Stagnation Traps

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Research question and motivation

Can insufficient aggregate demand lead to economic stagnation?

- Research question goes back to Great Depression
- Recent renewed interest due to:
  - Two decades-long slump affecting Japan since early 1990s
  - Slow recoveries from 2008 financial crisis in US and Euro Area
- All these episodes featured:
  - Long-lasting liquidity traps ($i = 0$)
  - High unemployment
  - Slowdowns in growth
Unemployment - Japan (1980-2014)
Real GDP/hour worked - Japan (1980-2014)
<table>
<thead>
<tr>
<th></th>
<th>Japan</th>
<th>United States</th>
<th>Euro area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy rate</td>
<td>4.34</td>
<td>0.86</td>
<td>2.91</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>2.50</td>
<td>4.02</td>
<td>8.67</td>
</tr>
<tr>
<td>Growth GDP/hours</td>
<td>4.13</td>
<td>1.63</td>
<td>1.20</td>
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Note: All the values are expressed in percentage points. Data from IMF International Financial Statistics and OECD.
This paper

**Keynesian growth framework:** standard endogenous growth model (Aghion and Howitt, 1992) augmented with nominal rigidities

- Weak aggregate demand might generate unemployment
- Growth driven by investment by profit-maximizing firms

**Key results**

- Pessimistic expectations can generate *stagnation traps*
- Countercyclical subsidy to investment leads the economy out of stagnation
Firms produce and invest in R&D/innovation

- Market size effect → higher aggregate demand leads to higher profits and higher investment in innovation and productivity growth

\[ g = f(L), \quad f'(L) > 0 \] (GG)

Nominal wage rigidities

- One unit labor endowment → full employment \( L = 1 \)
- Nominal wage rigidities → unemployment possible \( (L < 1) \)
Model - Demand Side

- Households’ demand for consumption and borrowing increasing in growth

\[ R = h(g), \quad h'(g) > 0 \]  \hspace{1cm} (Euler)

- Central bank sets \( R \) to stabilize output around full employment subject to zlb

\[ R = \max\{\bar{R}\Psi(L), 1\}, \quad \Psi'(L) > 0 \]  \hspace{1cm} (MP)

- Aggregate demand equation: Euler + MP

\[ h(g) = \max\{\bar{R}\Psi(L), 1\} \]  \hspace{1cm} (AD)
Two steady states
The role of confidence shocks

- Equilibrium is determined by expectations and sunspots
  - Suppose agents expect that growth will be low
  - Low expectations of future income imply low aggregate demand
  - Due to zero lower bound, central bank is not able to lower the interest rate enough to sustain full employment
  - Firms’ profits are low, weak investment in innovation
  - Expectations of weak growth are verified

- Pessimistic expectations can give rise to long lasting stagnation traps
Policy implications

- Stagnation traps are possible even when monetary policy is run optimally if central bank lacks commitment.

- Consider a countercyclical subsidy to innovation

\[ g = f(L) + s(g), \quad s'(g) < 0 \]  \hspace{1cm} (GG)

- If subsidy is strong enough stagnation traps are ruled out.
COUNTERCYCLICAL SUBSIDY TO INNOVATION

\[ g^f \]

\[ g^u \]

\[ L^u \]

employment \[ L \]

\[ 1 \]

\[ GG \] laissez faire

\[ GG \] with growth subsidy
SMALL SUBSIDY TO INNOVATION

The diagram illustrates the relationship between growth and employment under different subsidy conditions.

- The solid blue line represents the laissez faire scenario, labeled as $GG$ laissez faire.
- The dashed blue line represents the scenario with a growth subsidy, labeled as $GG$ with growth subsidy.

Key labels include:
- $g^f$: growth under laissez faire.
- $g^u$: growth with subsidy.
- $L_u$: employment level under laissez faire.
- $L_u'$: employment level under laissez faire with small subsidy.
- $AD$: aggregate demand curve.
CONCLUSIONS

- We develop a **Keynesian growth** model in which endogenous growth interacts with the possibility of slumps driven by weak aggregate demand.
- Inverse of Say’s law: lack of demand creates lack of supply.
- Pessimistic expectations can generate **stagnation traps**.
- Aggressive supply-side policies stimulate demand and drive economy out of stagnation.
Thank you!
Real GDP (log) - Japan (1980-2014)
Real GDP - US (1998-2014)
Baseline model
No zero lower bound

\[ g^f \]

\[ AD \]

\[ GG \]

growth \( g \)

employment \( L \)
Exogenous productivity growth

employment $L$

$g^f$

growth $g$

$AD$

$GG$

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