Historically, a 70 percent marginal tax rate is not unusual
The top marginal income tax rates from 1913 to 2018

1981
Reagan took office

SOURCE: TAX POLICY CENTER
Source: Computations made by Emmanuel Saez using tax and transfer system parameters
Source: Piketty, Thomas, and Emmanuel Saez (2012)
### Basic Theory

**Diagram:**

- **Consumption vs. Leisure hours** graph
  - **Indifference curve, $IC_1$:**
    - Point $A$ lies on the indifference curve, indicating a choice between consumption and leisure.
    - The indifference curve shows combinations of consumption and leisure that provide the same level of satisfaction.
  - **Points:**
    - $C_1 = $13,750
    - $C_2 = $9,625

**Equations:**

- $C_1 = $13,750
- $C_2 = $9,625
21.1 Substitution versus Income Effect

(a) Substitution effect is larger

(b) Income effect is larger

Consumption vs. Leisure hours graph.
20.3

The Laffer Curve

Image: Diagram of the Laffer curve with tax revenues on the y-axis and tax rate on the x-axis. The curve has a peak labeled "Correct side" at a tax rate $\tau^*$ and a "Wrong side" beyond 100% tax rate.
Optimal Top Income Tax Rate (Mirrlees ’71 model)

Disposable Income

\[ c = z - T(z) \]

Market income \( z \)

Top bracket:
Slope 1-\( \tau \)
\( z^* \)

Reform:
Slope 1-\( \tau - d\tau \)
\( z^* - T(z^*) \)

Source: Diamond and Saez JEP’11
Optimal Top Income Tax Rate (Mirrlees '71 model)

Disposable Income
\[ c = z - T(z) \]

Market income \( z \)

\[ z^* - T(z^*) \]

Mechanical tax increase:
\[ d\tau [z - z^*] \]

Behavioral Response tax loss:
\[ \tau dz = - d\tau \frac{e^z \tau}{1-\tau} \]

Source: Diamond and Saez JEP'11
Empirical Pareto Coefficient

\[ z^* = \text{Adjusted Gross Income (current 2005$)} \]

\[ a = \frac{zm}{zm - z^*} \text{ with } zm = E(z | z > z^*) \]

\[ \alpha = \frac{z^* h(z^*)}{1 - H(z^*)} \]

Source: Diamond and Saez JEP'11
Starting from a Means-Tested Program

Source: revised version of Saez (2002), p. 1050
Introducing a small EITC is desirable for redistribution.

Starting from a Means-Tested Program

Source: revised version of Saez (2002), p. 1050
Introducing a small EITC is desirable for redistribution.

Starting from a Means-Tested Program

Participation response saves government revenue

Source: revised version of Saez (2002), p. 1050
EITC Amount as a Function of Earnings

Subsidy: 40%
Subsidy: 34%
Phase-out tax: 21%
Phase-out tax: 16%

Source: Federal Govt
Figure 1: Earned Income Tax Credit by Number of Children and Filing Status, 2013

Individual Income Tax

\[ T(z) \] is continuous in \( z \)

- slope 10%
- slope 12%
- slope 37%

Taxable income \( z \)
Marginal Income Tax

$T'(z)$ is a step function

- $10\%$ at $0$
- $12\%$ at some value
- $37\%$ at some value

taxable income $z$
$c = z - T(z)$

after-tax and transfer income

Budget Set

slope = $1 - T'(z)$

$z^*$

pre-tax income $z$
Pre-tax income $z$

$$c = z - T(z)$$

$$\tau_p = \text{participation tax rate}$$

$$-T(0)$$

$$45^\circ$$
Laffer Curve

\[ R = \tau \cdot Z(1 - \tau) \]

\[ \tau^* = \frac{1}{1 + e} \text{ with } e = \frac{1-\tau}{Z} \cdot \frac{dZ}{d(1-\tau)} \]
Utilitarianism and Redistribution

utility

$u \left( \frac{c_1 + c_2}{2} \right)$

$u(c_1) + u(c_2)$

$\frac{c_1 + c_2}{2}$

consumption $c$
The effect of tax on labor supply is shown in the diagram. The equation is $c = z - T(z)$.

- When $T(z) < 0$: income effect, $z \downarrow$.
- When $T'(z) > 0$: substitution effect, $z \downarrow$.
- When $T(z) > 0$: income effect, $z \uparrow$.
- When $T'(z) > 0$: substitution effect, $z \downarrow$.

