Reconciling Hayek’s and Keynes’ views of recessions

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0. Introduction
Recessions

- Recessions often come after periods of rapid accumulation of assets (productive capital, houses, durable goods)
- Two opposite views of economic policy in those recessions
  - Hayek
  - Keynes
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The Liquidationist View (Friedrich Hayek)

- Recessions are needed to cleanse the economy.
- Gvt spendings, aggregate demand management only delays necessary adjustment.
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- Recessions are periods of insufficient demand
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- Show that the two views are not mutually exclusive
- “Over-” (“mal-”) accumulation of physical assets creates the need \textit{liquidation} $\Rightarrow$ recession
- \textit{Liquidation} can produce periods where the economy functions particularly inefficiently.
- Many socially desirable trades between individuals may remain unexploited.
- In this sense, a need for liquidation can cause recessions characterized by deficient aggregate demand.
- Some stimulative policies may remain desirable even if they postpone a recovery.
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Main Ingredients

- Environment with decentralized markets & flexible prices.
- Two imperfections:
  - Labor market matching friction in the spirit of Diamond-Mortensen-Pissarides ⇒ unemployment risk
  - Adverse selection in the insurance market: unemployment risk is not insurable.
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Main Mechanism

▶ If the economy finds itself with an excess of accumulated goods (houses, durables and/or capital goods):
  × Consumers and firms will spend less because they already have a lot, (Hayek view, this is the efficient thing to do)
  × Firms will hire less as demand is low
  × Consumers will consume less by fear of being unemployed,
  × Spendings will therefore be low (Keynes view, a (negative) multiplier shows up)
  × etc...
▶ There will be socially excessive precautionary savings
▶ Government spending can boost mutually beneficial trades ...
▶ ... but it will postpone the recovery by slowing down the liquidation process (in the dynamic version of the model)
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References

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Roadmap

1. Static model setup
2. Equilibrium
3. Interesting Properties of the Static Equilibrium
4. Extensions / Dynamics / Policy Trade-offs
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1. Static model setup

Figure 1: Overview: timeline

subpanel 1

subpanel 2
1. Static model setup

Figure 2: Overview: Initial goods

\[ X \text{ given} \]
1. Static model setup

Figure 3: Overview: markets
1. Static model setup

Figure 4: Overview: markets
1. Static model setup

Figure 5: Overview: markets
1. Static model setup

Figure 6: Overview: firms
1. Static model setup

Figure 7: Overview: firms
1. Static model setup

Figure 8: Overview: households
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Figure 9: Overview: households
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Figure 10: Overview: households
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Figure 11: Overview: households
1. Static model setup

Checklist

- $X$: exogenous amount of good that is already in households hands
- Mass $L$ of households always looking for jobs
- Sub-period two is centralized, all the action is in sub-period 1
- Frictions on the labor market
- Unemployment risk that is not insured
- No coordination between firms, buyers and workers
- Buyers and workers credit/debit a bank account that they will clear in sub-period 2.
- Good 2 serves as the numéraire.
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Preferences

\[ U(X_j + e_j) - \nu(\ell_j) + V(-pe_j + I_j w]\ell_j). \]

- Initial endowment of \( X_j \) units of good 1.
- Continuation value \( V(a_j) \) given (in this talk)
- \( I_j = \begin{cases} 
1 & \text{if employed} \\
0 & \text{if unemployed} 
\end{cases} \)
1. Static model setup
Firms

- Vacancy posting cost $\Phi$.
- Decreasing-returns-to-scale production function $F(\ell)$.
- Net production of a firm hiring $\ell$ hours of labor from one worker is $F(\ell) - \Phi$. 
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Matching

- \( N = \) number firms who decide to search for workers.
- \( M(N, L) = \) number of matches (CRS).
- Upon a match, a Walrasian auctioneer equilibrates the demand and supply of labor among the two parties in the match:

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pF'(\ell) = w
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1. Static model setup
Household first sub-period decisions

