

The Foolproof Way of Escaping from a Liquidity Trap:

Is It Really, and Can It Help Japan?

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- Intro
 - The zero bound, liquidity traps, Japan
- The foolproof way
 - Price-level target path
 - Depreciation and temporary exchange-rate peg
- Alternative proposals
- Is it really foolproof?
 - Technical problems
 - Political problems (Japan)

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The zero bound, liquidity traps and Japan

- The zero bound, $i_t \geq 0$
 - Desired reduction in interest rate prevented
- Liquidity trap, $i_t = 0$
 - Liquidity saturation

$$m_t - p_t \geq g(0, y_t)$$

(m_t (log) money supply, $g(i_t, y_t)$ (log) real money demand)

- Money and T-bills (close to) perfect substitutes
- Japan
 - A lost decade
 - Continued stagnation, deflation

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The foolproof way of escaping from a liquidity trap

(Svensson 2001)

1. Price-level target path
 - Best nominal anchor
 - Undo price gap
 - Provides exit strategy
2. Depreciation and temporary exchange-rate peg
 - Jump-start economy: Increase output, price-level
 - Real depreciation
 - Lower real interest rate
 - Induce inflation expectations

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The foolproof way (of escaping from a liquidity trap)

1. Announce an upward-sloping price-level target path $\{\hat{p}_t\}_{t=t_0}^{\infty}$ for the (log) domestic price level.

$$\hat{p}_t = \hat{p}_{t_0} + \hat{\pi}(t - t_0), \quad t \geq t_0 \quad (1)$$

Current price-level target exceeds current price level
("price gap" to undo)

$$\hat{p}_{t_0} > p_{t_0} \quad (2)$$

Small positive long-run inflation target (1-2%/yr)

$$\hat{\pi} > 0$$

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- 2a. Announce devaluation and temporary peg

$$s_t = \bar{s}_t, \quad t \geq t_0 \quad (3)$$

Exchange-rate target (crawling)

$$\bar{s}_t \equiv \bar{s}_{t_0} + (\hat{\pi} - \pi^*)(t - t_0), \quad t \geq t_0 \quad (4)$$

Choose initial devaluation to achieve initial real depreciation relative to steady state

$$q_{t_0} \equiv p_{t_0}^* + \bar{s}_{t_0} - p_{t_0} > q \quad (5)$$

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- 2b. Announce that, when price-level target path has been reached, the peg will be abandoned, in favor of flexible price-level targeting (FPT) with loss function

$$\begin{aligned} & E_t \sum_{\tau=0}^{\infty} \delta^\tau L_{t+\tau} \\ L_t &= \frac{1}{2} [(p_t - \hat{p}_t)^2 + \lambda x_t^2] \end{aligned} \quad (6)$$

($x_t \equiv y_t - y_t^*$ output gap)

or flexible inflation-targeting (FIT)

$$L_t = \frac{1}{2} [(\pi_t - \hat{\pi})^2 + \lambda x_t^2] \quad (7)$$

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3. Then, just do it.

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Why would this work?

- Devaluation and peg technically feasible
 - Excess demand for domestic currency
- Once peg demonstrated, it will be credible

$$s_{t+1|t} = \bar{s}_{t+1}$$

Uncovered interest-rate parity

$$i_t = i_t^* + s_{t+1|t} - s_t + \varphi_t \quad (8)$$

Nominal interest rate increases

$$i_t = i_t^* + \hat{\pi} - \pi^* + \varphi_t > 0$$

- Already escaped from liquidity trap
- Tighter monetary policy?

