Labor Market Policies in a Dual Economy

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GRIPS

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Shadow Economy is Big

- Size of *underground* (informal) economy is *large*
- Schneider, et al. (2010) estimate:
  - World: 33%
  - Developing countries: 40%
  - OECD: 17%
Dual Markets

- Formal and informal markets **differ in key aspects**
  - Compliance with regulations
  - Evasion of taxes and other contributions

- Informal workers face:
  - Higher labor mobility
  - Higher earnings volatility

- Government policies in economies with large informal markets may not achieve desired effects
Mexico is a prime example for our study
- 30% of production is done by shadow economy
- 43% of workers employed in informal sector
  - Large flows of workers between sectors

Government plans to introduce policies to curve informality
- Unemployment insurance system
Previous Studies

- Labor market policies in models with risk and asset accumulation
  - Krusell, Mukoyama and Sahin (2010)
  - Ljungqvist and Sargent (2007), Kitao, Ljungqvist and Sargent (2008)

- No informality ➡ Applicable to economies with dual markets?

- Labor market policies in models with informality
  - Albrecht, Navarro and Vroman (2009)
  - Bosch and Esteban-Pretel (2012)

- No risk or asset accum. ➡ No self-insurance, hard to evaluate welfare
Objectives of this Paper

(1) Build model that captures features of state-of-the-art structural macro models, but within a dual economy

(2) Study the effects of labor market policies on unemployment, worker flows and welfare
What We Do

- **Build model**
  - Life-cycle model with job search and dual economy
  - Incomplete markets, risk aversion and asset accumulation

- **Calibrate parameters to match Mexican data**
  - Use micro data on wages, flows and assets

- **Simulate 3 policies and study their effect on labor market.**
  - Consumption vs labor income **taxes**
  - Introduction of **UI system**
  - Change in **severance payment**
Overview of Model

- **Search-Island Model**
  - 2 islands/sectors: Formal and Informal
    - Workers and firms meet
    - Wages determined competitively in the spirit of Lucas & Prescott (1974)
  - Inter-sectoral flows: (I→F) and (F→I)
  - Taxation, firing costs on formal jobs
- **Incomplete markets** and indivisible labor
Government

- Imposes taxes on:
  - Consumption: $\tau_c$
  - Labor: $\tau_L$

- To finance
  - Government expenditures
  - UI benefits when introduced
Firms

- As in Lucas and Prescott (1974), but with 2 sectors
  - Firms locate in Formal or Informal sector/island
  - Operate in a competitive market within the island
- Produce using labor ($n$), capital ($k$) and firm’s productivity ($z$)
  - Prod $z$: varies exogenously over time.
- Pay job opening cost, $\mu_s$ for $s \in \{F,I\}$
- Formal sector firms pay firing cost, if destroy the match
- Choose:
  - Choose $k$ to max profits
  - Decide whether or not to continue in market
Workers

- **Working age (Form., Inf., Unemp) and Retired**
- **Every period a worker:**
  - Faces retirement and death
  - Is laid-off with prob. $q_s$ for $s \in \{F,I\}$
  - Receives offer with exogenous prob. $\Pi^U_s$ and $\Pi^E_s$ for $s \in \{F,I\}$

- **States:**
  - **Employed:** $x_E(a,h,s,\varepsilon)$
    - $a$: assets
    - $h$: human capital
    - $s$: sector
    - $\varepsilon$: worker’s idiosyncratic productivity
  - **Unemployed:** $x_U(a,h)$

- **Choose:**
  - **All** choose: consumption, savings
  - **Employed** choose: quit or stay, accept or reject offer from other sector
  - **Unemployed** choose: accept or reject offer
Timing and Flows

- Firm decides lay-offs after observing $z'$: $F \rightarrow U$ & $I \rightarrow U$
- Workers receive new offers (exog prob.)
  - Depending on indiv. states $x_E(a,h,s,\varepsilon)$ or $x_U(a,h)$ decides:
    - Stay in current status
    - Move to sector $s \in \{F,I\}$:
      - From unemployment: $U \rightarrow F$ and $U \rightarrow I$
      - From other sector: $I \rightarrow F$ and $F \rightarrow I$
    - Quit: $F \rightarrow U$ and $I \rightarrow U$
Data

▪ Micro Data
  • ENEU-ENOE
    - Household employment survey - equivalent to CPS
    - Contains Informality information
      – Use it to construct labor market flows data
  • ENIGH
    - Income and expenditure survey
      – Use to construct asset data

▪ Aggregate Data
  • Bank of Mexico
    - Interest rate and inflation data
Calibration Targets

- Unemployment rate
- Share of Formal employment
- Flow Rates:
  - Separation Rates
  - Inter-sectoral Flows
- Fraction of separations which are quits/layoffs
- Formal-Informal Wage differential
- Asset to earnings ratio
Increases in labor taxes produce:
- Higher unemployment, but small change
- Redistrib. of workers between sectors
  - Lower flows into formality
  - Higher flows into informality
- Lower Formality
- Higher cons. taxes
Unemployment Insurance System

