Figure 1

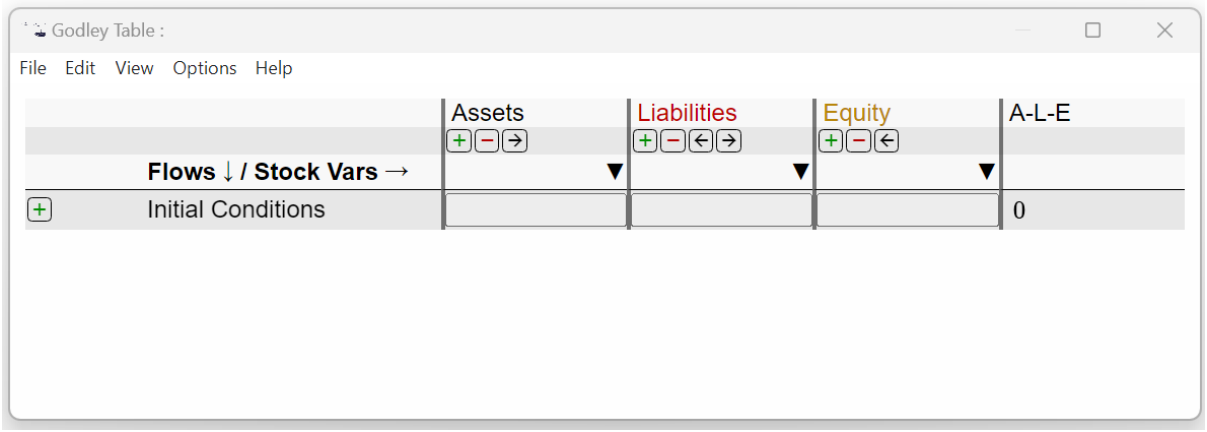


Figure 2

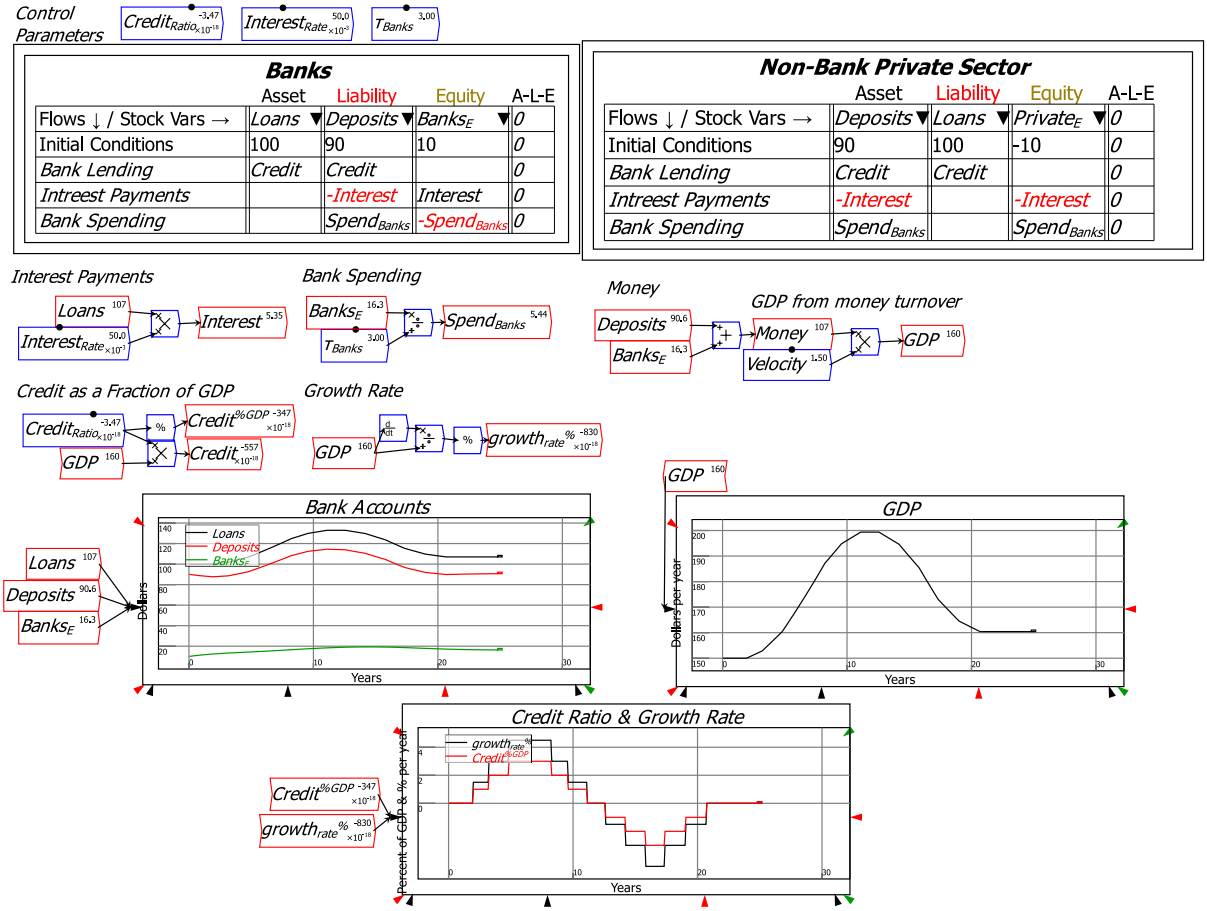


Figure 3

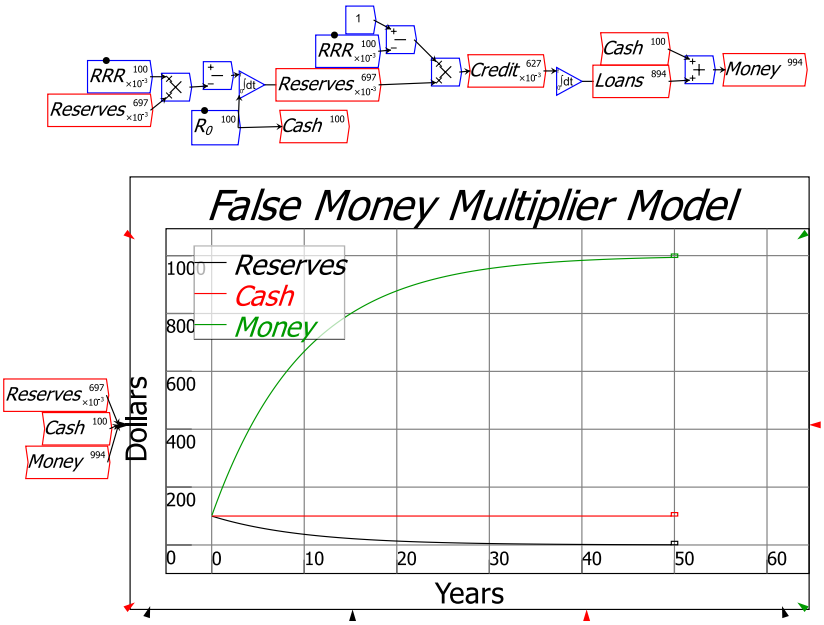


Figure 4

Banking Sector

	Asset		Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Reserves* ▼	*Loans* ▼	*Deposits* ▼	*Banks$_E$* ▼	*0*
Initial Conditions	0	0	0	0	*0*
Lend from Reserves	*-Lend$_{Reserves}$*		*Lend$_{Reserves}$*		*-2Lend$_{Reserves}$*

