BUSINESS INCOME UNDERREPORTING AND PUBLIC FINANCE

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The Macroeconomics of US Public Finance

- Net government saving $\approx -1 \text{ $Trillion (in 2018)}$
  - Current receipts: 5.6T
  - Current expenditures: 6.7T
The Macroeconomics of US Public Finance

- Net government saving $\approx -1 \text{ } \text{ } $Trillion
  - Current receipts: 5.6T
  - Current expenditures: 6.7T

- Untaxed business income $\approx 1 \text{ } \text{ } $Trillion
  - Income reported to IRS: 3.2T
  - Estimate of true: 4.2T
The Macroeconomics of US Public Finance

- Net government saving $\approx -1$ $\text{Trillion}$
  - Current receipts: 5.6T
  - Current expenditures: 6.7T

- Untaxed pass-through income $\approx 700$ $\text{Billion}$
  - Income reported to IRS: 1.3T
  - Estimate of true: 2T
The Macroeconomics of US Public Finance

- Net government saving $\approx -5.4\%$ GDP
  - Current receipts: 27%
  - Current expenditures: 33%

- Untaxed pass-through income $\approx 3.4\%$ GDP
  - Income reported to IRS: 6.4%
  - Estimate of true: 9.8%
The Macroeconomics of US Public Finance

- Net government saving $\approx -5.4\%$ GDP
  - Current receipts: $27\%$
  - Current expenditures: $33\%$

- Untaxed pass-through income $\approx 3.4\%$ GDP
  - Income reported to IRS: $6.4\%$
  - Estimate of true: $9.8\%$

$\implies$ Prompting more funding for IRS enforcement
Greater IRS Enforcement

- Inflation Reduction Act:
  - 80 billion over 10 years
  - Enforcement budget roughly doubled

- Predicted returns on investment (ROI):
  - CBO/JCT (2021): 5–9$
  - Boning et al (2023): 5–12$
This Paper

- First step before using IRS micro data
  - Use public IRS compliance data (TCMP/NRP)
  - Develop dynamic GE model of tax evasion
  - Compare higher tax vs enforcement counterfactuals

- Useful for next steps
  - Data: expand collection to business filings
  - Theory: add transition dynamics and welfare analysis
What’s New?

• Factors relevant for dynamics of tax evasion
  ◦ Loss of sweat capital (eg, reputation, brands, etc)
  ◦ Recovery of back taxes

• Why relevant?
  ◦ Impacts business dynamics and productivity
  ◦ Amplifies precautionary motives

⇒ Economies with higher tax vs enforcement different
Summary of IRS Compliance Data
IRS Compliance Data

- Tax gap = random audits + DCE adjustments

- Random audits:
  - Taxpayer compliance measurement program, 1962–88
  - National research program, 2000–present

- Detection controlled estimation (DCE) adjustments:
  - Scale up recommendations of all examiners
  - Use data from examiners with largest adjustments
# How Big is the Tax Gap?

<table>
<thead>
<tr>
<th>Gross tax gap</th>
<th>2001</th>
<th>2011</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amount:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>billions of 2023$</td>
<td>567</td>
<td>575</td>
<td>763</td>
</tr>
<tr>
<td>% of GDP</td>
<td>3.3</td>
<td>2.7</td>
<td>2.9</td>
</tr>
<tr>
<td><strong>Source share (%):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonfiling</td>
<td>7</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Underpayment</td>
<td>10</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td><strong>Underreporting</strong></td>
<td>83</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td><strong>Business income</strong></td>
<td>52</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>Wages &amp; salaries</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>28</td>
<td>34</td>
<td>35</td>
</tr>
</tbody>
</table>
How Widespread is Cheating?

- Evidence from 2 NRP random-audit studies (no DCE)
  - All owners—ranked by reported incomes
  - Sole proprietors—ranked by understated tax

- Reveal same patterns
  - Cheating is widespread
  - But few owners account for most cheating
Does Evasion Occur Across Income Distribution?

