

Reconciling Hayek's and Keynes' views of recessions

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Boston, July 2014

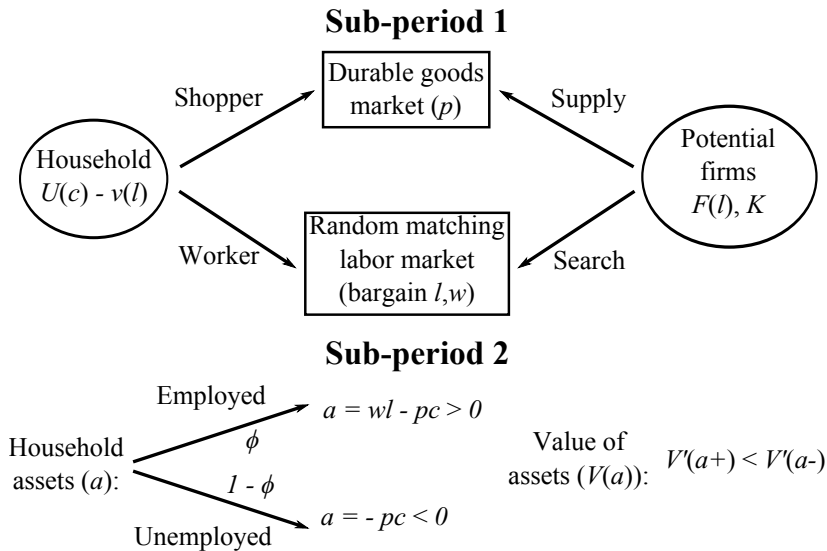
- Two views of recessions that are often presented as polar opposites.
- ① Liquidation view, often associated with Hayek:
 - Over-accumulation → liquidation phase → recession (necessary evil).
 - Stimulating demand ill-advised; only postpones the problem.
- ② Aggregate demand view, associated with Keynes:
 - Recessions inefficient: gains-from-trade not properly exploited.
 - Desirable to stimulate consumption/investment, as aggregate demand deficient.

Introduction

- We find both narratives compelling!
- Motivates us to look for a framework in which we can make sense of both views, and examine policy tradeoffs within.
- What we do:
 - ① Re-examine liquidation view in environment where trades not all coordinated through centralized market.
 - ② Ask: How does economy adjust when inheriting excess capital (houses, durable goods, productive capital)? Can agents be worse off? How should policy respond: laissez faire, or stimulus
 - Mainly take over-accumulation as given.

- Many precursors in literature on strategic complementarities and aggregate demand externalities. Examples:
 - Older literature: Diamond (1982), Cooper and John (1988).
 - Newer literature: Guerrieri and Lorenzoni (2009), Angeletos and La'O (2009), and especially Heathcote and Perri (2013).
- Model also builds on elements in the money-search literature
 - Uses multi-agent household framework as in Lucas (1990) and Shi (1998)
 - Use alternating decentralized-centralized market setting as in Lagos-Wright (2005) and Rocheteau-Wright (2005)
- Precautionary saving related unemployment risk plays a central role
 - Empirical support: in Carroll(1992), Carroll and Dunn (1997), Alan, Crossley and Low (2012)
 - Models: Heathcote and Perri (2012), Ravn and Sterk (2013)

Basic two period model



Static Model: Setup

- Preferences 1st sub-period: $U(c) - v(l)$, $c = X + e$
- Preferences 2nd sub-period: $V(a) = a$ if $a > 0$, $V(a) = (1 + \tau)a$ if $a < 0$ (a is assets)
- Technology
 - Firms: $F(l)$, l hours worked
 - Matching: $\text{Min}[N, L]$, N number of firms, L number of workers
 - Cost to set up: K
- Basic timing: one period, two sub-periods.

