Redistributive Taxation and
Personal Bankruptcy in US States

Charles Grant
Reading

Winfried Koeniger
Queen Mary

Key Words: Personal bankruptcy, Consumer credit,
Redistributive taxes and transfers

JEL Codes: E21, E61, G18

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Introduction:

Q: How do households pool their income risk if markets are incomplete?

(i) Taxes as Insurance:

Ex post taxes increase with income
redistributes income from rich to poor

If people ex ante identical

⇒ this is insurance

e.g. Varian (1980), Grant et. al. (2003)

(ii) Bankruptcy:

If ex post
repay when income high
default when income is low
and all households borrow

⇒ this is insurance

e.g. Zame (1993), Athreya (1999), Grant (2003)
Households can use both mechanisms
to insure income risks

May use different mechanisms
in different places

For Example:

- Texas has no income tax
  but keep house and $60,000 when default
- New York has high taxes
  but low bankruptcy exemptions

Question:
Are the two policies substitutes?
We develop a simple analytic model
And then provide some empirical evidence
Approach of this paper:

• income exogenous

• household wish to smooth their consumption across time (borrowing/saving) across agents (insurance)

We show how taxes and bankruptcy affects borrowing incentives and interest rates similar to Bertola and Koeniger (2004)

Then empirically test some features of the model

States set value of exempt assets in bankruptcy and set their own local taxes

We use household data from different US states for the years 1980-2003
Stylized Model: (Basic Idea)

(More formally dealt with in the paper/appendix and similar to White, 2004)

Suppose Risk-Averse agents live for two periods receive endowment $\omega_1 = 1$ in period 1 and receive endowment $\omega_2$ in period 2 where $\omega_2$ is uncertain

They either lend at risk-free interest rate $r_f$ or borrow at interest rate $r_2 \geq r_f$

where $r_2$ depends on default probability (zero profit condition for banks)

The government chooses the level of assets $E$

the agent keeps should he default on his debts
The agent chooses consumption $c_1$ in the first period which may involve borrowing $B$ in first period.

To make it interesting - suppose there is borrowing.

In period 2 the household receives $\omega_2$ and decides whether to repay his debts.

Default means agent keeps up to an amount $E$ which we call the bankruptcy exemption.

Hence default whenever

$$\omega_2 < E + (1 + r)B$$

e.g. period 2 endowment is sufficiently low.
The Effect of the Bankruptcy Exemption

\[ (1 + r_f)B \]

\[ (1 + r)B \]
There are clearly three regions

- For low levels of the endowment the agent fully defaults and consumes his endowment
- For intermediate levels of the endowment the agent partially defaults and consumes $E$
- For high levels of the endowment the agent repays the debt and consumes $\omega_2 - B(1 + r_f)$

Low endowment agents are better off since they do not repay their debts

High endowment agents are worse off since they pay more interest

Bankruptcy provides insurance as it redistributes consumption from high $\omega_2$ to low $\omega_2$ households
Raising the bankruptcy exemption means
more households fully default
fewer households fully repay

Comments:
Very poor do not benefit since they fully default anyway
intermediate households keep more in default
high endowment households pay more in interest

The level of insurance is higher
The Effect of Redistributive Taxes

Governments can also set taxes and transfers. Suppose there was a marginal income tax of $\tau$

redistributed as a lump-sum amount

same to all households

Clearly this also redistributes from rich to poor

Hence there are two methods

   to insure households against risk

And important interactions between the policies
The Effect of Taxes with Bankruptcy Exemptions
Interactions Between the Policies:

• For a given level of borrowing:
Raising the tax rate $\tau$ and raising transfers
    increases the interest rate and
    reduces welfare gain from bankruptcy exemptions

• For a given level of interest
Raising the bankruptcy exemption
    increases the level of borrowing in period one
While raising the the tax rate
    reduces the level of borrowing

• If both borrowing and the interest rate can change
the overall effect of each policy
    is highly sensitive on the exact assumptions
    of the model
(need to calibrate/simulate)
We have developed some interesting theory
but is there any evidence to support it
We exploit the fact different US states have different taxes
and different bankruptcy laws

Constructed group averages:
- Working age households
- 18 largest states
- 1980-2003
- 420 cells

We measure tax and exemption to investigate:

