov.Spending		G_t^{RW}			$-G_t^{RW}$	
Net Exports		NX_t^{RW}				
Wages	W_t^{RW}	$-W_t^{RW}$				
Taxes	$-Th_t^{RW}$	$-Tf_t^{RW}$				
Int.Deposits	$rd_{t-1}^{RW}.M_{t-1}^{RW}$		$-rd_{t-1}^{RW}.M_{t-1}^{RW}$			
Int.Loans		$-r^{RW}_{t-1}.L_{t-1}^{RW}$	$rl_{t-1}^{RW}.L_{t-1}^{RW}$			
Int.Reserves			$rs_{t-1}^{RW}.R_{t-1}^{RW}$		$-rs_{t-1}^{RW}.R_{t-1}^{RW}$	
Int.Advances			$-r_{t-1}^{RW}.A_{t-1}^{RW}$		$r_{t-1}^{RW}.A_{t-1}^{RW}$	
Int.Bonds ^{US}						
Int.Bonds ^{RW}			$-rb_{t-1}^{RW}.Bs_{t-1}^{RW}$		$rb_{t-1}^{RW}.Bd, cb_{RW_{t-1}}^{RW}$	
Int.Bonds ^{CH}						
Int.Bonds ^{EZ}						
$rb.Bancor$					$-rb_{t-1}.Bancor, s_{t-1}^{RW}.E10$	
Profits	Pb^{RW}	$-Pf^{RW}$	Pf^{RW}	$-Pb^{RW}$	Pdb^{RW}	$-Pdb^{RW}$
$\Delta Cash$	$-\Delta H^{RW}$					ΔH^{RW}
$\Delta Deposits$	$-\Delta M^{RW}$				ΔM^{RW}	
$\Delta Loans$			ΔL^{RW}		$-\Delta L^{RW}$	
$\Delta Reserves$					$-\Delta R^{RW}$	ΔR^{RW}
$\Delta Advances$					ΔA^{RW}	$-\Delta A^{RW}$
$\Delta Bonds^{US}$						
$\Delta Bonds^{RW}$			$-\Delta Bd, b_{RW}^{RW}$		ΔBs^{RW}	$-\Delta Bd, cb_{RW}^{RW}$
$\Delta Bonds^{CH}$						
$\Delta Bonds^{EZ}$						
$\Delta Bancor$						$-\Delta Bancor^{RW}$
Total	0	0	0	0	0	0

Continues on next page

	Households	Firms	Com.Banks	Government	Central Bank	
	Current	Capital	Current	Capital	Current	Capital
China						
Consumption	$-C_t^{CH}$	C_t^{CH}				
Investment		I_t^{CH}	$-I_t^{CH}$			$-G_t^{CH}$
Gov.Spending		G_t^{CH}				
Net Exports		NX_t^{CH}				
Wages	W_t^{CH}	$-W_t^{CH}$				
Taxes	$-Th_t^{CH}$	$-Tf_t^{CH}$				
Int.Deposits	$rd_{t-1}^{CH}.M_{t-1}^{CH}$		$-rd_{t-1}^{CH}.M_{t-1}^{CH}$			
Int.Loans		$-rl_{t-1}^{CH}.Ld_{t-1}^{CH}$	$rl_{t-1}^{CH}.Ld_{t-1}^{CH}$			
Int.Reserves			$rs_{t-1}^{CH}.R_{t-1}^{CH}$			$-rs_{t-1}^{CH}.R_{t-1}^{CH}$
Int.Advances			$-r_{t-1}^{CH}.A_{t-1}^{CH}$			$r_{t-1}^{CH}.A_{t-1}^{CH}$
Int.Bonds ^{US}						
Int.Bonds ^{RW}						
Int.Bonds ^{CH}		$rb_{t-1}^{CH}.Bd, b_{CH_{t-1}}^{CH}$				$rb_{t-1}^{CH}.Bd, cb_{CH_{t-1}}^{CH}$
Int.Bonds ^{EZ}						
rb.Bancor					$-rb_{t-1}.Bancor, s_{t-1}^{CH}.E9$	
Profits	Pb_{t}^{CH}	$-Pf_{t}^{CH}$	Pf_{t}^{CH}	$-Pb_{t}^{CH}$	Pdb_{t}^{CH}	Aid, s_{ICU}^{CH}
$\Delta Cash$	$-\Delta H^{CH}$					ΔH^{CH}
$\Delta Deposits$		$-\Delta M^{CH}$				ΔM^{CH}
$\Delta Loans$					ΔL^{CH}	$-\Delta L^{CH}$
$\Delta Reserves$					$-\Delta R^{CH}$	ΔR^{CH}
$\Delta Advances$					ΔA^{CH}	$-\Delta A^{CH}$
$\Delta Bonds^{US}$						
$\Delta Bonds^{RW}$						
$\Delta Bonds^{CH}$					$-\Delta Bd, b_{CH}^{CH}$	$-\Delta Bd, db_{CH}^{CH}$
$\Delta Bonds^{EZ}$						
$\Delta Bancor$						$-\Delta Bancor^{CH}$
Total	0	0	0	0	0	0