The slope of the line is $1 - T'(z)$.
Labor Supply Theory

Indifference Curves

Budget: \( c = wl + R \)

Marshallian Labor Supply: \( l(w, R) \)

Available consumption: \( c = z - T(z) \)
Minimize cost to reach utility $u$ given slope $w$: Hicksian Labor Supply $l^c(w,u)$

$c = z - T(z)$

Consumption

Utility $u$
Labor Supply Income Effect

\[ c = z - T(z) \]

Consumption

Budget: \[ c = wI + R \]

l(w, R)
labor supply \ l(l(w, R))

Budget: \ c = w l + R + d R

Budget: \ c = w l + R

\ c = z - T(z) \text{ consumption}
Labor Supply Income Effect

\[ R(l(w, R + dR)) \]

Budget: \( c = wl + R + dR \)

\[ \eta = w(\partial l/\partial R) < 0 \]

\[ c = z - T(z) \]

consumption

labor supply \( l \)
$c = z - T(z)$

consumption

$u = l^c(w,u)$

Slope = $w$

Labor Supply Substitution Effect
Labor Supply Substitution Effect

$c = z - T(z)$

Consumption

$u = \frac{w}{l_c}$

Utility

Slope = $w + dw$

$\varepsilon^c = \left(\frac{w}{l^c}\right) \frac{\partial l^c}{\partial w} > 0$

$\frac{\partial}{\partial c}$

Labor supply $l$
Uncompensated Labor Supply Effect

Budget: \( c = wl + R \)

\( c = z - T(z) \) consumption

Labor supply \( l \)

Slope = \( w \)
Uncompensated Labor Supply Effect

c = z - T(z)
consumption

slope = w + dw
slope = w
Uncompensated Labor Supply Effect

c = z - T(z)

consumption

\[ R \]

\[ l(w, R) \]

\[ l(w + dw, R) \]

\[ \epsilon^u \]

\[ \epsilon^c > 0 \]

substitution effect:

\[ \text{slope} = w + dw \]

\[ \text{slope} = w \]
Uncompensated Labor Supply Effect

Slutsky equation: \( \varepsilon^u = \varepsilon^c + \eta \)

- \( \eta \leq 0 \) (income effect)
- \( \varepsilon^c > 0 \) (substitution effect)

\[ c = z - T(z) \]

\[ \text{consumption} \]

\[ l(w, R) \]

\[ l(w + dw, R) \]

\[ \text{Labor supply} \]
Basic income vs. Means-tested transfer

Budget: $c = (1-\tau)z + R$

**Basic income:** give $R$ to all,
Tax all earnings $z$ at MTR $\tau$

**Means-tested transfer:** give $R$ to people with $z=0$,
give $R-\tau z$ to people with $z$ in $(0,z^*)$,
Tax earnings $z$ at MTR $\tau$ but only above $z^*$

$c = z - T(z)$

disposable income
Effect of Taxes/Transfers on Labor Supply

c = z - T(z)
disposable income

T(z) < 0:
income effect: z decreases

T'(z) > 0:
substitution effect: z decreases

Net effect: z decreases

T(z) > 0:
income effect: z increases

T'(z) > 0:
substitution effect: z decreases

Net effect on z is ambiguous

slope = 1 - T'(z)

pre-tax earnings z
Effect of Taxes/Transfers on Labor Supply

c = z - T(z)
disposable income

slope = 1 - T'(z)

pre-tax earnings z

z^*

45°
Effect of Taxes/Transfers on Labor Supply

\( z < z^* \)

c = z - T(z)

disposable income

\( T(z) < 0: \) income effect: \( z \) decreases

\( T'(z) > 0: \) substitution effect: \( z \) decreases

Net effect: \( z \) decreases

slope = 1 - T'(z)

pre-tax earnings \( z \)
Effect of Taxes/Transfers on Labor Supply

\[ z > z^* \]

\[ c = z - T(z) \]

disposable income

\[ T(z) > 0: \text{income effect: } z \text{ increases} \]

\[ T'(z) > 0: \text{substitution effect: } z \text{ decreases} \]

Net effect on \( z \) is ambiguous

Slope = \( 1 - T'(z) \)
Starting from a Means-Tested Program

Disposable income $c = z - T(z)$

Pre-tax earnings $z$

$G$

$45^\circ$

$w^*$
Introducing a small EITC is desirable for redistribution if $1 to low paid workers more valued than $1 distributed to all.
Introducing a small EITC is desirable for redistribution.

Participation response saves government revenue.
Introducing a small EITC is desirable for redistribution

Participation response saves government revenue

Win-Win reform

Disposable income $c = z - T(z)$
Introducing a small EITC is desirable for redistribution

Participation response saves government revenue

Win-Win reform

If intensive response is small

Disposable income

c = z - T(z)

Pre-tax earnings z

Starting from a Means-Tested Program
Starting from a means-tested program

Disposable income
\( c = z - T(z) \)

Pre-tax earnings \( z \)

\( z^* \)

\( G \)

45°
Reducing generosity of $G$ and phase-out rate is desirable if society puts low weight on zero earners. $\$1$ to zero earners less valued than $\$1$ distributed to all.

The disposable income $c = z - T(z)$ is given by the equation $\frac{G - dG}{z}$.

Starting from a means-tested program:

- $G$ is the generous portion.
- $G - dG$ is the reduced generous portion.

$G$ is the point where the generous portion starts, and $G - dG$ is where it decreases due to the phase-out rate.
Reducing generosity of G and phase-out rate is desirable if society puts low weight on zero earners. Labor supply response saves government revenue. Win-Win reform.