(i) Average debts
(ii) Consumption Inequality
(iii) Growth in Consumption Inequality
   (measures insurance, Deaton and Paxson 1994)
(iv) Whether the are policies substitutes
Data:
• Consumption (non-durable) from CEX
• Income/Transfers from CPS March supplement
  e.g. household data, state information,
  singles / single parents / couples,
  age 30-60
  exclude farmers / self-employed
Comment: - Better measured (?)
  - larger sample
  - error uncorrelated with CEX
• Taxes use TAXSIM from NBER
  - Greenburg and Coutts (1993)
  - input income, household characteristics,
    STATE
  - output total / marginal taxes
Thresholds for 1998 federal tax brackets:

<table>
<thead>
<tr>
<th>Tax Rate (%)</th>
<th>Tax Bracket</th>
<th>single</th>
<th>married jointly</th>
<th>married separately</th>
<th>% paying</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>58.2</td>
</tr>
<tr>
<td>28</td>
<td>26,250</td>
<td>43,850</td>
<td>21,925</td>
<td>34.2</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>63,550</td>
<td>105,950</td>
<td>52,975</td>
<td>5.2</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>132,660</td>
<td>161,450</td>
<td>80,725</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>39.6</td>
<td>288,350</td>
<td>288,350</td>
<td>144,175</td>
<td>0.3</td>
<td></td>
</tr>
</tbody>
</table>

Taxes also vary substantially between states:

For example - in 1998:

Texas had no state income taxes
Pennsylvania had a 2.8 percent flat rate tax with no exempt income
Californian taxes increase from 1 to 9.3 percent
New York did not tax first $2,900 of income
Wages and Transfers:

<table>
<thead>
<tr>
<th></th>
<th>average</th>
<th>average if received</th>
<th>% receive</th>
</tr>
</thead>
<tbody>
<tr>
<td>wages</td>
<td>34,696</td>
<td>36,789</td>
<td>94.3</td>
</tr>
<tr>
<td>social security</td>
<td>261</td>
<td>6,601</td>
<td>3.9</td>
</tr>
<tr>
<td>supplementary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>security income</td>
<td>77</td>
<td>4,161</td>
<td>1.8</td>
</tr>
<tr>
<td>unemployment /</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>workers compensation</td>
<td>353</td>
<td>2,688</td>
<td>13.1</td>
</tr>
<tr>
<td>public assistance /</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>welfare</td>
<td>176</td>
<td>3,712</td>
<td>4.7</td>
</tr>
<tr>
<td>food stamps</td>
<td>128</td>
<td>1,571</td>
<td>8.1</td>
</tr>
<tr>
<td>total transfer</td>
<td>997</td>
<td>4,250</td>
<td>23.4</td>
</tr>
</tbody>
</table>

Transfers are also important for households
**Problem:** How to summarise tax-system

Want a single index number

Within a regime:

- different tax rates
- thresholds
- tax exemptions

Could use mean marginal tax rate but:

- does not account for progressivity
- ignores various tax exemptions
- ignores transfers

Instead construct income compression measure:

\[
1 - \frac{sd_{st}(income_{ist} - tax_{ist} + transfer_{ist})}{sd_{st}(income_{ist})}
\]

Comment: measures how taxes re-distribute income

- but correlation 0.81
Personal Bankruptcy in the United States
Regulated by the Federal Bankruptcy Act of 1978
debtors choose Chapter 7 or Chapter 13
Chapter 7: debtor had his debts expunged
but surrenders non-exempt assets
Chapter 13: debtor agreed a repayment schedule
but retained his assets
Since the debtor could choose - could never be forced
to pay more than under Chapter 7
<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1978 Exemptions:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. House</td>
<td>7,500</td>
<td></td>
</tr>
<tr>
<td>2. Car</td>
<td>1,200</td>
<td></td>
</tr>
<tr>
<td>3. Household Goods</td>
<td></td>
<td>no limit on aggregate amount</td>
</tr>
<tr>
<td>4. Jewelry</td>
<td>500</td>
<td>personal use only</td>
</tr>
<tr>
<td>5. Other Property</td>
<td></td>
<td>Allowed all of unclaimed exemption from (1)</td>
</tr>
<tr>
<td>6. Tools of Trade</td>
<td>750</td>
<td>Items needed for job.</td>
</tr>
<tr>
<td><strong>Revised Exemptions of 1984:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Household Goods</td>
<td>4,000</td>
<td>$200 each item</td>
</tr>
<tr>
<td>5. Other Property</td>
<td>400</td>
<td>+ $3,750 of (1) that is unused.</td>
</tr>
<tr>
<td><strong>Revised Exemptions of 1994:</strong></td>
<td></td>
<td>All values doubled</td>
</tr>
<tr>
<td><strong>Revised Exemptions of 1998:</strong></td>
<td></td>
<td>All values increased with inflation</td>
</tr>
<tr>
<td><strong>Revised Exemptions of 2001:</strong></td>
<td></td>
<td>All values increased with inflation</td>
</tr>
</tbody>
</table>
The Act allowed states to set their own exemptions