- Evidence from NRP random-audit studies:
  - Underreporting occurs across the distribution
  - Top-income estimates depend on DCE adjustments

⇒ Wide range of opinions on enforcement targeting
Is Economic Deterrence Driving Compliance?

- TAS surveys intended to elicit nonpecuniary motives

- How?
  - Construct samples of sole proprietors
  - Use DIF scores indicating likelihood of audit
  - Group proprietors by DIF score
  - Compare responses of low- and high-DIF groups

- What do they find?
  - Trust in IRS/govt is main predictor of compliance
Recap: Lessons from IRS Data

- Gross tax gap large and \( \approx 3\% \) of GDP over time
- Underreporting is main source of tax gap
- Underreporting by business owners is most of that
- Underreporting is widespread but concentrated
- Underreporting occurs across the income distribution
- Economic deterrence is only one factor driving compliance
Theory
Key Factors

- Occupational choice: paid- or self-employment
- Taxpayer types: always compliant or not
- Noncompliance source: business income underreporting
- Dynamics of tax evasion:
  - Loss of reputation, business brands, customers
  - Recovery of back taxes

⇒ Extends standard model of economic deterrence
Occupational Choice

- Choose business $b$ or work $w$

\[ V(s) = \max \{ V^b(s), V^w(s) \} \]

\[ V^i(s) = \max_x \{ U(c, \ell) + \beta \sum_{z',\epsilon'} \pi(z', \epsilon'| z, \epsilon) V(s') \} \]

where $s = (a, \kappa, d, z, \epsilon)$ and

- $a$: financial assets
- $\kappa$: sweat capital, eg, reputation, brands, etc
- $d$: back taxes, eg, accumulated unpaid taxes
- $z$: productivity in self-employment
- $\epsilon$: productivity in paid-employment
- $x = [a', \kappa', d', c_p, c_c, \ell, k_p, h_p, n_p, h_\kappa, e, c^r, y_b^r]$ decisions defined below
Continuation Value

\[ V(a', \kappa', d', z', \epsilon') \]

\[ = \underbrace{(1 - \Pi(d'))V(a', \kappa', d', z', \epsilon')}_{\text{no audit}} \]

\[ + \underbrace{\Pi(d')V(a' - f_a(d'), f_r(\kappa'), 0, z', \epsilon')}_{\text{audit}} \]
Continuation Value

\[ V(a', \kappa', d', z', \epsilon') = (1 - \Pi(d')) V(a', \kappa', d', z', \epsilon') \]

\[ + \Pi(d') V(a' - f_a(d'), f_r(\kappa'), 0, z', \epsilon') \]

\[ \uparrow \]

Probability of audit
Continuation Value

\[ \mathcal{V}(a', \kappa', d', z', \epsilon') = (1 - \Pi(d')) \mathcal{V}(a', \kappa', d', z', \epsilon') \]

\[ + \Pi(d') \mathcal{V}(a' - f(a'(d')), f_r(\kappa'), 0, z', \epsilon') \]

\[ \uparrow \quad \rightarrow \quad \text{audit} \]

Probability of audit and fines depend on \(d'\)
Continuation Value

\[ V(a', \kappa', d', z', \epsilon') = (1 - \Pi(d')) V(a', \kappa', d', z', \epsilon') \]

no audit

\[ + \Pi(d') V(a' - f_a(d'), f_r(\kappa'), 0, z', \epsilon') \]

audit

↑

Audit results in reputational losses
Business Owner’s Technologies

- Goods and services: \( y_p = zf_p(\kappa, h_p, k_p, n_p) \)
  - \( z \) = productivity in self-employment
  - \( \kappa \) = sweat capital
  - \( h_p \) = owner time in production
  - \( k_p \) = rented physical capital
  - \( n_p \) = employee time

- Sweat investment: \( x_\kappa = f_\kappa(h_\kappa, e) \)
  - \( h_\kappa \) = owner time in brand building
  - \( e \) = owner expenses
Business Owner’s Constraints