Figure 5

Banking Sector

	Asset		Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Reserves* ▼	*Loans* ▼	*Deposits* ▼	*Banks$_E$* ▼	*0*
Initial Conditions	0	0	0	0	*0*
Lend from Reserves	*-Lend$_{Reserves}$*	*Lend$_{Reserves}$*			*0*

Figure 6

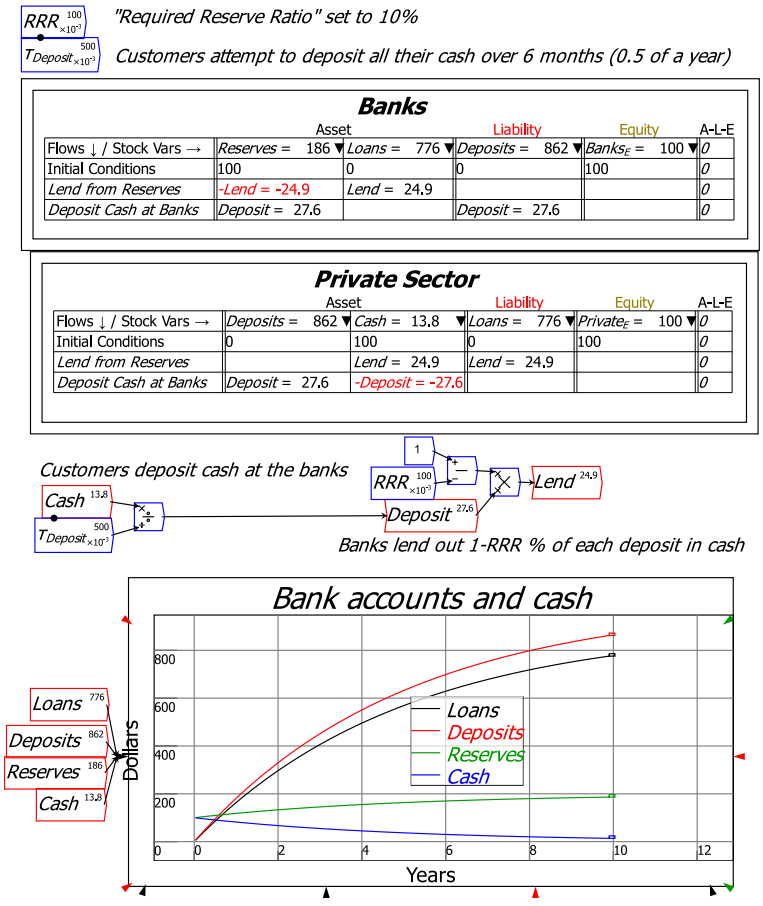


Figure 7

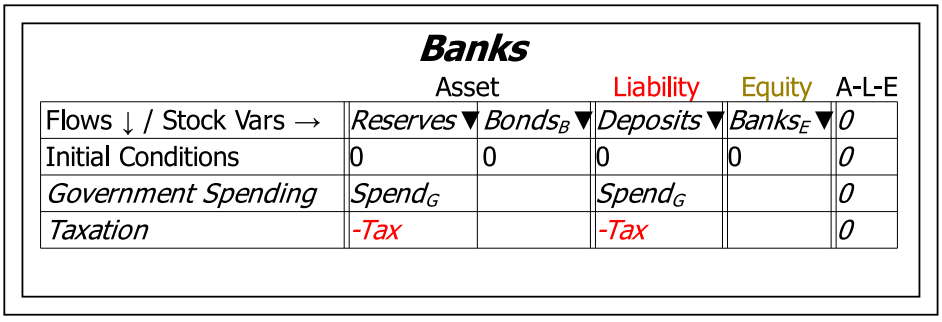
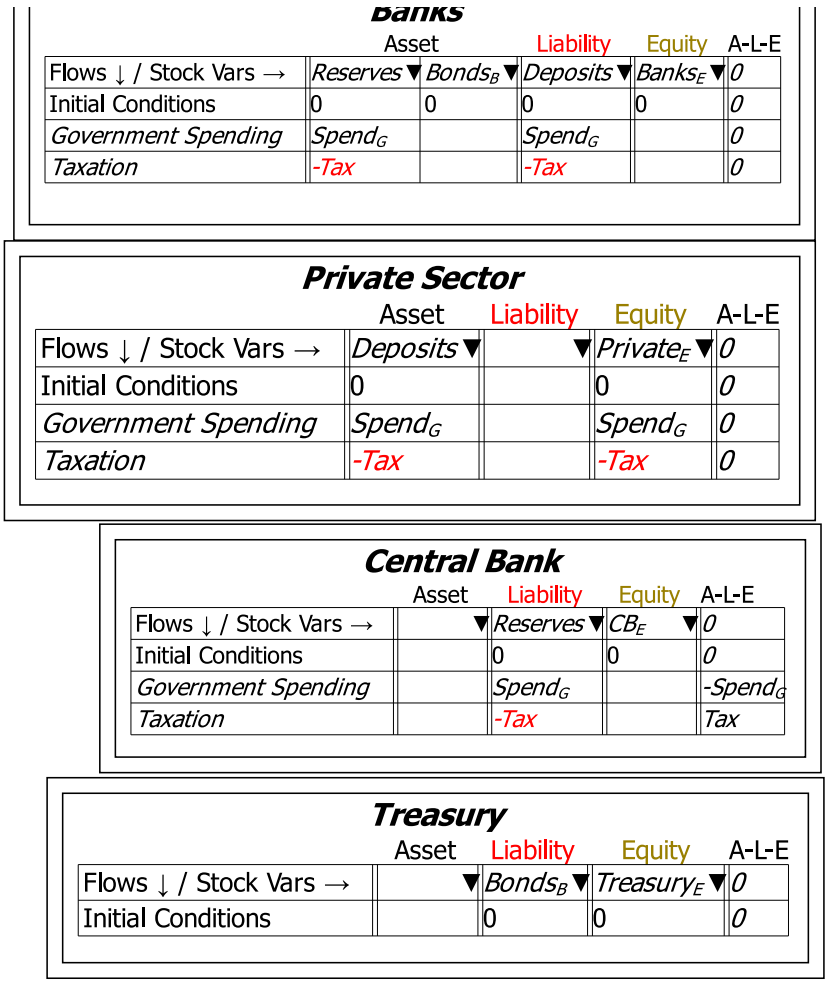