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- Real UIP

$$r_t = r_t^* + q_{t+1|t} - q_t + \varphi_t \quad (9)$$

$$(r_t = i_t - \pi_{t+1|t}, r_t^* = i_t^* - \pi_{t+1|t}^*)$$

Steady state

$$r = r^* + \varphi$$

Solve (9) forward

$$\rho_t = \rho_t^* + q - q_t + \Phi_t \quad (10)$$

$$\rho_t \equiv \sum_{\tau=0}^{\infty} (r_{t+\tau|t} - r) \approx T(r_t^T - r), \quad \Phi_t = \sum_{\tau=0}^{\infty} (\varphi_{t+\tau|t} - \varphi)$$

$$q_{t_0} \uparrow \Rightarrow \rho_{t_0} \downarrow$$

Real depreciation \Leftrightarrow Reduction in long real interest rate

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- **Jump-starts economy**

- Real depreciation
- Reduction in long real interest rate

\Rightarrow **Increased aggregate demand and output**

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- Inflation expectations

Initial real depreciation below steady state

\Rightarrow

Expected (long-run) real appreciation

Exchange rate-peg

$$(\pi_{t+1} - \hat{\pi}) - (\pi_{t+1}^* - \pi^*) = -(q_{t+1} - q_t)$$

(Assume $\pi_{t+1}^* \approx \pi^*$)

Expected real appreciation \Rightarrow Expected inflation $> \hat{\pi}$

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- **Inflation** $> \hat{\pi}$

- Increased costs (real depreciation)
- Increased output (gap)
- Increased inflation expectations
- Inflation $> \hat{\pi} \Rightarrow$ Real appreciation
- Price level approaches price-level target path from below
- When price-level target path reached, abandon exchange-rate peg for FPT or FIT

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Role of price-level target and exchange rate peg

- Price-level target path
 - Nominal anchor, benchmark
 - Price gap to undo
 - Exit strategy for exchange-rate peg
- Devaluation and temporary exchange-rate peg
 - Technically feasible
 - Provides benchmark
 - Jump-starts economy: Increases output
 - Creates inflation and inflation expectations

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Comparison with other proposals

- Krugman: Announce inflation target, future monetary expansion
 - Why credible?
 - Price-level target path better anchor than inflation target
 - * Long-run inflation expectations independent of timing
 - * Price gap to undo
 - Devaluation and exchange-rate peg demonstrates commitment
 - * Do, not just say
 - * Induces expectations of real appreciation and inflation

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- Meltzer, McCallum, Bernanke: FX interventions/open-market operations to depreciate currency
 - Temporary peg more structure, benchmark
 - Portfolio-balance effects (endogenous risk premia)
 - McCallum reaction function

$$\tilde{s}_t = s_{t-1} + \nu_0 - \nu_1(\pi_{t,t-1} - \pi^*) - \nu_2(x_{t,t-1})$$

- * Time-varying exchange-rate target/instrument \tilde{s}_t :
 - Commitment to buy/sell unlimited amounts of FX at rate \tilde{s}_t
 - * More complex commitment and benchmark, less verifiable
 - * Parameter values?
 - * Interest-rate setting?
 - * Exit strategy?

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- McKinnon: Permanent bilateral peg
 - Would escape liquidity trap by $i_t = i_t^*$
 - * No real depreciation to jump-start economy
 - * No price gap to undo
 - * Sustainable?
 - * Optimal?
 - Temporary peg, exit strategy
 - Unilateral

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- Quantitative easing (Meltzer, Nakahara, current)
 - Money and T-bills (close to) perfect substitutes
 - Volumes, targets?
 - Exit strategy?

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Is it really foolproof?

Technical problems

- Steady-state real exchange rate
- UIP, FX risk premia
- Sticky deflation
- Price-level target path credible?