- **Budget**

\[ a' = \frac{[(1+r)a+y_b-T^b(y^b)-\tau_c(c_c+p_c)+\chi]}{1+\gamma} \]

- **Sweat capital**

\[ \kappa' = \frac{[(1-\delta_\kappa)\kappa + f_\kappa(h_\kappa, e)]}{1+\gamma} \]

- **Back taxes**

\[ d' = \frac{[(1-\delta_d)d + f_d(c^r)]}{1+\gamma} \]

- **Borrowing**

\[ a' \geq f_a(d') \]
Business Owner’s Constraints

- Budget

\[ a' = \frac{[(1+r)a + y_b - T^b(y_b^{\tau}) - (1+\tau_c)(c_c + p_c p) + \chi]/(1+\gamma)}{1+\gamma} \]
Business Owner’s Constraints

- Budget

\[ a' = \frac{[(1+r)a+y_b-T^b(y^b)-(1+\tau_c)(c_c+pc_p)+\chi]/(1+\gamma)}{↑ \quad ↑} \]

next period and current assets
Business Owner’s Constraints

- Budget

\[ a' = \frac{[(1+r)a+y_b-T^b(y_b^r)-(1+\tau_c)(c_c+pc_p)+\chi]/(1+\gamma)}{\text{true and reported income}} \]

\[ y_b = py_p - (r + \delta)k_p - wn_p - \epsilon \]

\[ y_b^r = y_b - (1 + \tau_c)c^r \]
Business Owner’s Constraints

- Budget

\[ a' = \frac{\left( (1+r)a + y_b - T^b(y_b) - (1+\tau_c)(c_c + p_c p) + \chi \right)}{(1+\gamma)} \]

↑  ⟷

taxes on business and consumption
Business Owner’s Constraints

• Budget

\[ a' = [(1+r)a + y_b - T^b(y'_b) - (1 + \tau_c)(c_c + p_c p) + \chi]/(1+\gamma) \]

↑ ↦

goods produced by C-corps
and pass-thrus, \( c = \text{ces}(c_c, c_p) \)
Business Owner’s Constraints

- Budget

\[ a' = \frac{[(1+r)a+y_b-T^b(y'_b)-(1+\tau_c)(c_c+pc_p)+\chi]/(1+\gamma)}{\uparrow \text{transfers}} \]
Business Owner’s Constraints

- Budget
  \[a' = [(1+r)a+y_b-T^b(y_b^r)-(1+\tau_c)(c_c+pc_p)+\chi]/(1+\gamma)\]

- Sweat capital
  \[\kappa' = [(1 - \delta_\kappa)\kappa + f_\kappa(h_\kappa, e)]/(1 + \gamma)\]
Business Owner’s Constraints

- **Budget**

\[ a' = \frac{[(1+r)a + y_b - T^b(y_b^r) - (1+\tau_c)(c_c + p c_p) + \chi]}{(1+\gamma)} \]

- **Sweat capital**

\[ \kappa' = \frac{[(1 - \delta_\kappa)\kappa + f_\kappa(h_\kappa, e)]}{(1 + \gamma)} \]

\[ \uparrow \]

sweat investment (shown earlier)
Business Owner’s Constraints

- **Budget**

\[
a' = [(1+r)a + y_b - T^b(\bar{y}_b) - (1+\tau_c)(c_c + pc_p) + \chi]/(1+\gamma)
\]

- **Sweat capital**

\[
\kappa' = [(1 - \delta_\kappa)\kappa + f_\kappa(h_\kappa, e)]/(1 + \gamma)
\]

- **Back taxes**

\[
d' = [(1 - \delta_d)d + f_d(c^r)]/(1 + \gamma)
\]
Business Owner’s Constraints

- **Budget**

\[
a' = \frac{[(1+r)a + y_b - T_b(y_b^r) - (1+\tau_c)(c_c + c_p) + \chi]}{(1+\gamma)}
\]