Figure 8



Banks

	Asset		Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Reserves*	*$Bonds_B$*	*Deposits*	*$Banks_E$*	*0*
Initial Conditions	0	0	0	0	*0*
Government Spending	*$Spend_G$*		*$Spend_G$*		*0*
Taxation	*-Tax*		*-Tax*		*0*

Private Sector

	Asset	Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Deposits*		*$Private_E$*	*0*
Initial Conditions	0		0	*0*
Government Spending	*$Spend_G$*		*$Spend_G$*	*0*
Taxation	*-Tax*		*-Tax*	*0*

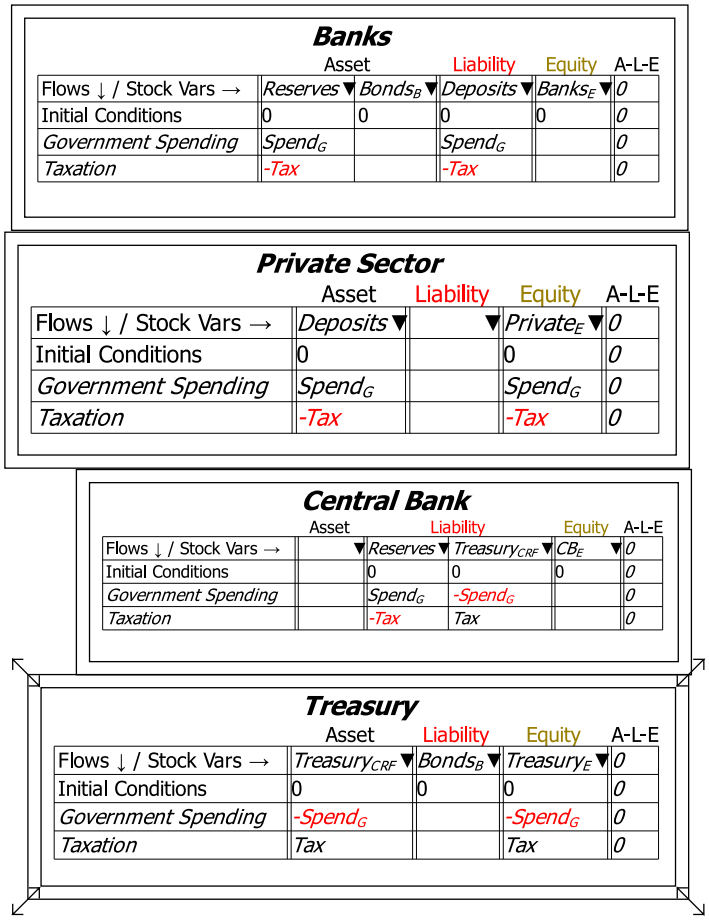
Central Bank

	Asset	Liability	Equity	A-L-E
Flows ↓ / Stock Vars →		*Reserves*	*CB_E*	*0*
Initial Conditions		0	0	*0*
Government Spending		*$Spend_G$*		*$-Spend_G$*
Taxation		*-Tax*		*Tax*

Treasury

	Asset	Liability	Equity	A-L-E
Flows ↓ / Stock Vars →		*$Bonds_B$*	*$Treasury_E$*	*0*
Initial Conditions		0	0	*0*

Figure 9



Banks

	Asset		Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Reserves* ▼	*Bonds$_B$* ▼	*Deposits* ▼	*Banks$_E$* ▼	*0*
Initial Conditions	0	0	0	0	*0*
Government Spending	*Spend$_G$*		*Spend$_G$*		*0*
Taxation	*-Tax*		*-Tax*		*0*

Private Sector

	Asset	Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Deposits* ▼	▼	*Private$_E$* ▼	*0*
Initial Conditions	0		0	*0*
Government Spending	*Spend$_G$*		*Spend$_G$*	*0*
Taxation	*-Tax*		*-Tax*	*0*

Central Bank

	Asset	Liability		Equity	A-L-E
Flows ↓ / Stock Vars →	▼	*Reserves* ▼	*Treasury$_{CRF}$* ▼	*CB$_E$* ▼	*0*
Initial Conditions		0	0	0	*0*
Government Spending		*Spend$_G$*	*-Spend$_G$*		*0*
Taxation		*-Tax*	*Tax*		*0*

Treasury

	Asset	Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Treasury$_{CRF}$* ▼	*Bonds$_B$* ▼	*Treasury$_E$* ▼	*0*
Initial Conditions	0	0	0	*0*
Government Spending	*-Spend$_G$*		*-Spend$_G$*	*0*
Taxation	*Tax*		*Tax*	*0*

Figure 10

Banks

	Asset		Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Reserves* ▼	*Bonds$_B$* ▼	*Deposits* ▼	*Banks$_E$* ▼	*0*
Initial Conditions	0	0	0	0	*0*
Government Spending	*Spend$_G$*		*Spend$_G$*		*0*
Taxation	*-Tax*		*-Tax*		*0*
Treasury Bond Sales	*-Bond$_{Sale}^{T->B}$*	*Bond$_{Sale}^{T->B}$*			*0*

Figure 11

Central Bank

	Asset	Liability		Equity	A-L-E
Flows ↓ / Stock Vars →		*Reserves*	*$Treasury_{CRF}$*	*CB_E*	*0*
Initial Conditions		0	0	0	*0*
Government Spending		*$Spend_G$*	*$-Spend_G$*		*0*
Taxation		*-Tax*	*Tax*		*0*
Treasury Bond Sales		*$-Bond_{Sale}^{T-->B}$*	*$Bond_{Sale}^{T-->B}$*		*0*

Treasury

	Asset	Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*$Treasury_{CRF}$*	*$Bonds_B$*	*$Treasury_E$*	*0*
Initial Conditions	0	0	0	*0*
Government Spending	*$-Spend_G$*		*$-Spend_G$*	*0*
Taxation	*Tax*		*Tax*	*0*
Treasury Bond Sales	*$Bond_{Sale}^{T-->B}$*	*$Bond_{Sale}^{T-->B}$*		*0*