Bankruptcy law otherwise uniform across states

Almost all states have exploited this legislation

causing large differences in state exemptions

Texas and Florida allow the home to be fully exempt

Texas allowed individuals $15,000 of other assets

Florida - personal property = $1,000; car = $1,000

Minnesota limited homestead to $200,000 in 1993

Pennsylvania allowed only $300 of personal property

but allowed the federal exemptions

Maryland homestead = $2,500; other assets = $3,500

and did not allow the federal exemptions
As debtors could re-arrange portfolio before default

I added exemptions have been added together
but excluding the ‘tools of trade’ exemption
to get total value the exemption in each state
based on age / disabled / depend. / couple

Given federal exemption if allowed and larger

\approx 18 \text{ percent get federal exemption}
Tax redistributiveness and bankruptcy exemptions by state:

<table>
<thead>
<tr>
<th>State</th>
<th>min. bracket</th>
<th>max. bracket</th>
<th>exempt</th>
<th>marginal rate</th>
<th>income compression</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>1.0</td>
<td>9.3</td>
<td>72</td>
<td>22.8</td>
<td>34.3</td>
</tr>
<tr>
<td>Florida</td>
<td>no state income tax</td>
<td></td>
<td></td>
<td>19.2</td>
<td>27.0</td>
</tr>
<tr>
<td>Maryland</td>
<td>2.0</td>
<td>4.75</td>
<td>1,850</td>
<td>25.1</td>
<td>32.6</td>
</tr>
<tr>
<td>Minnesota</td>
<td>5.35</td>
<td>7.85</td>
<td>2,900</td>
<td>24.6</td>
<td>34.3</td>
</tr>
<tr>
<td>New York</td>
<td>4.0</td>
<td>6.85</td>
<td>-</td>
<td>22.1</td>
<td>35.5</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>2.8</td>
<td>2.8</td>
<td>-</td>
<td>21.0</td>
<td>29.8</td>
</tr>
<tr>
<td>Texas</td>
<td>no state income tax</td>
<td></td>
<td></td>
<td>19.0</td>
<td>26.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State</th>
<th>house ‘84</th>
<th>other ‘84</th>
<th>house ‘98</th>
<th>other ‘98</th>
<th>fed</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>30,000</td>
<td>5,200</td>
<td>50,000</td>
<td>10,900</td>
<td>1984</td>
</tr>
<tr>
<td>Florida</td>
<td>no limit</td>
<td>1,000</td>
<td>no limit</td>
<td>2,000</td>
<td>1979</td>
</tr>
<tr>
<td>Maryland</td>
<td>2,500</td>
<td>3,500</td>
<td>2,500</td>
<td>3,500</td>
<td>1982</td>
</tr>
<tr>
<td>Minnesota</td>
<td>no limit</td>
<td>6,500</td>
<td>200,000</td>
<td>11,050</td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>10,000</td>
<td>7,400</td>
<td>10,000</td>
<td>7,400</td>
<td>1982</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>300</td>
<td></td>
<td>300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Texas</td>
<td>no limit</td>
<td>15,000</td>
<td>no limit</td>
<td>30,000</td>
<td></td>
</tr>
</tbody>
</table>
Debt equations estimated by CLAD

Debt equations estimated using actual debt levels for data from 1988 - 2003

Exemption significant, taxes insignificant

The effect on unsecured debt

<table>
<thead>
<tr>
<th></th>
<th>Income compression</th>
<th>Mean marginal tax rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>tax</td>
<td>0.381 (0.903)</td>
<td>0.442 (2.523)</td>
</tr>
<tr>
<td>exemption × (1-house)</td>
<td>-0.028 (0.284)</td>
<td>-0.048 (0.305)</td>
</tr>
<tr>
<td>exemption × house</td>
<td>0.213 (0.054)</td>
<td>0.214 (0.061)</td>
</tr>
<tr>
<td>house fully exempt</td>
<td>0.576 (0.190)</td>
<td>0.559 (0.178)</td>
</tr>
</tbody>
</table>
Main Regressions

Use panel of state-year cells to find effect of policy measures on consumption insurance and on each other.