- **Sweat capital**

\[
\kappa' = \frac{[(1 - \delta_{\kappa})\kappa + f_\kappa(h_\kappa, e)]}{(1 + \gamma)}
\]

- **Back taxes**

\[
d' = \frac{[(1 - \delta_d)d + f_d(c^r)]}{(1 + \gamma)}
\]

\[\uparrow\]

current misreporting: \(y_b - y_b^r = (1 + \tau_c)c^r\)
Business Owner’s Constraints

- **Budget**

\[ a' = \frac{[(1+r)a+y_b-T^b(y^r)_{b}-(1+\tau_c)(c+c+pc_p)+\chi]}{(1+\gamma)} \]

- **Sweat capital**

\[ \kappa' = \frac{[(1-\delta_\kappa)\kappa + f_\kappa(h_\kappa, e)]}{(1 + \gamma)} \]

- **Back taxes**

\[ d' = \frac{[(1 - \delta_d)d + f_d(c^r)]}{(1 + \gamma)} \]
Business Owner’s Constraints

- **Budget**

\[ a' = \frac{[(1+r)a + y_b - T^b(y^r_b) - (1+\tau_c)(c_c + p_c p) + \chi] + \chi}{1+\gamma} \]

- **Sweat capital**

\[ \kappa' = \frac{[(1 - \delta_\kappa)\kappa + f_\kappa(h_\kappa, e)]}{1+\gamma} \]

- **Back taxes**

\[ d' = \frac{[(1 - \delta_d)d + f_d(c^r)]}{1+\gamma} \]

- **Borrowing**

\[ a' \geq f_a(d') \]
Close the Model

- Standard dynamic program for workers, except
  - Sweat capital decays without use
  - Back taxes not forgiven

- Standard dynamic program for C corporations

- Public financing (G&S plus transfers) with
  - Taxes on consumption and all forms of income
  - Fines if caught evading taxes

(Details in slide deck appendix)
Qualitative Predictions
To Highlight Key Mechanisms...

- Consider four alternative economies with

  1. Low audit rate & no loss of reputation with audit
  2. Low audit rate & loss of reputation with audit
  3. High audit rate & no loss of reputation with audit
  4. High audit rate & loss of reputation with audit

- In each, track *the same* business owner over time
The Shocks

- Business owner
- Employee

Productivity Shocks

Random audit
Financial Assets Before Fines Due

No reputation loss
Reputation loss

Financial Assets

Pay fine
Financial Assets Before Fines Due

- No reputation loss
- Reputation loss

Low audit rates

High audit rates

Financial Assets

Pay fine
Evasion is a motive for precautionary saving.
Back Taxes Before Audit

No reputation loss
Reputation loss

Low audit rates
High audit rates
Back Taxes Before Audit

No reputation loss
Reputation loss

Low audit rates
High audit rates

Cheating is delayed for poor owners
Sweat Capital Before Audit

No reputation loss ——
Reputation loss

Sweat Capital

Low audit rates

High audit rates

0 5 10 15 20 25
Audit
Sweat Capital Before Audit

High audit rates and reputation losses deter firm growth
Financial Assets After Audit

- No reputation loss
- Reputation loss

Low audit rates

High audit rates

Financial Assets

Pay fine

0 5 10 15 20 25
Back Taxes After Audit

No reputation loss — solid line
Reputation loss — dotted line

Low audit rates

High audit rates

Back Taxes

Audit

0 5 10 15 20 25
Back Taxes After Audit

- No reputation loss
- Reputation loss

Low audit rates

High audit rates

No cheating for 13 years
As the owner rebuilds the sweat capital
Predictions of Increased Enforcement

- Lower precautionary motives
  - Financial assets used to pay future fines
  - Borrowing constraints less binding

- Lower sweat capital stocks
  - Brand assets lost with exposed tax evasion
  - Business ages lower with more exit/entry
  - Business productivity higher due to selection
Quantitative Results
Key Compliance Parameters