Figure 12

Banks

	Asset		Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Reserves*	*$Bonds_B$*	*Deposits*	*$Banks_E$*	*0*
Initial Conditions	0	0	0	0	*0*
Government Spending	*$Spend_G$*		*$Spend_G$*		*0*
Taxation	*-Tax*		*-Tax*		*0*
Treasury Bond Sales	*$-Bond_{Sale}^{T-->B}$*	*$Bond_{Sale}^{T-->B}$*			*0*
Interest on Bonds to Banks	*Int_{Bonds}^{B}*			*Int_{Bonds}^{B}*	*0*

Figure 13

Central Bank

	Asset	Liability		Equity	A-L-E
Flows ↓ / Stock Vars →		*Reserves*	*$Treasury_{CRF}$*	*CB_E*	*0*
Initial Conditions		0	0	0	*0*
Government Spending		*$Spend_G$*	*$-Spend_G$*		*0*
Taxation		*-Tax*	*Tax*		*0*
Treasury Bond Sales		*$-Bond_{Sale}^{T-->B}$*	*$Bond_{Sale}^{T-->B}$*		*0*
Interest on Bonds to Banks		*Int_{Bonds}^{B}*	*$-Int_{Bonds}^{B}$*		*0*

Treasury

	Asset	Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*$Treasury_{CRF}$*	*$Bonds_B$*	*$Treasury_E$*	*0*
Initial Conditions	0	0	0	*0*
Government Spending	*$-Spend_G$*		*$-Spend_G$*	*0*
Taxation	*Tax*		*Tax*	*0*
Treasury Bond Sales	*$Bond_{Sale}^{T-->B}$*	*$Bond_{Sale}^{T-->B}$*		*0*
Interest on Bonds to Banks	*$-Int_{Bonds}^{B}$*		*$-Int_{Bonds}^{B}$*	*0*

Figure 14

Banks

	Asset		Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Reserves*	*$Bonds_B$*	*Deposits*	*$Banks_E$*	*0*
Initial Conditions	0	0	0	0	*0*
Government Spending	*$Spend_G$*		*$Spend_G$*		*0*
Taxation	*-Tax*		*-Tax*		*0*
Treasury Bond Sales	*$-Bond_{Sale}^{T-->B}$*	*$Bond_{Sale}^{T-->B}$*			*0*
Interest on Bonds to Banks	*Int_{Bonds}^{B}*			*Int_{Bonds}^{B}*	*0*
Central Bank OMO with Banks	*$Bond_{Sale}^{B-->CB}$*	*$-Bond_{Sale}^{B-->CB}$*			*0*

Figure 15

Banks

	Asset		Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Reserves*	*$Bonds_B$*	*Deposits*	*$Banks_E$*	*0*
Initial Conditions	0	0	0	0	*0*
Government Spending	*$Spend_G$*		*$Spend_G$*		*0*
Taxation	*-Tax*		*-Tax*		*0*
Treasury Bond Sales	*$-Bond_{Sale}^{T-->B}$*	*$Bond_{Sale}^{T-->B}$*			*0*
Interest on Bonds to Banks	*Int_{Bonds}^{B}*			*Int_{Bonds}^{B}*	*0*
Central Bank OMO with Banks	*$Bond_{Sale}^{B-->CB}$*	*$-Bond_{Sale}^{B-->CB}$*			*0*
Central Bank OMO with NBFIs	*$Bond_{Sale}^{NB-->CB}$*		*$Bond_{Sale}^{NB-->CB}$*		*0*
Bank Bond Sales to Non-Banks		*$-Bond_{Sale}^{B-->NB}$*	*$-Bond_{Sale}^{B-->NB}$*		*0*
Interest on Bonds to Non-Banks	*Int_{Bonds}^{NB}*		*Int_{Bonds}^{NB}*		*0*

Private Sector

	Asset		Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Deposits*	*$Bonds_{NB}$*		*$Private_E$*	*0*
Initial Conditions	0	0		0	*0*
Government Spending	*$Spend_G$*			*$Spend_G$*	*0*
Taxation	*-Tax*			*-Tax*	*0*
Bank Bond Sales to Non-Banks	*$-Bond_{Sale}^{B-->NB}$*	*$Bond_{Sale}^{B-->NB}$*			*0*
Interest on Bonds to Non-Banks	*Int_{Bonds}^{NB}*			*Int_{Bonds}^{NB}*	*0*
Central Bank OMO with NBFIs	*$Bond_{Sale}^{NB-->CB}$*	*$-Bond_{Sale}^{NB-->CB}$*			*0*

Central Bank

	Asset	Liability		Equity	A-L-E
Flows ↓ / Stock Vars →	*$Bonds_{CB}$*	*Reserves*	*$Treasury_{CRF}$*	*CB_E*	*0*
Initial Conditions	0	0	0	0	*0*
Government Spending		*$Spend_G$*	*$-Spend_G$*		*0*
Taxation		*-Tax*	*Tax*		*0*
Treasury Bond Sales		*$-Bond_{Sale}^{T-->B}$*	*$Bond_{Sale}^{T-->B}$*		*0*
Interest on Bonds to Banks		*Int_{Bonds}^{B}*	*$-Int_{Bonds}^{B}$*		*0*
Central Bank OMO with Banks	*$Bond_{Sale}^{B-->CB}$*	*$Bond_{Sale}^{B-->CB}$*			*0*
Central Bank OMO with NBFIs	*$Bond_{Sale}^{NB-->CB}$*	*$Bond_{Sale}^{NB-->CB}$*			*0*
Interest on Bonds to Non-Banks		*Int_{Bonds}^{NB}*	*$-Int_{Bonds}^{NB}$*		*0*

Treasury

	Asset		Liability		Equity	A-L-E
Flows ↓ / Stock Vars →	*$Treasury_{CRF}$*	*$Bonds_B$*	*$Bonds_{CB}$*	*$Bonds_{NB}$*	*$Treasury_E$*	*0*
Initial Conditions	0	0	0	0	0	*0*
Government Spending	*$-Spend_G$*				*$-Spend_G$*	*0*
Taxation	*Tax*				*Tax*	*0*
Treasury Bond Sales	*$Bond_{Sale}^{T-->B}$*	*$Bond_{Sale}^{T-->B}$*				*0*
Interest on Bonds to Banks	*$-Int_{Bonds}^{B}$*				*$-Int_{Bonds}^{B}$*	*0*
Central Bank OMO with Banks		*$-Bond_{Sale}^{B-->CB}$*	*$Bond_{Sale}^{B-->CB}$*			*0*
Bank Bond Sales to Non-Banks		*$-Bond_{Sale}^{B-->NB}$*		*$Bond_{Sale}^{B-->NB}$*		*0*
Interest on Bonds to Non-Banks	*$-Int_{Bonds}^{NB}$*				*$-Int_{Bonds}^{NB}$*	*0*
Central Bank OMO with NBFIs			*$Bond_{Sale}^{NB-->CB}$*	*$-Bond_{Sale}^{NB-->CB}$*		*0*