- **Normalization:** \( L = 1 \)
- **Symmetry:** \( X_j = X \)
- **Worker problem:**

\[
\max_{\ell_j} -\nu(\ell_j) + V(-pe_j - I_j w \ell_j)
\]

- **Buyer problem:**

\[
\max_{c_j} U(c_j) + \mu V(w \ell_j - pe_j) + (1 - \mu) V(-pe_j)
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where \( \mu \equiv M(N, L)/L \) is the probability that a worker finds a job.
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Deriving the value function $V(a)$

- Not here...
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$a_1 < 0$
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\[ V(a) \]

$V'(a_1) < 0$

$a_1 < 0$

$a_2 > 0$
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$V'(a_1) < 0 \quad a_1 < 0$

$V'(a_2) > 0 \quad a_2 > 0$
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   Roadmap

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2. Equilibrium
3. Interesting Properties of the Static Equilibrium
4. Extensions / Dynamics / Policy Trade-offs
2. Equilibrium

- Second sub-period: accounts are balanced.
- First sub-period: markets clear and agents optimize.
2. Equilibrium

- Second sub-period: accounts are balanced.
- First sub-period: markets clear and agents optimize
2. Equilibrium
First sub-period

- The equilibrium is given by the following equations

\[
\frac{1}{p} U'(c) = \frac{M(N, L)}{L} V' (w \ell - p (c - X)) \\
+ \left[ 1 - \frac{M(N, L)}{L} \right] V' (-p (c - X))
\]

\[
\nu' (\ell) = V' (w \ell - p (c - X)) w
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\[
pF' (\ell) = w
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\frac{M(N, L)}{N} [pF(\ell) - w \ell] = p \Phi
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2. Equilibrium
A labor market wedge

\[
\frac{\nu'(\ell)}{U'(c)} \left\{ 1 + (1 - \mu) \left[ \frac{V'(-p(c - X))}{V'(w\ell - p(c - X))} - 1 \right] \right\} = F'(\ell)
\]

- The labor wedge is caused by precautionary savings and absent insurance market.
- The level of this wedge is influenced by \( X \).
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1+ labor wedge

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Roadmap

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3. Interesting Properties of the Static Equilibrium
Goal and parametric restrictions

- Our main goal now is to explore the effects of changes in $X$ on equilibrium outcomes.
- Why and when an increase in $X$ can actually lead to a reduction in consumption and/or welfare?
- Can liquidation periods be socially painful?
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  $\times \quad M(N, L) = \min\{N, L\}$
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Figure 14: The Value Function $V(a)$
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- $a_1 < 0$
- Slope: $(1 + \tau)\nu$
Figure 14: The Value Function $V(a)$

The value function $V(a)$ is defined as:

$$V(a) = \begin{cases} 
a_1 < 0 & \text{slope} = (1 + \tau)v \\
 a_2 > 0 & \text{slope} = v
\end{cases}$$
Figure 15: Proposition 1: Existence and Uniqueness
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Unique equilibrium

Multiple equilibria
Figure 16: Proposition 2: The three regimes
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Full employment
Figure 16: Proposition 2: The three regimes

- Full employment
- No employment

The diagram shows a range from 0 to X, with two points marked as X* and X**, indicating the transition between full employment and no employment.
Figure 16: Proposition 2: The three regimes

- Full employment
- Unemployment
- No employment
3. Interesting Properties of the Static Equilibrium Consumption as a function of $X$

- How does vary equilibrium consumption when $X$ increases?
  - In the full employment regime (which corresponds to no frictions):
    - Marginal utility of spendings decrease with $X ~\Rightarrow$ less production
    - But less than proportional to the increase in $X$
    - Overall, $c$ increases with $X$
  
  - In the no employment regime:
    - $c = X$
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Figure 17: Proposition 3, Consumption as function of $X$. 