Continues on next page

$$E7_t = \overline{E7} \quad (200c)$$

$$E8_t = \overline{E8} \quad (201c)$$

$$E9_t = \overline{E9} \quad (202c)$$

$$E10_t = \overline{E10} \quad (203c)$$

$$E1_t = \frac{E8_t}{E7_t} \quad (165c)$$

$$E2_t = \frac{E9_t}{E7_t} \quad (166c)$$

$$E3_t = \frac{E9_t}{E8_t} \quad (173c)$$

$$E4_t = \frac{E10_t}{E7_t} \quad (169c)$$

$$E5_t = \frac{E10_t}{E9_t} \quad (174c)$$

$$E6_t = \frac{E10_t}{E8_t} \quad (175c)$$

$$\Delta Bancor, s_t^{US} = \frac{(\Delta H_t^{US} + \Delta R_t^{US} - \Delta A_t^{US} - \Delta Bd, cb_{US_t}^{US})}{E7_t} \quad (204c)$$

$$\Delta Bancor, s_t^{EZ} = \frac{(\Delta H_t^{EZ} + \Delta R_t^{EZ} - \Delta A_t^{EZ} - \Delta Bd, cb_{EZ_t}^{EZ})}{E8_t} \quad (205c)$$

$$\Delta Bancor, s_t^{CH} = \frac{(\Delta H_t^{CH} + \Delta R_t^{CH} - \Delta A_t^{CH} - \Delta Bd, cb_{CH_t}^{CH})}{E9_t} \quad (206c)$$

$$\Delta Bancor, s_t^{RW} = \frac{(\Delta H_t^{RW} + \Delta R_t^{RW} - \Delta A_t^{RW} - \Delta Bd, cb_{RW_t}^{RW})}{E10_t} \quad (207c)$$

$$\Delta Bancor, d_t^{US} = Bancor, s_{t-1}^{US} \cdot \Delta E7_t + \Delta Bancor, s_t^{US} \cdot E7_t \quad (208c)$$

$$\Delta Bancor, d_t^{EZ} = Bancor, s_{t-1}^{EZ} \cdot \Delta E8_t + \Delta Bancor, s_t^{EZ} \cdot E8_t \quad (209c)$$

$$\Delta Bancor, d_t^{CH} = Bancor, s_{t-1}^{CH} \cdot \Delta E9_t + \Delta Bancor, s_t^{CH} \cdot E9_t \quad (210c)$$

$$\Delta Bancor, d_t^{RW} = Bancor, s_{t-1}^{RW} \cdot \Delta E10_t + \Delta Bancor, s_t^{RW} \cdot E10_t \quad (211c)$$