Equilibrium conditions

- Shopper's f.o.c.:

$$U'(c) = p \left[\frac{\min\{N, L\}}{L} V'(wl - p(c - X)) + \left(1 - \frac{\min\{N, L\}}{L} \right) V'(-p(c - X)) \right]$$

- Implications of efficient bargaining process:

$$\nu'(l) = V'(wl - p(c - X))w$$

$$pF'(l) = w$$

- Zero-profit condition for firms:

$$\min\{N, L\}[pF(l) - wl] = pNK$$

- Clothes market-clearing condition:

$$\min\{N, L\}F(l) = L(c - X) + NK$$

Existence and uniqueness of equilibrium

Proposition

There exists a $\bar{\tau} > 0$ such that:

- (a) if $\tau < \bar{\tau}$, then there exists a unique equilibrium for any value of X ;
- (b) if $\tau > \bar{\tau}$, then there exists a range of X for which there are multiple equilibria.

- Parameter τ governs strength of precautionary savings motive and therefore degree of strategic complementarity.
- As is often the case, if strategic complementarity is too strong multiple equilibria can arise.
- Focus on case where $\tau < \bar{\tau}$.

Three regimes

Proposition

There exists X^* and X^{**} , with $X^* < X^{**}$, such that:

- (a) if $X < X^*$, then $\phi = 1$ (**full employment**)
- (b) if $X^* < X < X^{**}$, then $0 < \phi < 1$ (**partial unemployment**)
- (c) if $X > X^{**}$, then $\phi = 0$ (**zero employment**)

- Endowment low \rightarrow demand high \rightarrow full employment.
- Endowment high \rightarrow demand low \rightarrow unemployment.
- Endowment very high \rightarrow consume endowment \rightarrow no employment.

- Conditions now:

$$U'(c) = \frac{\nu'(l)}{F'(l)}$$

$$c = F'(l)l + X$$

$$\frac{L}{N}[F(l) - F'(l)l] = K$$

$$w = \frac{\nu'(l)}{v}$$

$$p = \frac{\nu'(l)}{vF'(l)}$$

- First equations solves for l , second for c , then N , last two yield w and p . Own consumption is a substitute for others.

- Conditions now:

$$U'(c) = \frac{\nu'(l)}{F'(l)} \left(1 + \tau - \tau \frac{N}{L} \right)$$

$$\frac{N}{L} = \frac{c - X}{F'(l)l}$$

$$[F(l) - F'(l)l] = K$$

$$w = \frac{\nu'(l)}{v}$$

$$p = \frac{\nu'(l)}{vF'(l)}$$

- Now third equation solves for l , the first two solve for c and N ; then last two yield w and p .

Labor wedge as function of X

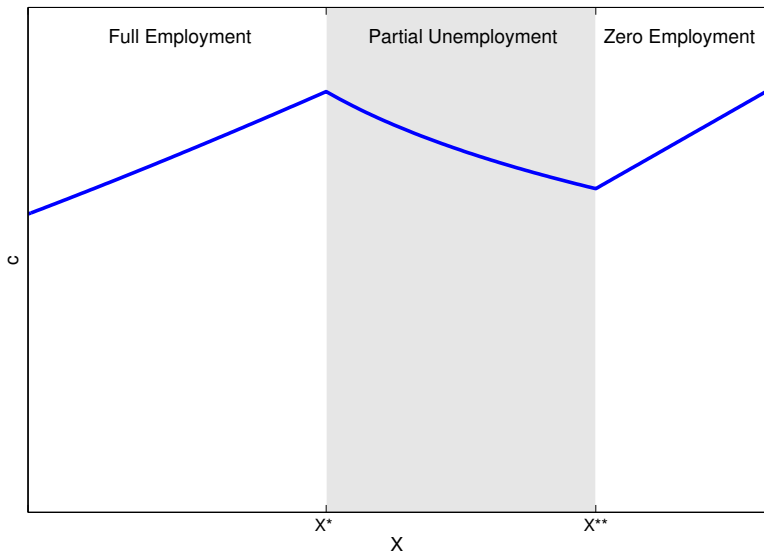


Proposition

Consumption is:

- (a) increasing in X if $X < X^*$ (**full employment**)
 - (b) decreasing in X if $X^* < X < X^{**}$ (**partial unemployment**)
 - (c) increasing in X if $X > X^{**}$ (**zero employment**)
- Similar result for welfare if average cost of work low relative to marginal cost