![Graph showing consumption as a function of $X$ with critical points $X^*$ and $X^{**}$]
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Multiple equilibria

- We are ruling out cases with multiple equilibria in the analysis
- Meaning that $\tau$ is not too large (Proposition 1)
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3. Interesting Properties of the Static Equilibrium

Is there deficient demand in the unemployment regime?
Proposition 4 (Aggregate Demand)

- When the economy is in the unemployment regime ($X^* < X < X^{**}$),
- if all but one households coordinate to increase purchases of the first sub-period consumption good,
- then it is optimal for the last household to also increase its spendings.
- Furthermore, this increases the expected utility of all households.
3. Interesting Properties of the Static Equilibrium
Effects of changes in $X$ on welfare
3. Interesting Properties of the Static Equilibrium
Effects of changes in $X$ on welfare

Proposition 5 (Welfare)

- If the economy is the unemployment regime and if $\tau$ is large enough (close enough to $\bar{\tau}$),
- then an increase in $X$ leads to a fall in expected welfare.
3. Interesting Properties of the Static Equilibrium
Introducing government spending

- Add a government to the first sub-period.
- It buys goods, and it taxes employed individuals (lump-sum).
- We assume that the government runs a balanced budget.
- Two types of government purchases: wasteful, and non-wasteful:
  - Wasteful government purchases, denoted $G_w$, are not valued by households.
  - Non-wasteful purchases, denoted $G_n$, are perfect substitutes to private consumption.
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3. Interesting Properties of the Static Equilibrium
Introducing government spending (continued)

Proposition 6 (Fiscal Multipliers)

- An increase in non-wasteful government purchases has no effect on economic activity.
- An increase in wasteful government purchases leads to an increase in economic activity.
- If the economy is in the unemployment regime, wasteful government purchases are associated with a multiplier that is greater than one.
- If the economy is in the full-employment regime, wasteful government purchases are associated with a multiplier that is less than one.
3. Interesting Properties of the Static Equilibrium
Introducing government spending (continued)

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Introducing government spending \textit{(continued)}

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3. Interesting Properties of the Static Equilibrium
Introducing government spending (continued)

Proposition 7 (Fiscal policy and welfare)

- If the economy is in the unemployment regime
- if $X$ is in the range such that a fall in $X$ would increase welfare,
- then an increase in wasteful government purchases will increase welfare.
0. Introduction

Roadmap

1. Static model setup
2. Equilibrium
3. Interesting Properties of the Static Equilibrium
4. Extensions / Dynamics / Policy Trade-offs
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Relaxing functional-form assumptions

- Results are robust to:
  - Relaxing functional assumptions
  - Other ways of splitting the surplus
  - Introduction of productive capital
  - Addition of another good

- Simple characterization is not possible any more
- but main results hold.
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Dynamic Setup

- An infinite number of periods $t$,
- Each period consists of the two previous sub-periods
- The only financial trade is between sub-periods by assumption

$$X_{t+1} = (1 - \delta)X_t + \gamma e_t$$

$$U = \sum_{t=0}^{\infty} \beta^t \left( U(c_t) - \nu(l_t) + V(a_t) \right)$$
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4. Extensions / Dynamics / Policy Trade-offs

Policy Trade-off

- When $X$ is high, the economy will converge with the SS with inefficiently low demand on the way.
- Welfare today would be increased by stimulating demand today.
- But this would imply higher $X$ tomorrow,
- And therefore lower consumption in all subsequent periods until the liquidation is complete.
- This tradeoff is aimed at capturing the tension between the Keynesian and Hayekian prescriptions in recession.
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This tradeoff is aimed at capturing the tension between the Keynesian and Hayekian prescriptions in recession.
Proposition 8 (Aggregate demand management is desirable)

- Suppose the economy is in steady state in the unemployment regime.
- Then, to a first-order approximation, a (feasible) change in the path of expenditures from this steady state equilibrium will increase the present discounted value of expected welfare if and only if it increases the presented discounted sum of the resulting expenditure path, $\sum_{i=0}^{\infty} \beta^i e_{t+i}$.
- Aggregate demand management is therefore desirable.