$$Bs, cb_{CH_t}^{US} = 0 \quad (159c)$$

$$Bs, cb_{RW_t}^{US} = 0 \quad (160c)$$

$$\Delta Bancor, s_t^{US} + \Delta Bancor, s_t^{EZ} + \Delta Bancor, s_t^{CH} + \Delta Bancor, s_t^{RW} = \Delta V_t^{ICU} = 0 \quad (212c)$$

$$Bd, cb_{US_t}^{US} = Bs_t^{US} - Bs, b_{US_t}^{US} - Bs, b_{EZ_t}^{US} - Bs, b_{CH_t}^{US} - Bs, b_{RW_t}^{US} \quad (172c)$$

$$Bd, cb_{EZ_t}^{EZ} = Bs_t^{EZ} - Bs, b_{EZ_t}^{EZ} - Bs, b_{US_t}^{EZ} - Bs, b_{CH_t}^{EZ} - Bs, b_{RW_t}^{EZ} \quad (158c)$$

$$Bd, cb_{CH_t}^{CH} = Bs_t^{CH} - Bs, b_{CH_t}^{CH} - Bs, b_{EZ_t}^{CH} - Bs, b_{US_t}^{CH} - Bs, b_{RW_t}^{CH} \quad (167c)$$

$$Bd, cb_{RW_t}^{RW} = Bs_t^{RW} - Bs, b_{RW_t}^{RW} - Bs, b_{EZ_t}^{RW} - Bs, b_{CH_t}^{RW} - Bs, b_{US_t}^{RW} \quad (170c)$$

$$P_t^{ICU} = |r_{t-1}^b \cdot Bancor, s_{t-1}^{US}| + |r_{t-1}^b \cdot Bancor, s_{t-1}^{EZ}| + |r_{t-1}^b \cdot Bancor, s_{t-1}^{CH}| + |r_{t-1}^b \cdot Bancor, s_{t-1}^{RW}| \quad (213d)$$

$$Aid, s_t^{ICU} = \frac{P_t^{ICU}}{\sigma} \quad (214d)$$

$$Aid, s_{ICU_t}^{US} = \begin{cases} Aid, s_t^{ICU} & \text{if Bancor, } s_{t-1}^{US} \leq \epsilon \\ 0 & \text{if Bancor, } s_{t-1}^{US} > \epsilon \end{cases} \quad (215d)$$

$$Aid, s_{ICU_t}^{EZ} = \begin{cases} Aid, s_t^{ICU} & \text{if Bancor, } s_{t-1}^{EZ} \leq \epsilon \\ 0 & \text{if Bancor, } s_{t-1}^{EZ} > \epsilon \end{cases} \quad (216d)$$

$$Aid, s_{ICU_t}^{CH} = \begin{cases} Aid, s_t^{ICU} & \text{if Bancor, } s_{t-1}^{CH} \leq \epsilon \\ 0 & \text{if Bancor, } s_{t-1}^{CH} > \epsilon \end{cases} \quad (217d)$$

$$Aid, s_{ICU_t}^{RW} = \begin{cases} Aid, s_t^{ICU} & \text{if Bancor, } s_{t-1}^{RW} \leq \epsilon \\ 0 & \text{if Bancor, } s_{t-1}^{RW} > \epsilon \end{cases} \quad (218d)$$

$$Aid, r_t^{US} = Aid, s_{ICU_t}^{US} \cdot E7_t \quad (219d)$$

$$Aid, r_t^{EZ} = Aid, s_{ICU_t}^{EZ} \cdot E8_t \quad (220d)$$

$$Aid, r_t^{CH} = Aid, s_{ICU_t}^{CH} \cdot E9_t \quad (221d)$$

$$Aid, r_t^{RW} = Aid, s_{ICU_t}^{RW} \cdot E10_t \quad (222d)$$

$$Bancor, s_t^{US} = \frac{(\Delta H_t^{US} + \Delta R_t^{US} - \Delta A_t^{US} - \Delta Bd, cb_{US_t}^{US} - |r_{t-1}^b \cdot Bancor, d_{t-1}^{US}| + Aid, r_t^{US})}{E7_t} \quad (204d)$$