Consumption as function of X

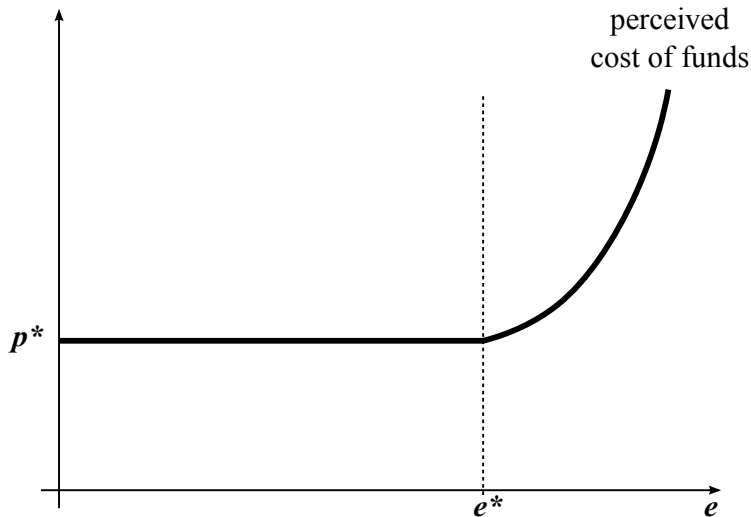


Why can consumption decrease with more X?

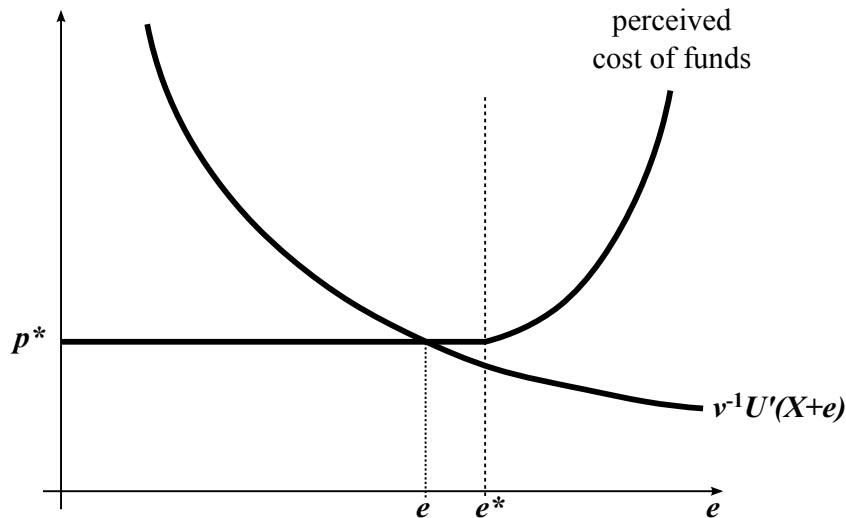
- $e^* \equiv F(l^*) - K$: net output per worker in unemployment regime.
- Key conditions:

$$\underbrace{\frac{U'(X + e_j)}{v}}_{\substack{\text{intertemporal MRS} \\ \text{if employed}}} = \underbrace{p \left[1 + \tau \left(1 - \min \left\{ \frac{e}{e^*}, 1 \right\} \right) \right]}_{\text{perceived cost of funds}}$$

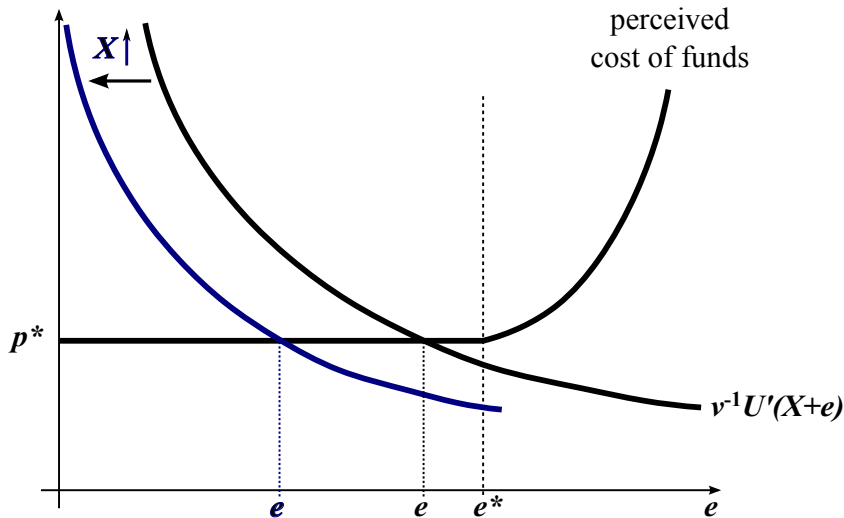
Baseline: no cost of debt ($\tau = 0$)