Can not test details of models but can see if evidence consistent with theory.

All regressions include state dummies homestead dummy only identified from Minnesota.

Also run IV regressions instrumenting the tax system (aggregate shocks may affect taxes and inequality) but bankruptcy exemptions can not change quickly.

Instruments are:

(i) lagged variables

(ii) some political variables and measures of tax efficiency taken from ACIR / Tannenwald
## Consumption Insurance

### Income Compression

<table>
<thead>
<tr>
<th></th>
<th>$sd(c_{it})$</th>
<th>$sd(\Delta c_{it})$</th>
<th>$sd(\Delta c_{it})$</th>
<th>$sd(\Delta c_{it})$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>tax</strong></td>
<td>-0.076</td>
<td>-0.254</td>
<td>-0.961</td>
<td>-0.743</td>
</tr>
<tr>
<td></td>
<td>(0.050)</td>
<td>(0.083)</td>
<td>(0.495)</td>
<td>(0.229)</td>
</tr>
<tr>
<td><strong>exemption</strong></td>
<td>-0.047</td>
<td>-0.066</td>
<td>-0.093</td>
<td>-0.055</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>(0.024)</td>
<td>(0.033)</td>
<td>(0.034)</td>
</tr>
<tr>
<td><strong>house fully exempt</strong></td>
<td>-0.148</td>
<td>-0.108</td>
<td>-0.118</td>
<td>-0.014</td>
</tr>
<tr>
<td></td>
<td>(0.051)</td>
<td>(0.084)</td>
<td>(0.096)</td>
<td>(0.127)</td>
</tr>
<tr>
<td><strong>constant</strong></td>
<td>0.856</td>
<td>0.719</td>
<td>0.945</td>
<td>0.729</td>
</tr>
<tr>
<td></td>
<td>(0.067)</td>
<td>(0.113)</td>
<td>(0.218)</td>
<td>(0.179)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>lag</th>
<th>pol</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>$IV$</strong></td>
<td>5.45</td>
<td>6.94</td>
</tr>
<tr>
<td><strong>Rank – test</strong></td>
<td>(prob)</td>
<td>(0.000)</td>
</tr>
<tr>
<td><strong>Sargan</strong></td>
<td>10.77</td>
<td></td>
</tr>
<tr>
<td><strong>(prob)</strong></td>
<td></td>
<td>(0.056)</td>
</tr>
</tbody>
</table>
## Relationship Between Taxes and Bankruptcy Exemptions

### Income Compression

<table>
<thead>
<tr>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OLS</td>
<td>IV</td>
<td>IV</td>
<td>IV</td>
</tr>
</tbody>
</table>

| tax     | 0.049 | -0.316 | -0.269 | -0.234 |
|         | (0.016) | (0.119) | (0.071) | (0.034) |
| constant | 0.069 | 0.161  | 0.139  | 0.128  |
|         | (0.007) | (0.040) | (0.024) | (0.012) |

### IV Lag Pol1 Pol2

<table>
<thead>
<tr>
<th>IV</th>
<th>lag</th>
<th>pol1</th>
<th>pol2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank - test</td>
<td>4.98</td>
<td>6.94</td>
<td></td>
</tr>
<tr>
<td>(prob)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td></td>
</tr>
<tr>
<td>Sargan</td>
<td>2.965</td>
<td>42.78</td>
<td></td>
</tr>
<tr>
<td>(prob)</td>
<td>(0.085)</td>
<td>(0.000)</td>
<td></td>
</tr>
</tbody>
</table>
Conclusion

Exemptions reduce level of debt

The exemptions also reduce consume inequality

rejection of market completeness

Both taxes and exemptions reduce \( sd(\Delta c_{it}) \)

together they explain third

of differences across states

Two policies are negatively correlated

Fisher (2005) found increasing unemployment insurance

reduces bankruptcy filings
Effect is large BUT plausible since

(i) chose homogeneous groups
    making the denominator smaller

(ii) although only 1.5% of households go bankrupt
    substantially more households default
    around 23% of households receive transfers

(iii) Legislation affects all households through
    higher interest rates and higher taxes

(iv) If prudence matters than policies benefit all
Results suggest there is an interesting policy trade-off between bankruptcy and tax/benefit system. Different US states have made different choices. Texas has generous bankruptcy and low taxes. New York has higher taxes and lower exemptions. What about Europe? If welfare payments are more important, then we need worry less about allowing bankruptcy.