Historically, a 70 percent marginal tax rate is not unusual

The top marginal income tax rates from 1913 to 2018

[Graph showing historical tax rates with a peak in 1981 when Reagan took office]
US Tax/Transfer System, single parent with 2 children, 2009

Source: Computations made by Emmanuel Saez using tax and transfer system parameters
Source: Piketty, Thomas, and Emmanuel Saez (2012)
21.1 Basic Theory

In the graph, the indifference curve, $IC_1$, is shown with a slope of $-12.50$. The points $A$ and $B$ represent different consumption choices:

- $C_1 = $13,750
- $C_2 = $9,625

The horizontal axis represents leisure hours, and the vertical axis represents consumption. The dashed lines $BC_1$ and $BC_2$ indicate different consumption levels at 900 leisure hours.
Substitution versus Income Effect

(a) Substitution effect is larger

(b) Income effect is larger
20.3 The Laffer Curve

The Laffer Curve illustrates the relationship between tax rates and tax revenues. The curve suggests that as tax rates increase, tax revenues also increase up to a point, after which a further increase in tax rates leads to a decrease in tax revenues. The optimal tax rate, denoted by $\tau^*$, is the point where tax revenues are maximized. The curve is often divided into two sides: the "Correct side" and the "Wrong side," indicating the efficiency of tax policy at different rates.
Optimal Top Income Tax Rate (Mirrlees ’71 model)

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

Market income \( z \)

Top bracket:
Slope \( 1 - \tau \)

Reform:
Slope \( 1 - \tau - d\tau \)

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

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

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

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

Market income
\[ z \]

Source: Diamond and Saez JEP'11
Empirical Pareto Coefficient

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

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

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

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

Consumption $c$

Earnings $w$

$45^\circ$

$G$

$w^*$

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
The Phase-In and Phaseout of the EITC

Credit Amount by Marital Status and Number of Children

$T(z)$ is continuous in $z$.

- Slope 10%
- Slope 12%
- Slope 37%

Individual Income Tax

Taxable income $z$
Marginal Income Tax

$T'(z)$ is a step function.

- $10\%$ at $0$
- $12\%$ at a certain value
- $37\%$ at a higher value

Taxable income $z$
\[ c = z - T(z) \]

after-tax and transfer income

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

Budget Set

slope = \(1 - T'(z)\)

pre-tax income \( z \)
\[ c = z - T(z) \]

\[ \tau_p = \text{participation tax rate} \]

\[ (1 - \tau_p)z \]

\[ -T(0) \]

\[ 0 \]

\[ z \]

\[ \text{pre-tax income } z \]
Laffer Curve

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

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

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

\[ u(c_1) + u(c_2) \]

utility

consumption \( c \)

\[ c_1 \quad \frac{c_1 + c_2}{2} \quad c_2 \]
Effect of Tax on Labor Supply

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

- **T(z) < 0:** income effect \( z \downarrow \)
- **T'(z) > 0:** substitution effect \( z \downarrow \)
- **T(z) > 0:** income effect \( z \uparrow \)
- **T'(z) > 0:** substitution effect \( z \downarrow \)

slope = \( 1 - T'(z) \)
Labor Supply Theory

Budget: $c = wl + R$

Marshallian Labor Supply $l(w, R)$

Indifference Curves

$c = z - T(z)$

consumption
Labor Supply Theory

Minimize cost to reach utility $u$ given slope $w$: Hicksian Labor Supply $l^c(w,u)$

$c = z - T(z)$

Consumption

Utility $u$

Slope $= w$

Labor supply $l$
Labor Supply Income Effect

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

consumption

\[ l(w,R) \]

Budget: \( c = wl + R \)

0

R

labor supply 1
Labor Supply Income Effect

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

consumption

Budget: \[ c = wl + R + dR \]

Budget: \[ c = wl + R \]

\[ l(w, R) \]

labor supply l
Labor Supply Income Effect

Budget: $c = wl + R + dR$

Budget: $c = wl + R$

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

$c = z - T(z)$ consumption
Labor Supply Substitution Effect

$c = z - T(z)$

Consumption

$u_l(c(w,u))$

Utility $u$

Slope = $w$

Labor supply $l^c(w,u)$

Labor supply $l$
Labor Supply Substitution Effect

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

consumption

\[ c^w(u) \]

\[ l^c(w,u) \]

\[ l^c(w+dw,u) \]

utility \( u \)

slope = \( w + dw \)

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

\[ \frac{\partial}{\partial c} = \frac{c}{c} \]

\[ \frac{\partial}{\partial l} = \frac{l}{l} \]
Uncompensated Labor Supply Effect

Budget: \( c = w l + R \)

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

consumption

R

0

l(w,R)

Labor supply l
Uncompensated Labor Supply Effect

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

consumption

\[ l(w, R) \]

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

\[ \varepsilon_u \]

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

\[ \text{slope} = w \]
Labor supply $l$

Uncompensated Labor Supply Effect

slope = $w + dw$

substitution effect: $\varepsilon^c > 0$

$c = z - T(z)$ consumption

$R$

l($w$, $R$) l($w + dw$, $R$)

Labor supply $l$
Uncompensated Labor Supply Effect

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

- **Income effect**: \( \eta \leq 0 \)
- **Substitution effect**: \( \varepsilon^c > 0 \)

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

\[ R \]

Labor supply \( l \)
Basic income vs. Means-tested transfer

**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 $z^*$

The budget is given by $c = (1-\tau) z + R$.

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

$z^* = R/\tau$
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)

45°
Effect of Taxes/Transfers on Labor Supply

c = z - T(z)

disposable income

slope = 1 - T'(z)

z*

pre-tax earnings z
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

\[ z^* \]

Effect of Taxes/Transfers on Labor Supply

\[ (z < z^*) \]

Pre-tax earnings \[ z \]

\[ \text{slope} = 1 - T'(z) \]
Effect of Taxes/Transfers on Labor Supply

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

\( z > z^* \)

Disposable income

\( -T(0) \)

45°

Pre-tax earnings \( z \)

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

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

Net effect on \( z \) is ambiguous
Starting from a Means-Tested Program

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

Pre-tax earnings $z$

$x$ axis

$y$ axis

$G$

$45^\circ$

$w^*$
Starting from a Means-Tested Program

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.

Starting from a Means-Tested Program

Disposable income

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

Pre-tax earnings \( z \)
Introducing a small EITC is desirable for redistribution.

Participation response saves government revenue.

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

Win-Win reform: If intensive response is small.
Starting from a means-tested program

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

Pre-tax earnings $z$

Graph showing the relationship between disposable income and pre-tax earnings, with a 45° line indicating no income taxes ($T(z) = 0$) and a point $G$ indicating a specific disposable income at $z^*$. 
Reducing generosity of $G$ and phase-out rate is desirable if society puts low weight on zero earners. $G = 1$ to zero earners less valued than $1$ distributed to all.
Starting from a means-tested program
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