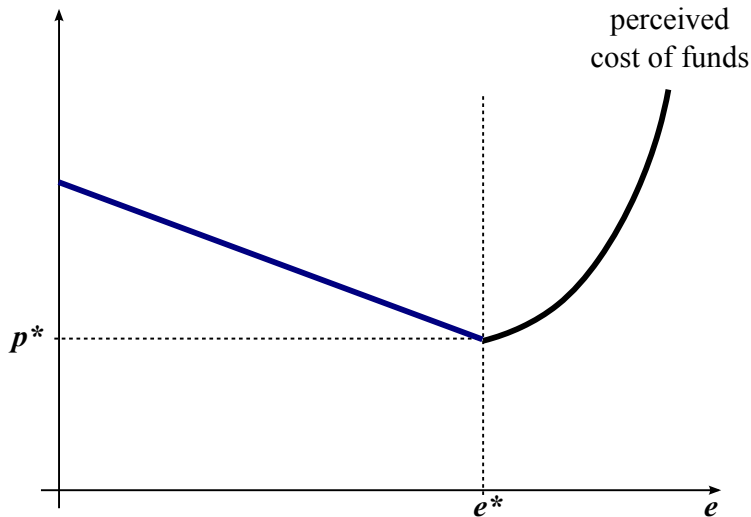
Baseline: no cost of debt ($\tau = 0$)



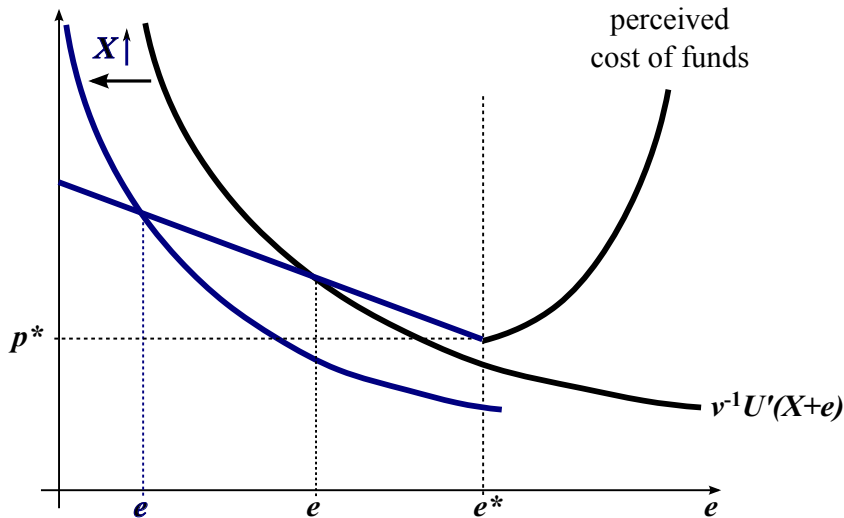
Baseline: no cost of debt ($\tau = 0$)