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Political problems (Japan)

- Reactions from BOJ (summer 2000)
 - “Since one cannot be absolutely sure, that any given policy action or change in the monetary policy regime will succeed in getting the economy out of the liquidity trap, it is safer not to try.”
 - * Prudent policy: Try a number of suggested remedies (as long as not inconsistent), some may work
 - “Foolproof way might be useful if needed, but *not* needed now. Problems are over!”
 - “Direct proposal to MOF and US Treasury.”
 - Myopic bureaucratic interests and technical details before national welfare
 - Lack of “Rooseveltian resolve” (Bernanke)

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- BOJ and MOF cooperation
 - MOF in charge of exchange-rate policy
 - Shift burden from fiscal policy to monetary policy
- Beggar thy neighbor? Regional and US reactions?
 - Easier 1–2 years ago
 - Lower long-run real interest rate requires real depreciation
 - Current-account effects of real depreciation ambiguous
 - Region, U.S. and world gain in long run
- Other policy changes/reforms needed
 - Financial-sector clean-up (Swedish way)

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Summary

- There is a foolproof way
- It can help Japan (but is not enough alone)
- Any political problems can be solved
- Show Rooseveltian resolve
- “The only thing we have to fear is fear itself... which paralyzes needed efforts to convert retreat into advance.”

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• Appendix 1. Details on establishing exchange-rate peg

1. Before the peg, $t \leq t_0-$

$$i_{t_0-} = 0$$

$$s_{t_0+1|t_0-} - s_{t_0-} = i_{t_0-} - i_{t_0}^* - \varphi_{t_0} = -i_{t_0}^* - \varphi_{t_0} < 0$$

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2. Initial lack of credibility of the peg, $t = t_0$

$$s_{t_0} = \bar{s}_{t_0} > s_{t_0-}$$

$$s_{t_0+1|t_0} = s_{t_0+1|t_0-}$$

$$i_{t_0} = 0$$

$$s_{t_0+1|t_0} - \bar{s}_{t_0} + i_{t_0}^* < -\varphi_{t_0}$$

- Expected (one-period domestic-currency) return on foreign bonds less than return on domestic bonds
- Excess demand for domestic currency
- CB sells domestic currency at rate \bar{s}_{t_0} , gains FX reserves
- Arbitrage ensures $s_{t_0} = \bar{s}_{t_0}$

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3. Credible peg, zero interest rate

$$i_{t_0} = 0$$

$$s_{t_0+1|t} = \bar{s}_{t_0+1}$$

$$s_{t_0+1|t_0} - \bar{s}_{t_0} + i_{t_0}^* = \hat{\pi} - \pi^* + i_{t_0}^* > -\varphi_{t_0}$$

- Expected (one-period domestic-currency) return on foreign bonds *greater* than return on domestic bonds
- Excess *supply* of domestic currency
- CB *buys* domestic currency at rate \bar{s}_{t_0} , *loses* FX reserves

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4. Credible peg, equilibrium interest rate

$$i_{t_0+} = \hat{\pi} - \pi^* + i_{t_0}^* + \varphi_{t_0} > 0$$

- FX market in equilibrium, no FX interventions
- Reduction in money demand/supply

$$m_{t_0+} - p_{t_0} = g(i_{t_0+}, y_{t_0}) < m_{t_0-} - p_{t_0}$$

- Composition domestic credit/FX reserves subject to choice

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• Appendix 2. Transmission mechanism in open economy

• Aggregate supply (Phillips curve)

$$\left. \begin{array}{l} \text{Inflation expectations } \uparrow \\ \text{Output gap } \uparrow \\ \text{Real exchange rate } \uparrow \end{array} \right\} \Rightarrow \text{Domestic inflation } \uparrow$$

• Aggregate demand

$$\left. \begin{array}{l} \text{Long real interest rate } \downarrow \\ \text{Real exchange rate } \uparrow \end{array} \right\} \Rightarrow \text{Output gap } \uparrow$$

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• Expectations hypothesis

$$\left. \begin{array}{l} \text{Expected future short nominal interest rates } \downarrow \\ \text{Expected future inflation } \uparrow \end{array} \right\} \Rightarrow \text{Long real rate } \downarrow$$

• Real uncovered interest parity

$$\text{Expected real appreciation } \uparrow \Rightarrow \text{Real interest rate } \downarrow$$

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