- **Unemployment Insurance:**
  - **Formal** workers who are fired collect UI benefit.
    - Worker who quits job cannot collect.
  - Informal workers can collect UI benefits.
  - UI benefits have limited durations.
  - Benefit is a fraction of earnings.
  - Financed via consumption taxes

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**Diagram:**

- **Unemp.**
  - **F → U** Lay-offs & Quits
  - **U → F** Job Finding
  - **U → I** Job Finding
  - **I → F** Job Switch
  - **F → I** Job Switch
  - **I → U** Lay-offs & Quits

- **Formal**

- **Informal**
## Unemployment Insurance

<table>
<thead>
<tr>
<th>Duration of Benefits</th>
<th>0m</th>
<th>6m</th>
<th>2y</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unemployment Rate</strong></td>
<td>3.71%</td>
<td>3.84%</td>
<td>4.12%</td>
</tr>
<tr>
<td><strong>Formality Share</strong></td>
<td>56.93%</td>
<td>56.63%</td>
<td>54.73%</td>
</tr>
<tr>
<td><strong>UI recipients (% of labor force)</strong></td>
<td>-</td>
<td>1.26%</td>
<td>4.86%</td>
</tr>
<tr>
<td>- Unemployed (% of all UI recipients)</td>
<td>-</td>
<td>59.87%</td>
<td>25.34%</td>
</tr>
<tr>
<td>- Informal workers (% of all UI recipients)</td>
<td>-</td>
<td>40.13%</td>
<td>74.66%</td>
</tr>
<tr>
<td><strong>Hazard U to E</strong></td>
<td>84.84%</td>
<td>83.19%</td>
<td>78.42%</td>
</tr>
<tr>
<td>- U to I</td>
<td>54.17%</td>
<td>54.94%</td>
<td>55.59%</td>
</tr>
<tr>
<td>- U to F</td>
<td>30.67%</td>
<td>28.25%</td>
<td>22.83%</td>
</tr>
<tr>
<td>- no benefits</td>
<td>-</td>
<td>30.58%</td>
<td>30.96%</td>
</tr>
<tr>
<td>- with benefits</td>
<td>-</td>
<td>18.68%</td>
<td>3.70%</td>
</tr>
</tbody>
</table>

### Intersectoral flow rates

| - F to I             | 9.52%    | 9.51%    | 9.52%    |
| - I to F             | 13.25%   | 13.18%   | 12.31%   |
| - no benefits        | -        | 13.25%   | 13.27%   |
| - with benefits      | -        | 7.49%    | 1.74%    |

| **Consumption Tax**  | 15.00%   | 15.71%   | 18.78%   |
| **Welfare**          | -        | -0.01%   | -0.74%   |

- Increase in unemployment and drop in formality
- Drop in flow into formality - Big difference with and without benefits
- Decrease in welfare
## Severance Pay

<table>
<thead>
<tr>
<th></th>
<th>0m</th>
<th>4m</th>
<th>8m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layoff prob</td>
<td>1.27%</td>
<td>1.22%</td>
<td>1.17%</td>
</tr>
<tr>
<td>Wage F relative to Benchmark</td>
<td>1.63%</td>
<td>-</td>
<td>-1.54%</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>3.71%</td>
<td>3.71%</td>
<td>3.72%</td>
</tr>
<tr>
<td>Formality Share</td>
<td>56.83%</td>
<td>56.93%</td>
<td>56.99%</td>
</tr>
<tr>
<td>Job separation rates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- F to U</td>
<td>1.93%</td>
<td>1.89%</td>
<td>1.84%</td>
</tr>
<tr>
<td>- I to U</td>
<td>3.48%</td>
<td>3.49%</td>
<td>3.52%</td>
</tr>
<tr>
<td>Hazard U to E</td>
<td>85.31%</td>
<td>84.84%</td>
<td>84.11%</td>
</tr>
<tr>
<td>- U to F</td>
<td>30.83%</td>
<td>30.67%</td>
<td>30.41%</td>
</tr>
<tr>
<td>- U to I</td>
<td>54.48%</td>
<td>54.17%</td>
<td>53.69%</td>
</tr>
<tr>
<td>Intersectoral flows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- F to I</td>
<td>9.53%</td>
<td>9.52%</td>
<td>9.53%</td>
</tr>
<tr>
<td>- I to F</td>
<td>13.25%</td>
<td>13.25%</td>
<td>13.24%</td>
</tr>
<tr>
<td>Welfare</td>
<td>-0.21%</td>
<td>-</td>
<td>-0.01%</td>
</tr>
</tbody>
</table>

- Increasing severance pay produces:
  - Decrease in layoff prob., but depresses formal wages
  - Small increase in unemployment and increase in formality
  - Decrease in welfare, but lower than removing the payment.
Conclusions

- Build structural life-cycle model with unemployment and dual markets.
- Dual sector economies may behave differently to single market ones:
  - Redistrib. of workers: Inform. absorbs part of changes expected in unemp.
- Study effects of 3 policies:
  - Consumption vs Labor taxes:
    - Cons. taxes
      - Less distortionary
      - Lower unemployment and higher formality
  - Introduction of UI:
    - Increase unemployment and reduce formality
    - Larger flows into informality
    - Decrease welfare
  - Severance pay:
    - Increases in unemployment and formality
    - Decrease welfare