Figure 16

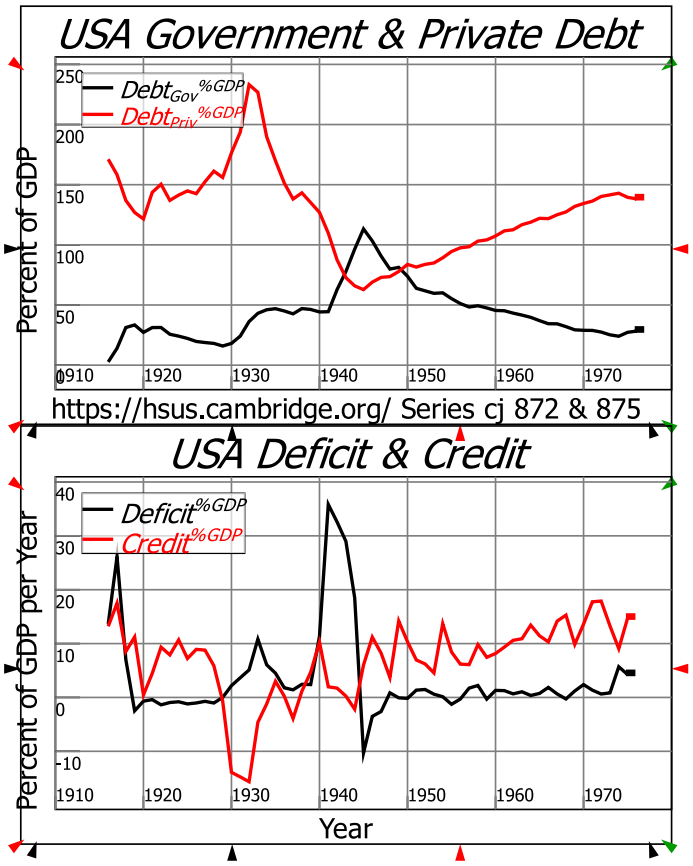


Figure 17

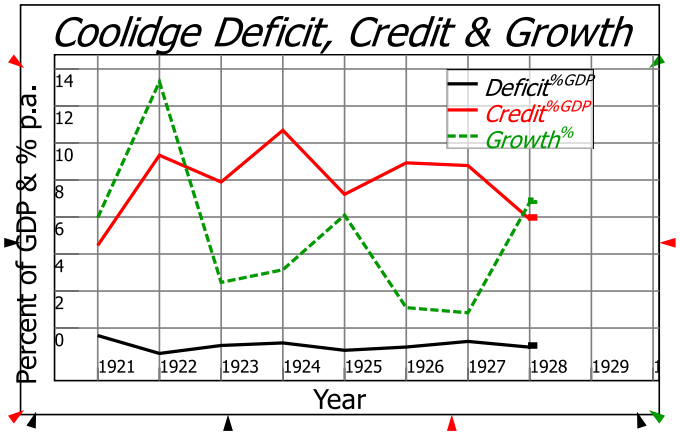
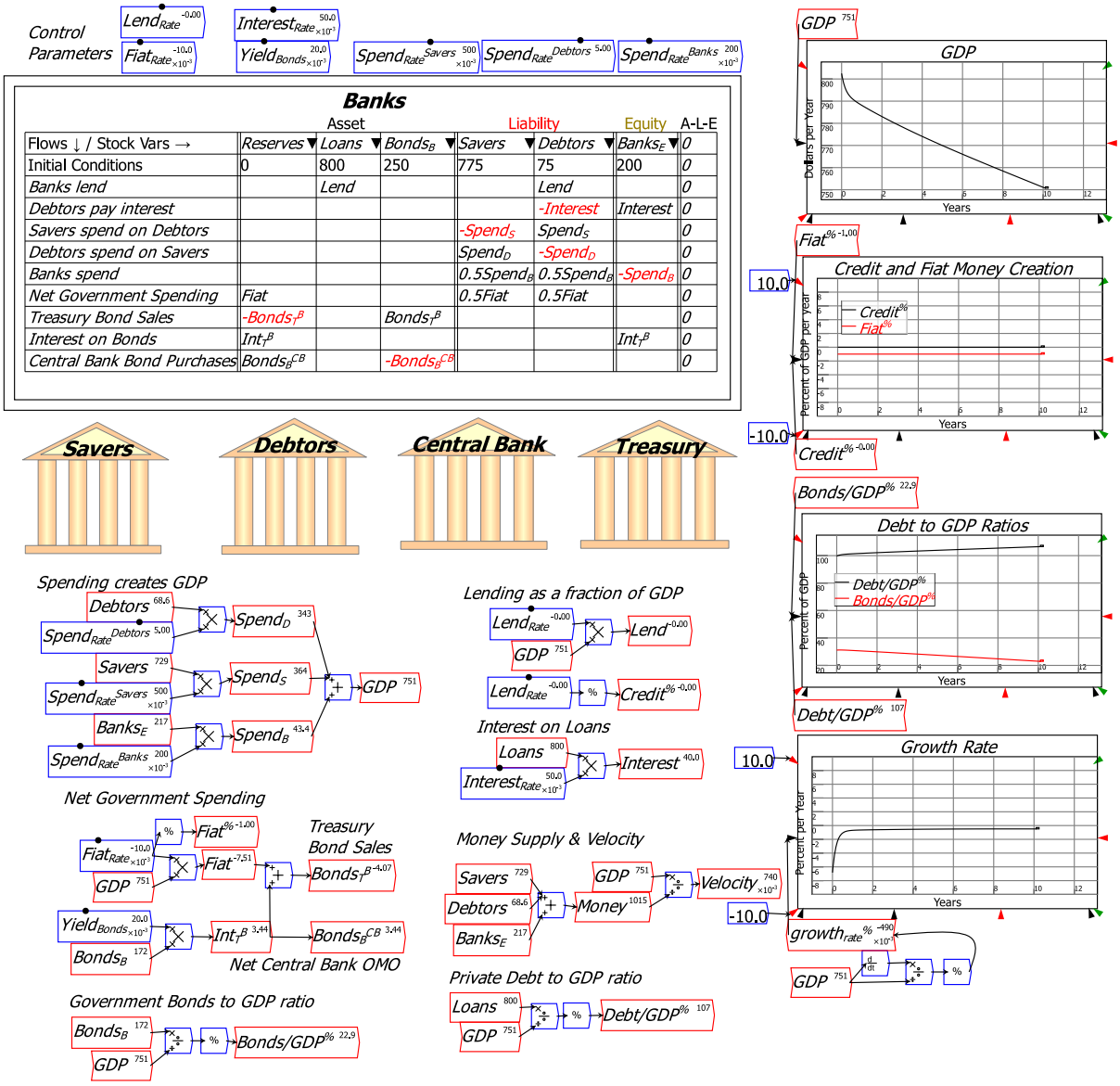


