Discussion of *Safety Traps*

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Conclusion: Given (a) **faster growth** of **safe asset-consumer** vs. **safe asset-producer economies**, (b) **aging**, (c) **absent financial innovations,** *shortage of safe assets will*: (1) **lower safe rates**, (2) **raise spreads**, (3) **strain financial system** and (4) **weaken monetary policy**.

- **Why?** Given (a), (b) and (c) likely ZLB (safety trap mode)
- Mechanics and policies

Discussion Approach

- Sketch: another Safety Trap model inspired by Caballero Farhi
- *Discussion:* thoughts as a modeler
  - Not shared concerns: virtue of C-F
  - Shared concerns: challenges for C-F

Model

- Young (entrepreneurs) and Old (retired)
  - *log*
  - α and $1 - \alpha$
- One tree
  - constant dividend δ
- **Markets**
  - Young buy tree borrow risk-free
  - Old save risk-free

The Old

$$\rho V(W,t) = \max_{\{c,b\}} \log(c) + V_w \cdot dW + V_t$$

where:

$$dW = \left[r_t^b b - c \right] dt \text{ and } b = W$$

The Young

- HJB but subject to:

$$dW = \left[\underbrace{\frac{(\delta + dq_t^x / dt)}{q_t^x}}_{r_t^x} q_t^x x + r_t^b b - c \right] dt$$

$$b + q_t^x x = W$$

Leverage constraint:

$$q_t^x x \leq L\left(r_t^b\right) W$$

Leverage

- $L(r)$ function
  - $L(\rho) = \mathbf{L}_\rho$ and $L(0) = \mathbf{L}_o$
  - L decreasing in rate

Solutions

- $c = \rho W$
- Aggregate Wealth of old:

$$dW^o = \left[r_t^b - \rho \right] W^o dt$$

- Wealth of young:

$$dW^y = \left[r_t^y - \rho \right] W^y dt$$

- Levered returns:

$$r_t^y = r_t^b + \max \left\{ \left(r_t^x - r_t^b \right) L \left(r_t^b \right), 0 \right\}$$

Steady States

- Steady State ($dW = 0$):

$$r_t^y = r_t^x = r_t^b = \rho$$

and

$$q^x = \frac{\delta}{\rho}.$$

- Safe-Asset Supply condition (wealth):

$$W^y \geq \frac{1}{(\mathbf{L}_\rho - 1)} (1 - \alpha) \frac{\delta}{\rho}.$$

Transitions away from ZLB

- Goods-market:

$$\delta = \rho \left[W^y + W^o \right].$$

- Asset-market clearing:

$$q_t^x = W^y + W^o \rightarrow q_t^x = \frac{\delta}{\rho}$$

- **Safe Rate**

$$r_t^b = L^{-1} \left(W^y / q_t^x \right).$$

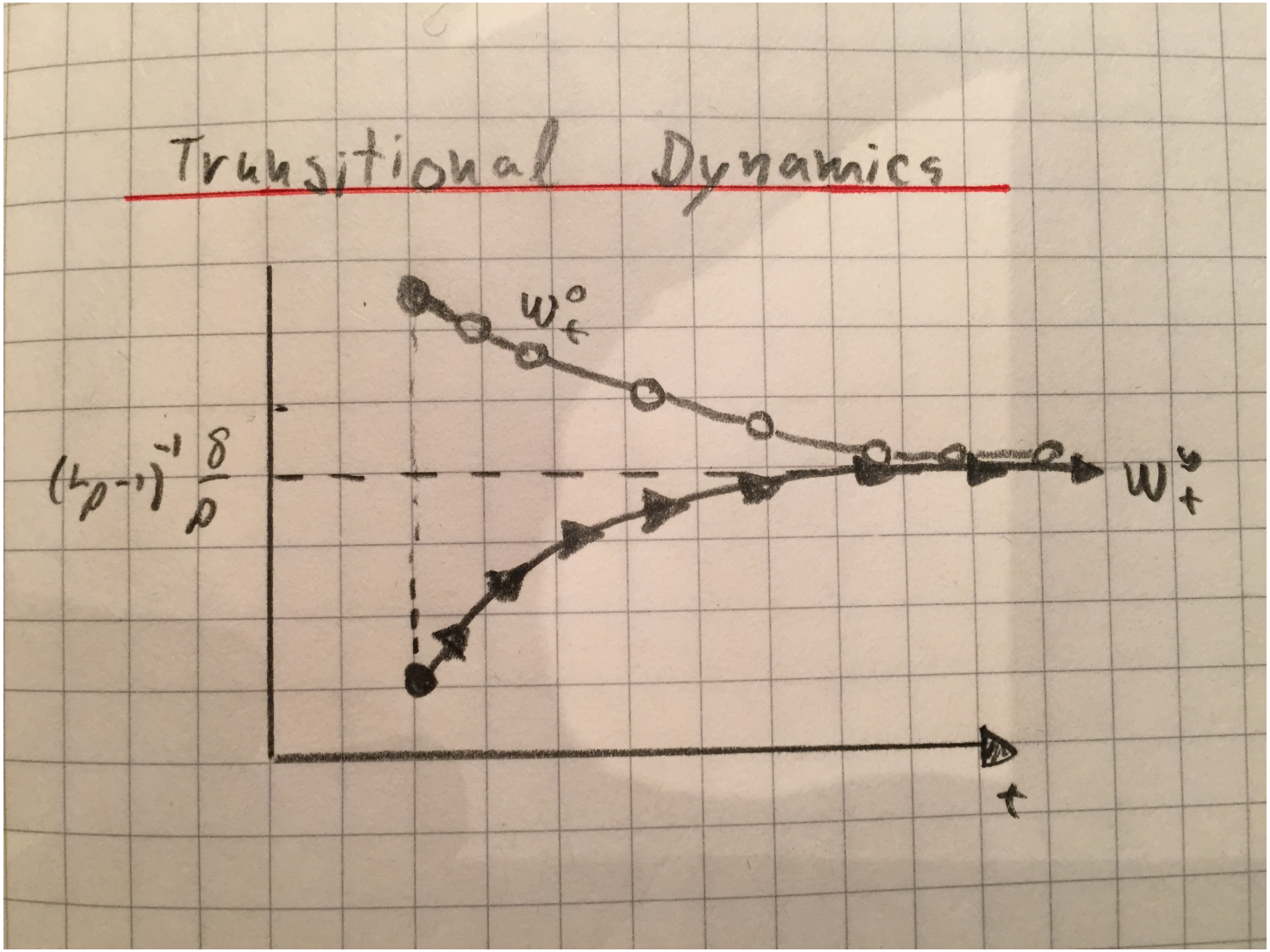
- **Drifts**

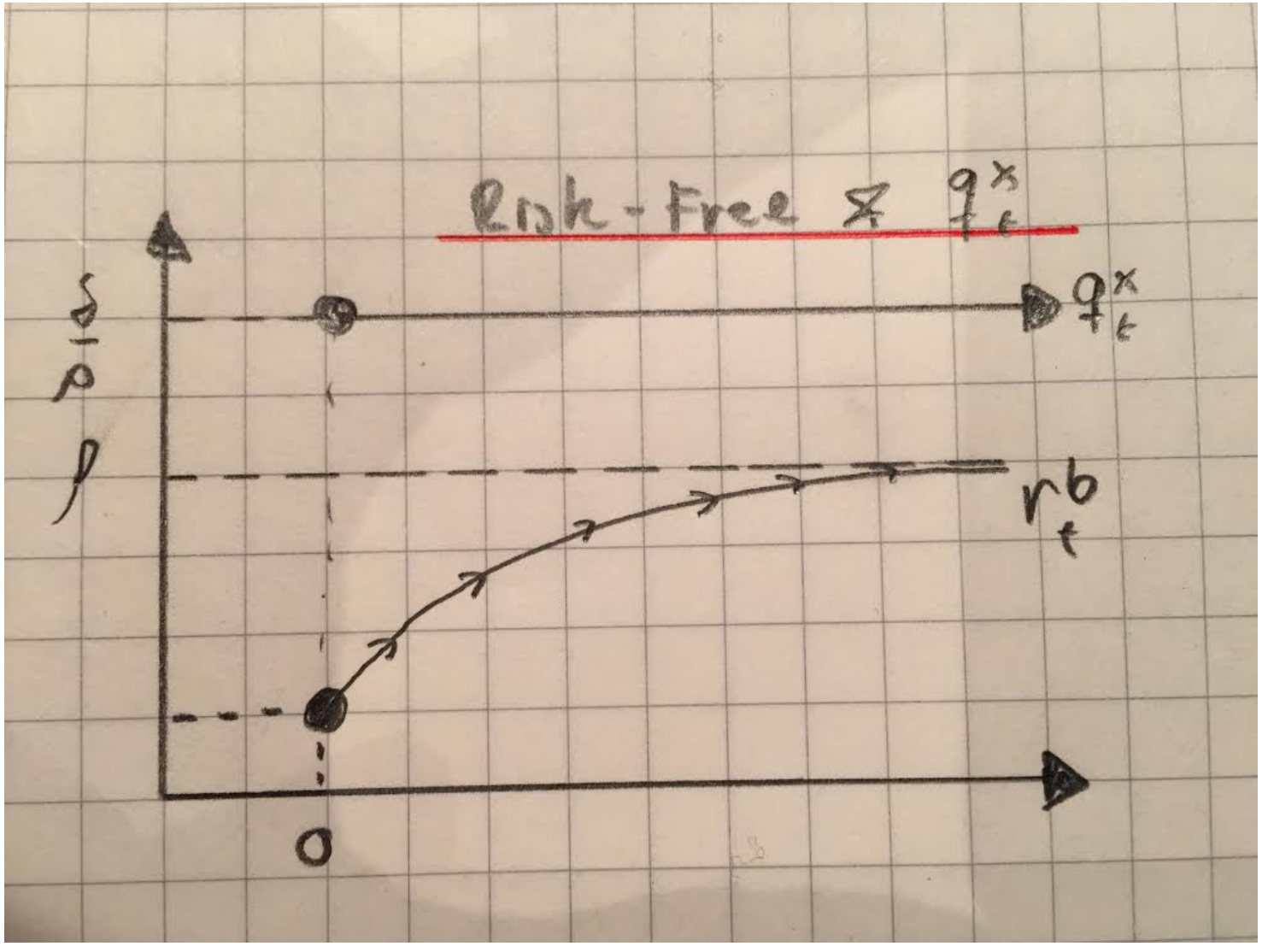
$$\mu^y = \left(\rho - r_t^b \right) \left(L \left(r_t^b \right) - 1 \right) W^y$$