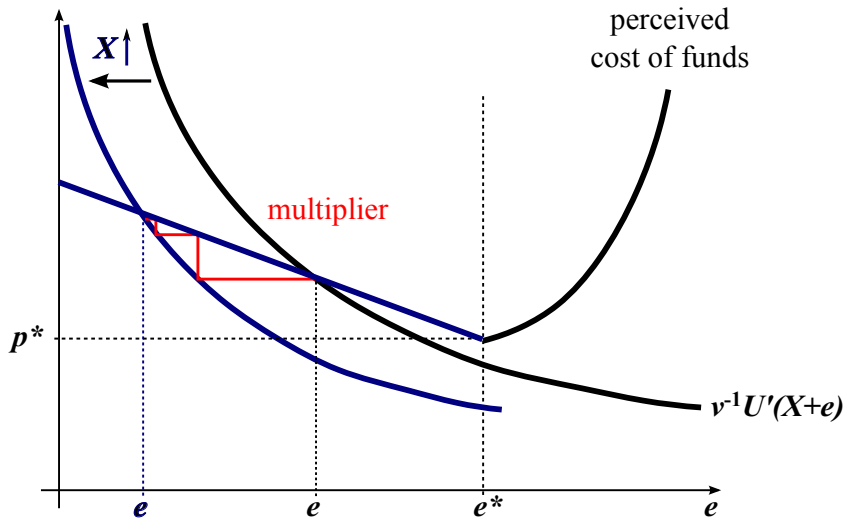
Baseline: costly debt ($\tau > 0$)



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Is there Deficient Demand?

Proposition

When the economy is in the unemployment regime ($X^* < X < X^{**}$), a coordinate increase in consumption/expenditures increases the expected utility of all households.

- Clear coordination problem.
- However, static framework does not allow to consider costs in terms of postponement

- Infinite sequence of periods, each with two sub-periods.
- Agents accumulate durables:

$$\begin{aligned}X_{t+1} &= (1 - \delta)X_t + \gamma e_t \\ &= (1 - \delta - \gamma)X_t + \gamma c_t\end{aligned}$$

- γ : fraction of new purchases that are durable (assume $< 1 - \delta$).
- Household's objective function:

$$\sum_{t=0}^{\infty} \beta^t \{U(c_t) + \phi_t [-\nu(l_t) + V(w_t l_t - p_t e_t)] + (1 - \phi_t)V(-p_t e_t)\}$$

- where ϕ is probability of finding a job.

Proposition

If δ is sufficiently small, steady state is unique and in the unemployment regime.

- Low $\delta \Leftrightarrow$ high durability.
- Focus on this case.

- Does $dc_t/dX_t < 0$ result extend around unemployment steady state?

Proposition

If τ is sufficiently small then in the neighborhood of an unemployment steady state, $dc_t/dX_t < 0$ and X_t converges monotonically.

- Over-accumulation \rightarrow low consumption during transition: liquidation period.
- Welfare: depends on similar factors as in static case, e.g., low average dis-utility of work.

Policy trade-offs

- Suppose economy has inherited high X_0 .
 - No intervention \rightarrow liquidation phase w/ low consumption.
- First-best policy: remove frictions/provide insurance, but may not be possible.

Policy trade-offs

- Explore alternative policy: Stimulate expenditures for one period, knowing this postpones problem.
 - Higher c_0 .
 - Delay of liquidation process: higher X_t , lower c_t , $t \geq 1$.
 - Could be accomplished in different ways (e.g., consumption subsidy financed by tax on employed).
- Break question into two parts.
 - 1 Would temporary stimulus increase welfare if begin from steady state ($X_0 = X_{SS}$)?
 - 2 Would effect on welfare be greater if initially in liquidation state ($X_0 > X_{SS}$)?

Proposition

If the system exhibits local convergence and $X_0 = X_{SS}$ then a small temporary stimulus will enhance welfare.

- From envelope theorem, only need to consider changes in welfare through changes in ϕ , which are proportional to e
 - Thus, change in welfare proportional to change in $\sum \beta^t e_t$.
 - Temporary stimulus $\rightarrow \sum \beta^t e_t \uparrow$.

Proposition

If $X_0 > X_{SS}$ and U''' is not too big then a small temporary stimulus will enhance welfare, but by no more than when $X_0 = X_{SS}$.

- Even if wedge is bigger, no larger gains.
- Again, only need to consider welfare effect of changes in ϕ (envelope theorem).

- Presented a simple environment where liquidations can create deficient aggregate.
- Mechanisms: precautionary savings associated with unemployment risk gives rise to multiplier process for “demand” shocks.
- Mechanism can explain why periods of liquidations often appear very painful and inefficient.
 - Links Hayekian and Keynesian views of recessions.
- Model helps discuss the intertemporal trade-off of stimulative policies.