Figure 18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Lend Rate -0.00
Fiat Rate -10.0 ×10⁻³
Interest Rate 50.0 ×10⁻³
Yield Bonds 20.0 ×10⁻³
Spend Rate Savers 500 ×10⁻³
Spend Rate Debtors 5.00
Spend Rate Banks 200 ×10⁻³
Banks
Asset
Liability
Equity
A-L-E
Flows ↓ / Stock Vars →
Reserves
Loans
Bonds B
Savers
Debtors
Banks E
Initial Conditions
Banks lend
Debtors pay interest
Savers spend on Debtors
Debtors spend on Savers
Banks spend
Net Government Spending
Treasury Bond Sales
Interest on Bonds
Central Bank Bond Purchases
Savers
Debtors
Central Bank
Treasury
Spending creates GDP
Debtors 68.6
Spend D 343
Savers 729
Spend S 364
GDP 751
Banks E 217
Spend B 43.4
Lending as a fraction of GDP
Lend -0.00
Credit -0.00
Interest on Loans
Loans 800
Interest 40.0
Interest Rate 50.0 ×10⁻³
Net Government Spending
Fiat -1.00
Fiat -7.51
Bonds B -4.07
Int B 3.44
Bonds B CB 3.44
Net Central Bank OMO
Money Supply & Velocity
Money 1015
Velocity 740 ×10⁻³
Government Bonds to GDP ratio
Bonds/GDP 22.9
Private Debt to GDP ratio
Debt/GDP 107
GDP
Dollars per Year
Years
Credit and Fiat Money Creation
Percent of GDP per year
Debt to GDP Ratios
Percent of GDP
Growth Rate
Percent per Year
growth rate -490 ×10⁻³
10.0
-10.0