- Audit probability, $\Pi(d') = \pi$, $\pi$ varied
- Fines, $f_{a}(d) = \bar{p}d$, $\bar{p} = 4$
- Reputational cost, $f_{r}(\kappa) = 0$ if non-compliant
- Underreporting, $f_{d}(c^{r}) = \tau_{b}(1 + \tau_{c})c^{r}$, $\tau_{c} = .065$, $\tau_{b} = .4$
- Back taxes depreciation, $\delta_{d} = 20\%$
Comparative Statics

- Vary audit probability $\pi$
- Record impacts for owners by type
### Fraction of Population

<table>
<thead>
<tr>
<th>Owner type:</th>
<th>3%</th>
<th>4%</th>
<th>5%</th>
<th>6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-compliant</td>
<td>−23</td>
<td>−40</td>
<td>−63</td>
<td>−61</td>
</tr>
<tr>
<td>Compliant</td>
<td>11</td>
<td>20</td>
<td>30</td>
<td>26</td>
</tr>
<tr>
<td>All owners</td>
<td>−3</td>
<td>−6</td>
<td>−10</td>
<td>−11</td>
</tr>
</tbody>
</table>

⇒ Large compositional shift
Financial Assets $(a)$

<table>
<thead>
<tr>
<th>Owner type:</th>
<th>3%</th>
<th>4%</th>
<th>5%</th>
<th>6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-compliant</td>
<td>−20</td>
<td>−36</td>
<td>−55</td>
<td>−65</td>
</tr>
<tr>
<td>Compliant</td>
<td>8</td>
<td>21</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>All owners</td>
<td>−18</td>
<td>−26</td>
<td>−30</td>
<td>−33</td>
</tr>
</tbody>
</table>

⇒ Large drop in precautionary saving
## Productivity ($z$)

<table>
<thead>
<tr>
<th>Owner type</th>
<th>3%</th>
<th>4%</th>
<th>5%</th>
<th>6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-compliant</td>
<td>8</td>
<td>16</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>Compliant</td>
<td>$-1$</td>
<td>$-2$</td>
<td>$-3$</td>
<td>$-3$</td>
</tr>
<tr>
<td>All owners</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

$\Rightarrow$ Increase in productivity due to selection
## Sweat Capital \((\kappa)\)

<table>
<thead>
<tr>
<th>Owner type:</th>
<th>3%</th>
<th>4%</th>
<th>5%</th>
<th>6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-compliant</td>
<td>-12</td>
<td>-25</td>
<td>-25</td>
<td>-4</td>
</tr>
<tr>
<td>Compliant</td>
<td>3</td>
<td>7</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>All owners</td>
<td>-1</td>
<td>0</td>
<td>8</td>
<td>11</td>
</tr>
</tbody>
</table>

⇒ Increase in capital with more compliance
### Business Age

<table>
<thead>
<tr>
<th>Owner type:</th>
<th>% Change from $\pi = 2%$ to</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3%</td>
</tr>
<tr>
<td>Non-compliant</td>
<td>$-46$</td>
</tr>
<tr>
<td>Compliant</td>
<td>5</td>
</tr>
<tr>
<td>All owners</td>
<td>$-27$</td>
</tr>
</tbody>
</table>

$\Rightarrow$ Large drop in age with increased auditing
Summary: All Owners

<table>
<thead>
<tr>
<th>Owner type:</th>
<th>3%</th>
<th>4%</th>
<th>5%</th>
<th>6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of population</td>
<td>−3</td>
<td>−6</td>
<td>−10</td>
<td>−11</td>
</tr>
<tr>
<td>Business age</td>
<td>−27</td>
<td>−32</td>
<td>−27</td>
<td>−27</td>
</tr>
<tr>
<td>Financial assets</td>
<td>−18</td>
<td>−26</td>
<td>−30</td>
<td>−33</td>
</tr>
<tr>
<td>Productivity</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Sweat capital</td>
<td>−1</td>
<td>0</td>
<td>8</td>
<td>11</td>
</tr>
</tbody>
</table>

