Classical Theories of Monetary-Fiscal Interaction

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Hyperinflations

Country	Beginning	End	P_t/P_0	Av Monthly Inflation Rate (%)	Av Monthly M Growth (%)
Austria	Oct. 1921	Aug. 1922	70	47	31
Germany	Aug. 1922	Nov. 1923	$1x10^{10}$	322	314
Greece	Nov. 1943	Nov. 1944	$4.7x10^{6}$	365	220
Hungary 1	Mar. 1923	Feb. 1924	44	46	33
Hungary 2	Aug. 1945	Jul. 1946	$3.8x10^{27}$	19800	12200
Poland	Jan. 1923	Jan. 1923	699	82	72
Russsia	Dec. 1921	Dec. 1921	$1.2x10^{5}$	57	49
Brazil	**Jan. 1983**	**Jun. 1994**	**$1.4x10^{10}$**	**20**	**19**

Source: Ayres et al. (2019)

Model with Nominal Debt

- Real interest: $1 + r_t = 1 + i_{t-1} \,/\, 1 + \pi_{t+1}$
- Government budget constraint:

$$B_0 = P_1 s_1 + \Delta M_1$$
$$B_{-1} = Q_0 B_0 + P_0 s_0 + \Delta M_0$$

- Households:

$$\underset{c \geq 0, M \geq 0, B_0}{\text{Max}} \quad u(c_0) + h(m_0) + \beta \left[u(c_1) + h(m_1) \right]$$
$$Q_0 B_0 + M_0 + P_0 c_0 \leq B_{-1} + M_{-1} + P_0 (y_0 - \tau_0)$$
$$P_1 c_1 + M_1 \leq B_0 + M_0 + P_1 (y_1 - \tau_1)$$

- Equilibrium:

$$u'(y_0 - g_0) = \beta (1 + r_1) u'(y_1 - g_1)$$
$$h'(m_0) = \frac{i_0}{1 + i_0} u'(y_0 - g_0)$$
$$h'(m_1) = u'(y_1 - g_1)$$

Cagan (1956)

- Hyperinflations: real variables r, y exogenous
- Log money $\hat{m}$ demand

$$\hat{m}_t + \eta i_t = p_t$$

- Adaptive expectations

$$\pi^e_{t+1} = p_t - p_{t-1}$$

- Solution:

$$p_t = \frac{\eta}{\eta - 1} p_{t-1} - \frac{m_t}{\eta - 1}$$

$\eta > 1$?

Sargent and Wallace (1981)

- Real debt and currency

$$P_t b_{t-1} = P_t s_t + \Delta M_t$$

- Passive monetary policy prevents default
- Constant V and y: $m_{-1} = m_0 = m_1$

$$b_0 = \left(s_0 + \frac{\pi_0}{1+\pi_0} m_{-1} \right) + q_0 \left(s_1 + \frac{\pi_1}{1+\pi_1} m_0 \right).$$

- Monetary shock $M_0' < M_0$:

$$P_0' < P_0 \qquad b_0' > b_0 \qquad M_1' > M_1 \qquad P_1' > P_1$$

References I

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