Figure 19

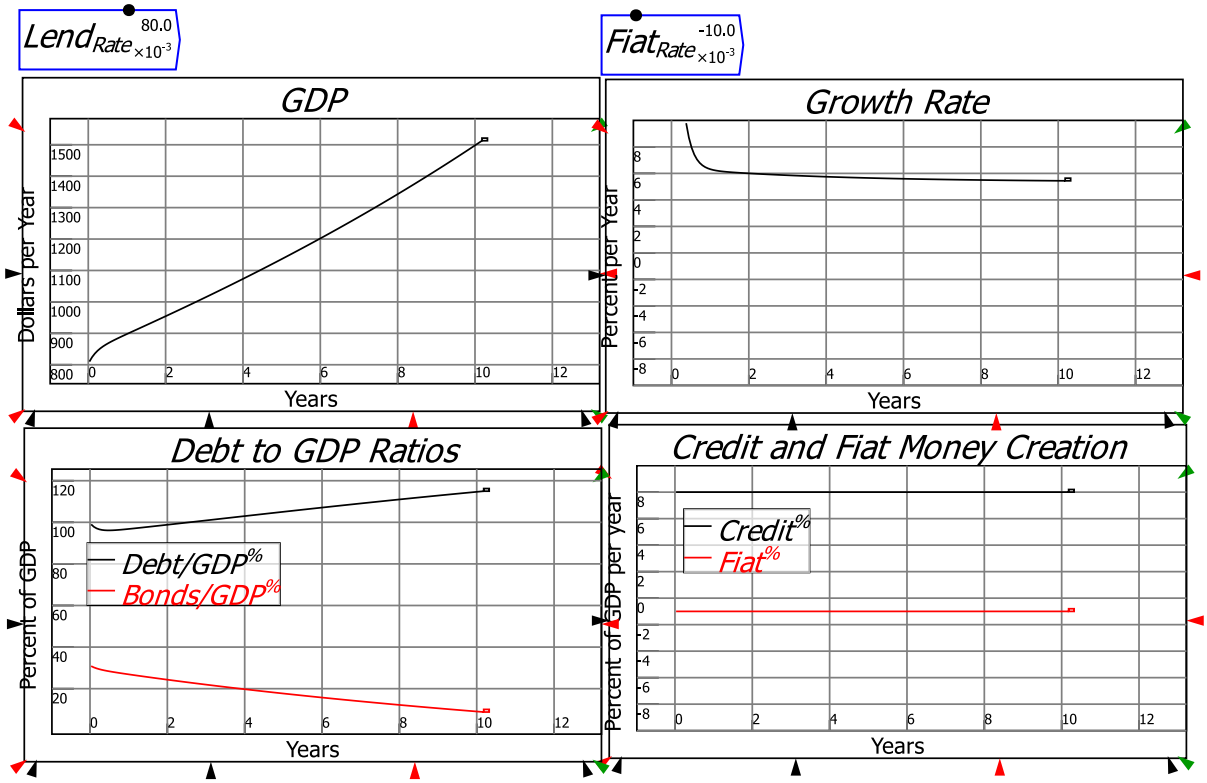


Figure 20

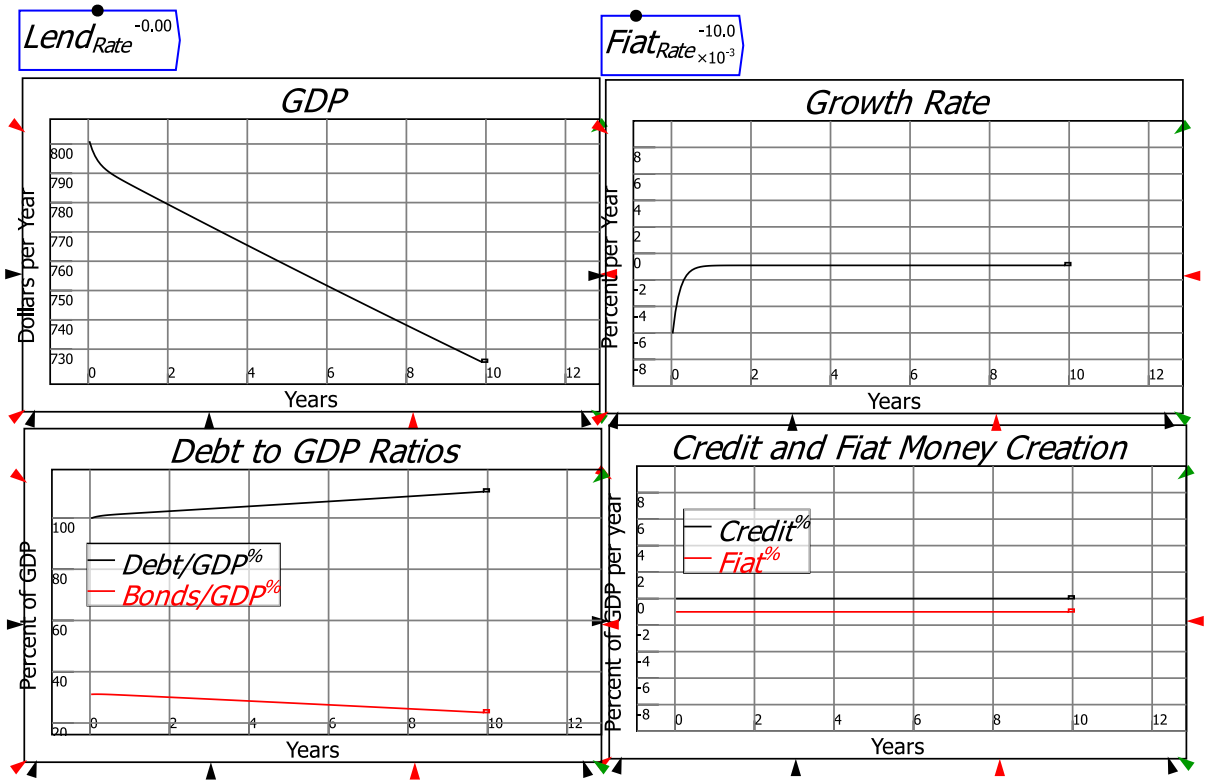
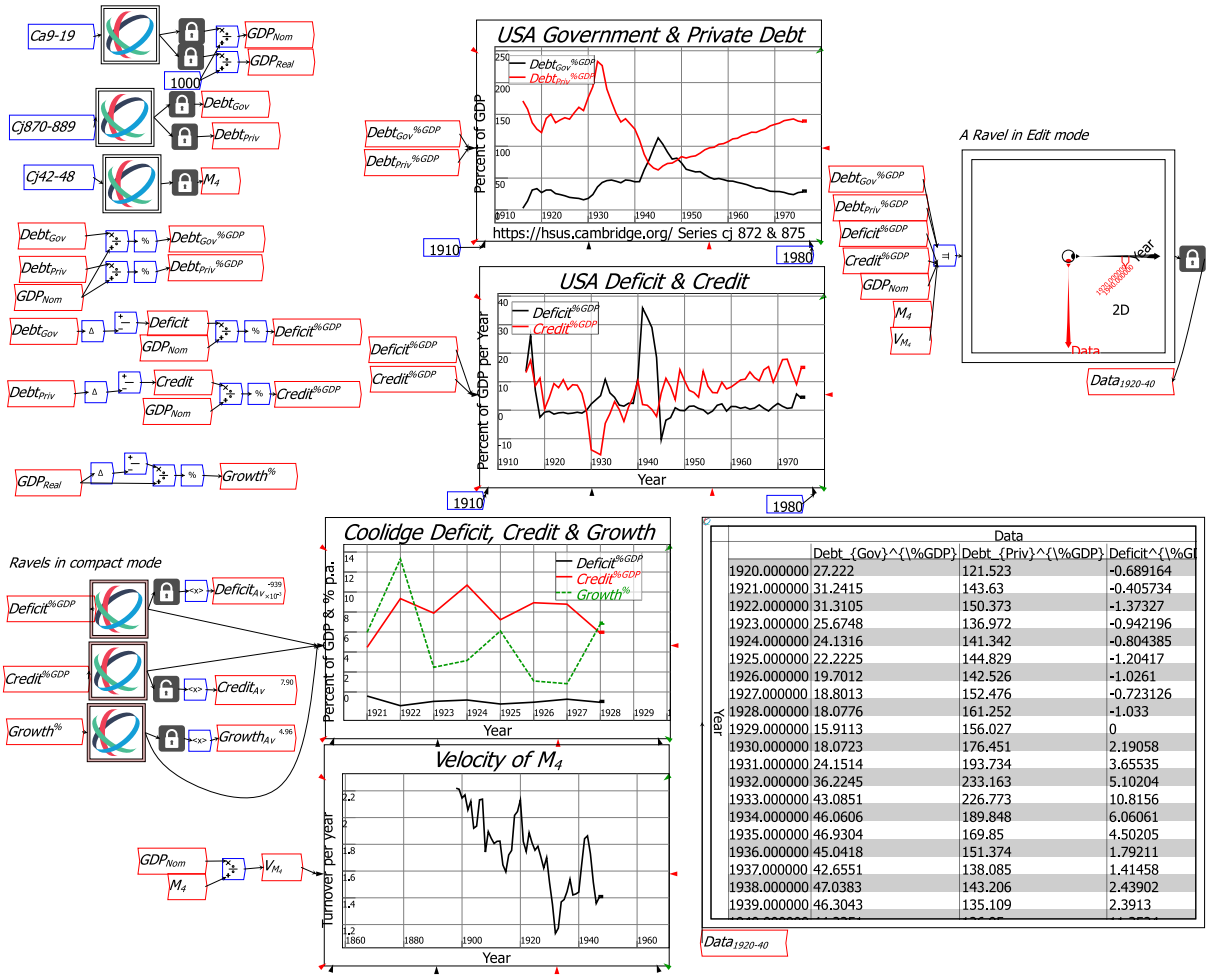