$$\mu^o = \left(r_t^b - \rho \right) W^o$$

NOTE: $r_t^b \leq \rho$

Transitional Dynamics




Risk-Free q_t^x
$\frac{\$}{\rho}$
q_t^x
r_t^b
0

Hitting ZLB

- ZLB *not* binding: $(\mathbf{L}_o - \mathbf{1}) W_0^y \geq \frac{\delta}{\rho}$
  - What if initial shock: $W_0^y <$ than that value?
- **Adjustment Mechanism:** employment ξ_t

$$\delta \xi_t = \rho \left[W_t^y + W_t^o \right].$$

- Solutions for Asset-Price

$$q_t^x = \frac{\delta}{\rho} \xi_t$$

- Drifts

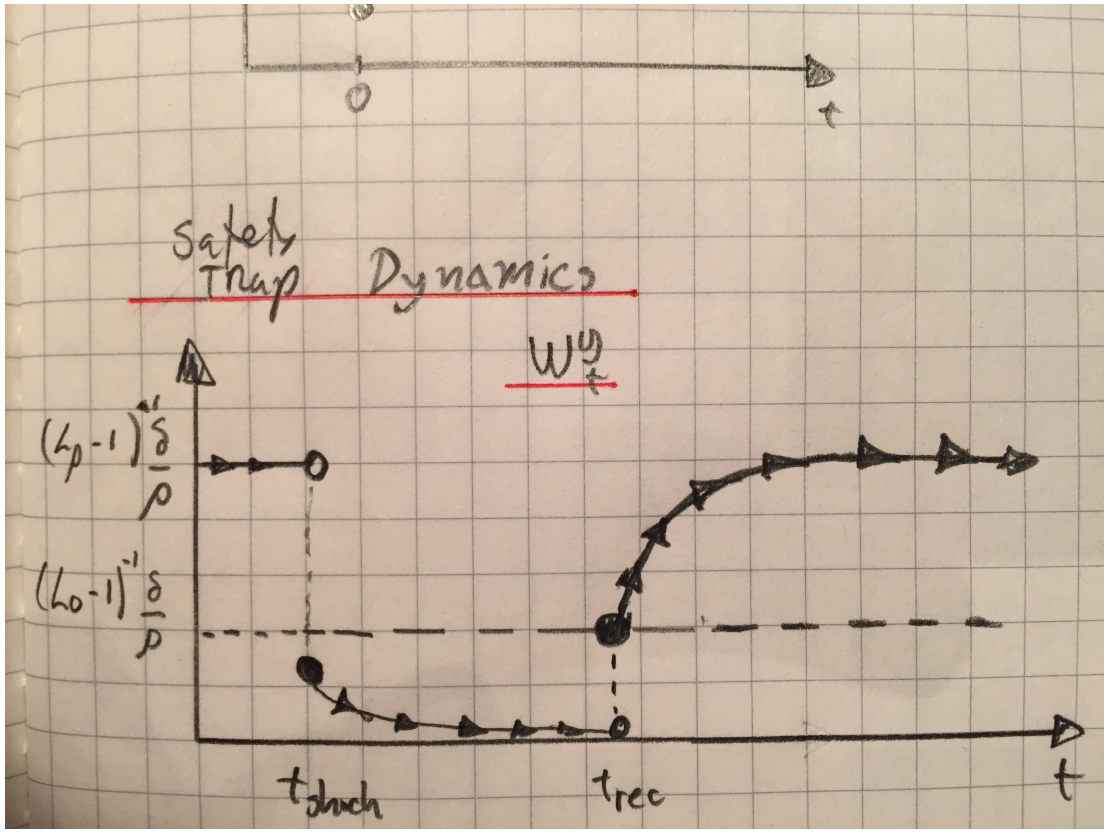
$$\mu^y = -\rho W^y \text{ and } \mu^o = -\rho W^o$$