⇒ Large drops in counts, age, financial assets
But increased TFP due to selection
Policy Counterfactuals

- Two ways to raise same revenues
  - Higher enforcement: $\pi = 2\% \rightarrow \pi = 5\%$
  - Higher tax rate on business: $\tau_b = 40\% \rightarrow \tau_b = 43\%$

- Raise revenues by 6% relative to $\pi = 2$, $\tau_b = 40$ baseline
### Enforcement vs Taxation

<table>
<thead>
<tr>
<th>% Change in:</th>
<th>More Audits</th>
<th></th>
<th>Higher Tax</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(\pi=5)</td>
<td>vs 2%</td>
<td>(\tau_b=43)</td>
<td>vs 40%</td>
</tr>
<tr>
<td># of Owners</td>
<td>−10</td>
<td>−5</td>
<td>−69</td>
<td>6</td>
</tr>
<tr>
<td>Non-compliant</td>
<td>−63</td>
<td>6</td>
<td>63</td>
<td>3</td>
</tr>
<tr>
<td>Compliant</td>
<td>30</td>
<td>−13</td>
<td>−37</td>
<td>−19</td>
</tr>
<tr>
<td>Back taxes, (d)</td>
<td>−76</td>
<td>20</td>
<td>−56</td>
<td>10</td>
</tr>
<tr>
<td>Business age</td>
<td>−27</td>
<td>22</td>
<td>−27</td>
<td>22</td>
</tr>
<tr>
<td>Financial assets, (a)</td>
<td>−30</td>
<td>14</td>
<td>−30</td>
<td>14</td>
</tr>
<tr>
<td>Sweat capital, (\kappa)</td>
<td>8</td>
<td>9</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Productivity, (z)</td>
<td>4</td>
<td>−2</td>
<td>4</td>
<td>−2</td>
</tr>
<tr>
<td>Business income, (y_b)</td>
<td>6</td>
<td>2</td>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>
Bottom Line

- Higher enforcement vs taxation
  - Most evident in composition of businesses/owners
  - Less evident in aggregate business activity
- Need transitional dynamics to do proper welfare analysis
Next Steps

- **Data:** gather relevant IRS micro data
  - Current NRP studies only work with 1040
  - Want to expand analysis to business filings

- **Theory:** add transitional dynamics
  - Current analysis is steady state
  - Want to analyze Inflation Reduction provisions
  - Want to do full welfare analysis with transition
Appendix
Dynamic Program for Workers

- Workers choose \( x = [a', c_p, c_c, \ell] \) to solve

\[
V^w(s) = \max_x \left\{ U(c, \ell) + \beta \sum z', \epsilon' \pi(z', \epsilon'| z, \epsilon) V(s') \right\}
\]

subject to

\[
a' = [(1 + r)a + w\epsilon h_w - T^w(w\epsilon h_w)
- (1 + \tau_c)(c_c + pc_p) + \chi] / (1 + \gamma)
\]

\[
\kappa' = (1 - \lambda_\kappa)\kappa / (1 + \gamma)
\]

\[
d' = (1 - \lambda_d)d / (1 + \gamma)
\]

\[
1 = \ell + h_w
\]
Dynamic Program for Corporations

- Corporations choose $x_c, n_c$ to solve

$$V^c(k_c) = \max \left\{ (1 - \tau_d)d_c + \frac{1 + \gamma}{1 + r} V^c(k'_c) \right\}$$

subject to

$$d_c = AF(k_c, n_c) - wn_c - x_c - \tau_p(y_c - wn_c - \delta_k k_c)$$

$$x_c = (1 + \gamma)k'_c - (1 - \delta_k)k_c$$
Government Budget Constraint

\[ g + \chi + (r - \gamma)b = \tau_c \int (c_{ci} + p_{ci}) \, di + \\
+ \tau_d (y_c - w_n c - (\gamma + \delta_k)k_c - \tau_p (y_c - w_n c - \delta_k k_c)) \\
+ \tau_p (y_c - w_n c - \delta_k k_c) + \int T^n (w\epsilon_i n_i) \, di \\
+ \int T^b (y_{ri}^b) \, di + \int 1_i f_a (d_i) \, di \]
IRS Compliance Data
IRS Compliance Data