Figure 21


Ca9-19
GDP_Nom
GDP_Real
1000
Cj870-889
Debt_Gov
Debt_Priv
Cj42-48
M4
Debt_Gov
Debt_Gov %GDP
Debt_Priv
Debt_Priv %GDP
GDP_Nom
Deficit
Deficit %GDP
Credit
Credit %GDP
GDP_Real
Growth %
USA Government & Private Debt
Percent of GDP
https://hsus.cambridge.org/ Series cj 872 & 875
1910
1980
USA Deficit & Credit
Percent of GDP per Year
Year
A Ravel in Edit mode
2D
Data
Data1920-40
Ravels in compact mode
Deficit_Av
Credit_Av
Growth_Av
Coolidge Deficit, Credit & Growth
Percent of GDP & % p.a.
Velocity of M4
Turnover per year
Data
Debt_{Gov}^{\%GDP}
Debt_{Priv}^{\%GDP}
Deficit^{\%GDP}
1920.000000 27.222 121.523 -0.689164
1921.000000 31.2415 143.63 -0.405734
1922.000000 31.3105 150.373 -1.37327
1923.000000 25.6748 136.972 -0.942196
1924.000000 24.1316 141.342 -0.804385
1925.000000 22.2225 144.829 -1.20417
1926.000000 19.7012 142.526 -1.0261
1927.000000 18.8013 152.476 -0.723126
1928.000000 18.0776 161.252 -1.033
1929.000000 15.9113 156.027 0
1930.000000 18.0723 176.451 2.19058
1931.000000 24.1514 193.734 3.65535
1932.000000 36.2245 233.163 5.10204
1933.000000 43.0851 226.773 10.8156
1934.000000 46.0606 189.848 6.06061
1935.000000 46.9304 169.85 4.50205
1936.000000 45.0418 151.374 1.79211
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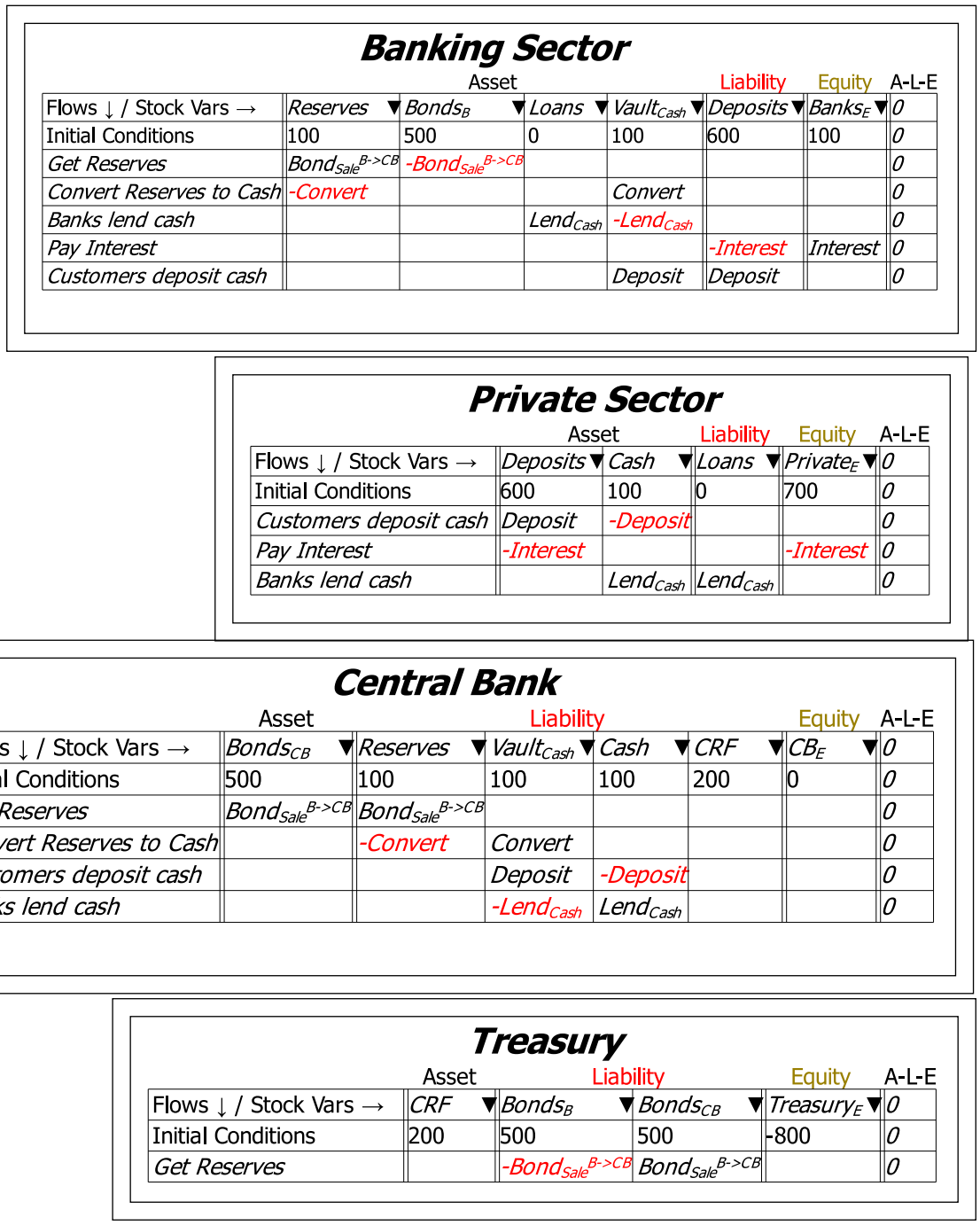
1938.000000 47.0383 143.206 2.43902
1939.000000 46.3043 135.109 2.3913

Figure 22



Banking Sector

	Asset				Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Reserves*	*$Bonds_B$*	*Loans*	*$Vault_{Cash}$*	*Deposits*	*$Banks_E$*	*0*
Initial Conditions	100	500	0	100	600	100	*0*
Get Reserves	*$Bond_{Sale}^{B->CB}$*	*$-Bond_{Sale}^{B->CB}$*					*0*
Convert Reserves to Cash	*-Convert*			*Convert*			*0*
Banks lend cash			*$Lend_{Cash}$*	*$-Lend_{Cash}$*			*0*
Pay Interest					*-Interest*	*Interest*	*0*
Customers deposit cash				*Deposit*	*Deposit*		*0*

Private Sector

	Asset		Liability	Equity	A-L-E
Flows ↓ / Stock Vars →	*Deposits*	*Cash*	*Loans*	*$Private_E$*	*0*
Initial Conditions	600	100	0	700	*0*
Customers deposit cash	*Deposit*	*-Deposit*			*0*
Pay Interest	*-Interest*			*-Interest*	*0*
Banks lend cash		*$Lend_{Cash}$*	*$Lend_{Cash}$*		*0*

Central Bank

	Asset		Liability			Equity	A-L-E
Flows ↓ / Stock Vars →	*$Bonds_{CB}$*	*Reserves*	*$Vault_{Cash}$*	*Cash*	*CRF*	*CB_E*	*0*
Initial Conditions	500	100	100	100	200	0	*0*
Get Reserves	*$Bond_{Sale}^{B->CB}$*	*$Bond_{Sale}^{B->CB}$*					*0*
Convert Reserves to Cash		*-Convert*	*Convert*				*0*
Customers deposit cash			*Deposit*	*-Deposit*			*0*
Banks lend cash			*$-Lend_{Cash}$*	*$Lend_{Cash}$*			*0*

Treasury

	Asset	Liability		Equity	A-L-E
Flows ↓ / Stock Vars →	*CRF*	*$Bonds_B$*	*$Bonds_{CB}$*	*$Treasury_E$*	*0*
Initial Conditions	200	500	500	-800	*0*
Get Reserves		*$-Bond_{Sale}^{B->CB}$*	*$Bond_{Sale}^{B->CB}$*		*0*