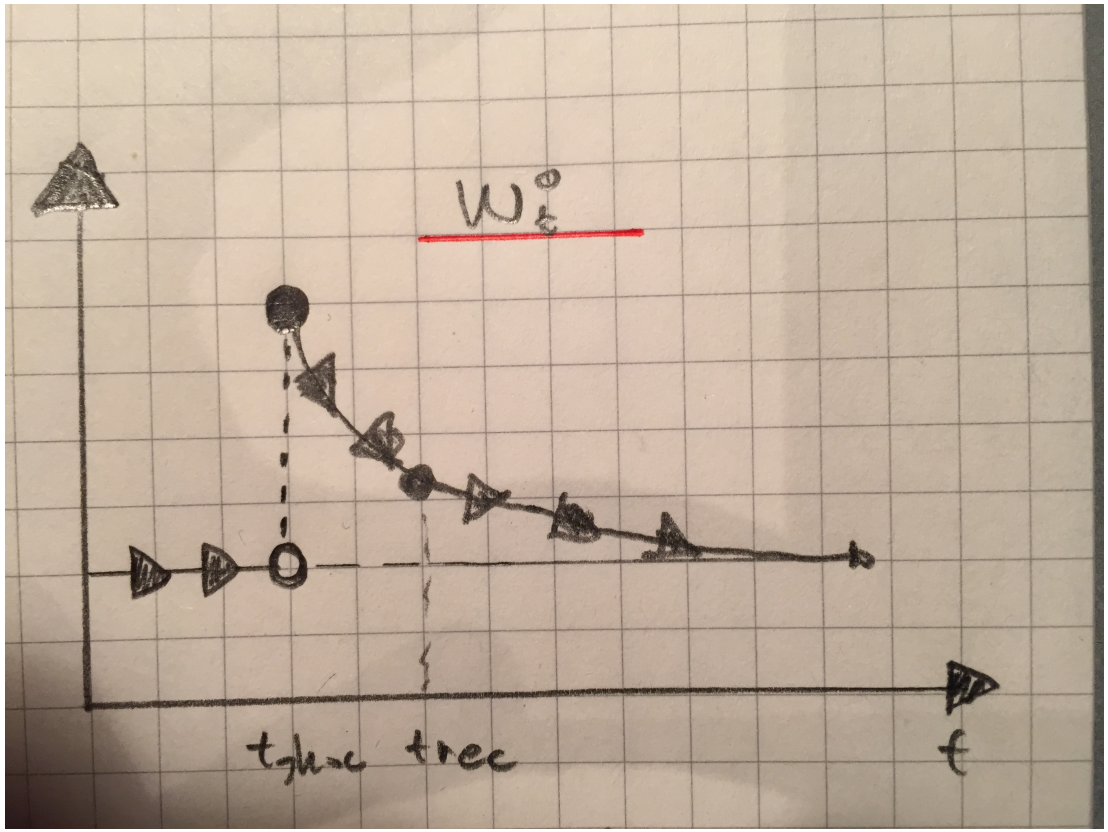
- Crisis escalation:

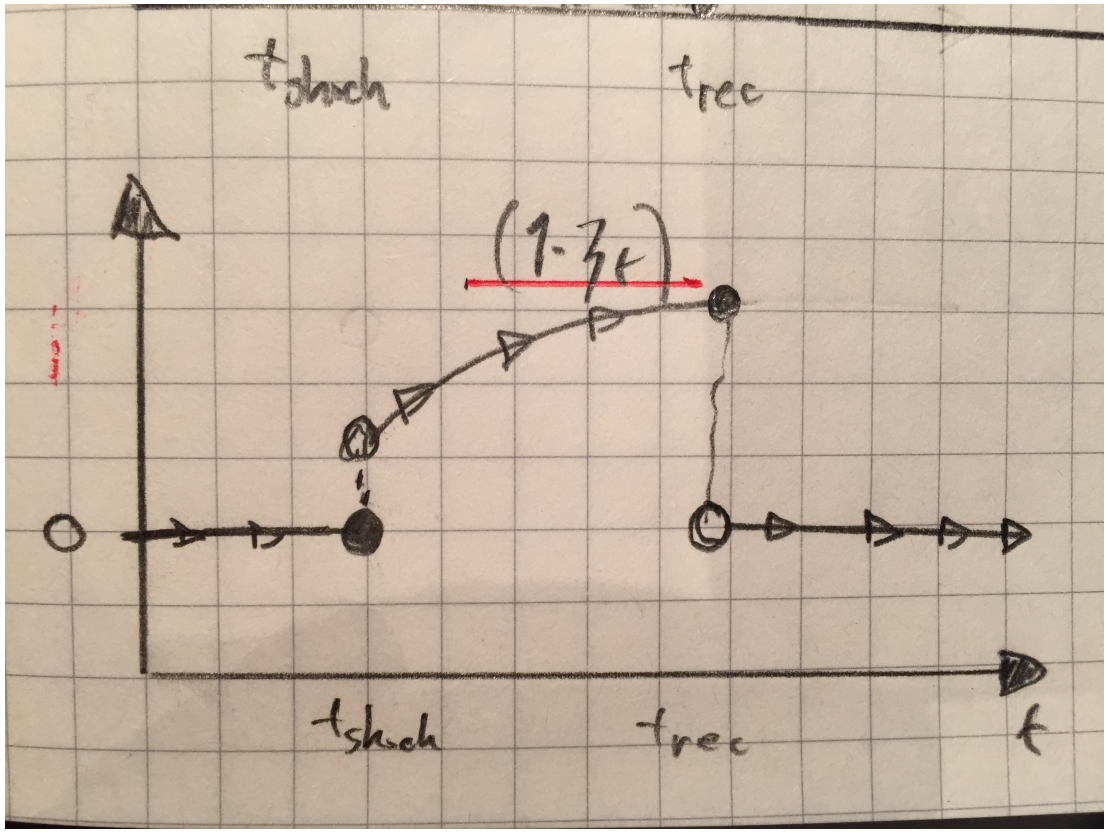
$$\xi_0 = \text{constant} \cdot W_0^y \text{ and } \mu^\xi = -\rho \xi.$$

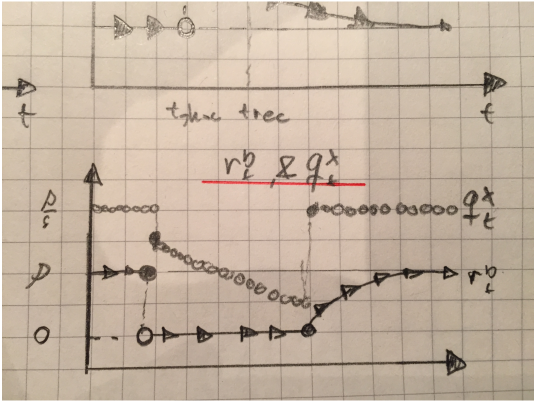
Can Depression End?

- Yes. When $W_0^o \leq (\mathbf{L}_o - \mathbf{1})\delta/\rho$
- Back to good transition $r_t^b = 0$


0
t
Safety Trap Dynamics
W_t^{ψ}
$(\lambda_p - 1)^{-1} \frac{\delta}{\rho}$
$(\lambda_0 - 1)^{-1} \frac{\delta}{\rho}$
$t_{discharge}$
t_{rec}
t


w_t^0
t_{gluc}
t_{rec}
t


t_{shoch}
t_{rec}
$(1.7t)$
t_{shoch}
t_{rec}
t


t
t
r^b_t & q^x_t
q^x_t
p
r^b_t
0

Inefficiency

- $\zeta_t < 1$ caused by Safe Assets Scarcity
  - Scarcity of Safe Assets $\Leftrightarrow$ Too much old wealth

Policy

- Class 1: target distribution of wealth
  - Taxation or Helicopter Drops
  - Make old poorer
  - Efficiency vs. Fairness
- Class 2: Creation of Safe Assets
  - Tackle problem directly
  - Gov going around leverage constraint
- Safety vs. Liquidity Trap
  - No forward guidance
  - But, coordination?

Zero-Lower Bound

- Where does it come from?
  - Why not model money away from limit
  - Redistribution
- Why goods market adjustment?
  - Why not default?
  - Constraint on consumption?