• Tax gap = random audits + DCE adjustments

• Random audits:
  ○ Taxpayer compliance measurement program, 1962–88
  ○ National research program, 2000–present

• Detection controlled estimation (DCE) adjustments:
  ○ Scale up recommendations of all examiners
  ○ Use data from examiners with largest adjustments
## How Big is the Tax Gap?

<table>
<thead>
<tr>
<th>Gross tax gap</th>
<th>2001</th>
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<th>2021</th>
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<td>575</td>
<td>763</td>
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<td>% of GDP</td>
<td>3.3</td>
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<td>Source share:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Underreporting</td>
<td>83</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Underpayment</td>
<td>10</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Nonfiling</td>
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<td>Business</td>
<td>62</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>Wages &amp; salaries</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>34</td>
<td>42</td>
<td>43</td>
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How Widespread is Cheating?

- Evidence from 2 NRP random-audit studies (no DCE)
  - All owners—ranked by reported incomes
  - Sole proprietors—ranked by understated tax

- Reveal same patterns
  - Cheating is widespread
  - Few owners account for most cheating
Owners Ranked by Reported Incomes

Ratio of Unreported to Reported Business Income (%)

Reported Business Income Quantile

- Negative
- 0-40
- 40-60
- 60-80
- 80-90
- 90-95
- 99-99.5
- Top 0.5

Years:
- 1988
- 2001
- 2006-7
- 2008-9
- 2010-11
- 2012-13
Owners Ranked by Reported Incomes

![Chart showing the ratio of unreported to reported business income quantiles across different years (1988, 2001, 2006-7, 2008-9, 2010-11, 2012-13) for various income quantiles. The chart displays a peak in the ratio for the 0-40 quantile in 1988.](chart.png)
Owners Ranked by Reported Incomes

![Bar chart showing the ratio of unreported to reported business income across different quantiles for various years: 1988, 2001, 2006-7, 2008-9, 2010-11, and 2012-13. The x-axis represents the reported business income quantile, and the y-axis represents the ratio of unreported to reported income. The chart highlights the variation in income reporting across different income brackets and years.]
Proprietors Ranked by Understated Taxes
Proprietors Ranked by Understated Taxes

![Bar chart showing understated tax amounts in thousands of 2023$ for various percentiles.](chart)

- 25th percentile: $449
- 50th percentile: $1,485
- 75th percentile: $4,155
- 90th percentile: $10,210
- 95th percentile: $18,219
- 98th percentile: $33,520

Percentile (excluding compliant 39%)
Cumulated Understated Taxes

Cumulative Understated Taxes (in billions of 2023$)

Percentile (excluding compliant 39%)
Nonpecuniary Motives for Compliance

• TAS surveys intended to elicit nonpecuniary motives

• How?
  ○ Construct samples of sole proprietors
  ○ Use DIF scores indicating likelihood of audit
  ○ Group proprietors by DIF score
  ○ Compare responses of low-DIF and high-DIF groups
TAS Survey Main Results

- Compare lowest and highest compliance groups

- Where similar:
  - Agree tax rules complicated
  - Know consequences of underreporting
  - Profess moral obligation to pay taxes

- Where different:
  - High-compliance more trusting in IRS/govt
  - High-compliance rely more on preparers
Does Evasion Occur Across Income Distribution?

- Evidence from NRP random-audit studies (no DCE)
  - Available publicly only for total incomes
  - Shows underreporting across the distribution
- Estimates of very top depend on DCE adjustments
Shares of Unreported Total Incomes (no DCE)