$$\Delta Bancor, s_t^{EZ} = \frac{(\Delta H_t^{EZ} + \Delta R_t^{EZ} - \Delta A_t^{EZ} - \Delta Bd, cb_{EZ_t}^{EZ} - |r_{t-1}^b \cdot Bancor, d_{t-1}^{EZ}| + Aid, r_t^{EZ})}{E8_t} \quad (205d)$$

$$\Delta Bancor, s_t^{CH} = \frac{(\Delta H_t^{CH} + \Delta R_t^{CH} - \Delta A_t^{CH} - \Delta Bd, cb_{CH_t}^{CH} - |r_{t-1}^b \cdot Bancor, d_{t-1}^{CH}| + Aid, r_t^{CH})}{E9_t} \quad (206d)$$

$$\Delta Bancor, s_t^{RW} = \frac{(\Delta H_t^{RW} + \Delta R_t^{RW} - \Delta A_t^{RW} - \Delta Bd, cb_{RW_t}^{RW} - |r_{t-1}^b \cdot Bancor, d_{t-1}^{RW}| + Aid, r_t^{RW})}{E10_t} \quad (207d)$$

$$G_t^i = Go_t^i + (1 + w^i) \cdot G_{t-1}^i + GG_t^i \quad \forall i = US, EZ, CH, RW \quad (5d - 8d)$$

$$GG_t^i = \begin{cases} \chi^i \cdot rb_{t-1} \cdot Bancor_{t-1}^i & \text{if } Bancor, s_{t-1}^i > 0 \wedge \frac{CA_{t-1}^i}{Y_{t-1}^i} > 0 \\ 0 & \text{if } Bancor, s_{t-1}^i \leq 0 \wedge \frac{CA_{t-1}^i}{Y_{t-1}^i} \leq 0 \end{cases} \quad (223d-226d)$$

Fixed but adjustable exchange rates

$$E7_t = \begin{cases} E7_{t-1} & \text{if } \sum_{i=1}^5 \frac{CA_{t-i}^{US}}{Y_{t-i}^{US}} \geq \lambda \\ E7_{t-1} \cdot (1 + \kappa) & \text{if } \sum_{i=1}^5 \frac{CA_{t-i}^{US}}{Y_{t-i}^{US}} < \lambda \end{cases} \quad (200c)$$

$$E8_t = \begin{cases} E8_{t-1} & \text{if } \sum_{i=1}^5 \frac{CA_{t-i}^{EZ}}{Y_{t-i}^{EZ}} \geq \lambda \\ E8_{t-1} \cdot (1 + \kappa) & \text{if } \sum_{i=1}^5 \frac{CA_{t-i}^{EZ}}{Y_{t-i}^{EZ}} < \lambda \end{cases} \quad (201c)$$

$$E9_t = \begin{cases} E9_{t-1} & \text{if } \sum_{i=1}^5 \frac{CA_{t-i}^{CH}}{Y_{t-i}^{CH}} \geq \lambda \\ E9_{t-1} \cdot (1 + \kappa) & \text{if } \sum_{i=1}^5 \frac{CA_{t-i}^{CH}}{Y_{t-i}^{CH}} < \lambda \end{cases} \quad (202c)$$

$$E10_t = \begin{cases} E10_{t-1} & \text{if } \sum_{i=1}^5 \frac{CA_{t-i}^{RW}}{Y_{t-i}^{RW}} \geq \lambda \\ E10_{t-1} \cdot (1 + \kappa) & \text{if } \sum_{i=1}^5 \frac{CA_{t-i}^{RW}}{Y_{t-i}^{RW}} < \lambda \end{cases} \quad (203c)$$