Political Economy - The Economic Origins of Democracy

February 25, 2013

The Economic Origins of Democracy

- Almost all societies began as oligarchies and then some became democracies; this raises a series of questions

The Economic Origins of Democracy

- Almost all societies began as oligarchies and then some became democracies; this raises a series of questions
  - Why did some societies become democratic and others remain oligarchic?

The Economic Origins of Democracy

- Almost all societies began as oligarchies and then some became democracies; this raises a series of questions
    - Why did some societies become democratic and others remain oligarchic?
    - Why did some societies evolve into democracies relatively peacefully and others violently?

The Economic Origins of Democracy

- Almost all societies began as oligarchies and then some became democracies; this raises a series of questions
  - Why did some societies become democratic and others remain oligarchic?
  - Why did some societies evolve into democracies relatively peacefully and others violently?
  - Why do some democracies appear secure whereas other are quite fragile?

The Economic Origins of Democracy

- Key Idea

The Economic Origins of Democracy

- Key Idea
  - Strategic delegation

The Economic Origins of Democracy

- Key Idea
    - Strategic delegation
        - Oligarchs will only relinquish control over resources if it is in their interests to do so

The Economic Origins of Democracy

- Key Idea
  - Strategic delegation
    - Oligarchs will only relinquish control over resources if it is in their interests to do so
    - It must therefore be the case that if they do so it is because others are able to undertake actions that benefit the oligarchs more than those which they themselves could carry out

The Economic Origins of Democracy

- Key Idea
  - Strategic delegation
    - Oligarchs will only relinquish control over resources if it is in their interests to do so
    - It must therefore be the case that if they do so it is because others are able to undertake actions that benefit the oligarchs more than those which they themselves could carry out
    - Thus to delegate decision making power to others is rational

The Economic Origins of Democracy

- Workhorse Model

The Economic Origins of Democracy

- Workhorse Model
  - Assume

The Economic Origins of Democracy

- Workhorse Model
    - Assume
        - Society consist of two groups, rich r and poor p

The Economic Origins of Democracy

- Workhorse Model
  - Assume
    - Society consist of two groups, rich r and poor p
    - There are R rich and P poor agents in the society, naturally $P > R$

The Economic Origins of Democracy

- Workhorse Model
    - Assume
        - Society consist of two groups, rich r and poor p
        - There are R rich and P poor agents in the society, naturally $P > R$
        - There are $N = R + P$ agents in total

The Economic Origins of Democracy

- Workhorse Model
    - Assume
        - Society consist of two groups, rich r and poor p
        - There are R rich and P poor agents in the society, naturally $P > R$
        - There are $N = R + P$ agents in total
        - Each period each agent receives income y_i, $i = r, p$, naturally $y_r > y_p$

The Economic Origins of Democracy

- Workhorse Model
    - Assume
        - Society consist of two groups, rich r and poor p
        - There are R rich and P poor agents in the society, naturally $P > R$
        - There are $N = R + P$ agents in total
        - Each period each agent receives income y_i, $i = r, p$, naturally $y_r > y_p$
        - Each agent pays income tax τy_i, $i = r, p$, where each faces the common tax rate τ

The Economic Origins of Democracy

- Workhorse Model
    - Assume
        - Society consist of two groups, rich r and poor p
        - There are R rich and P poor agents in the society, naturally $P > R$
        - There are $N = R + P$ agents in total
        - Each period each agent receives income y_i, $i = r, p$, naturally $y_r > y_p$
        - Each agent pays income tax τy_i, $i = r, p$, where each faces the common tax rate τ
        - Taxes are distortionary so that $C(\tau) \in (0, 1)$ of every dollar in tax revenue is wasted

The Economic Origins of Democracy

- Workhorse Model
    - Assume
        - Society consist of two groups, rich r and poor p
        - There are R rich and P poor agents in the society, naturally $P > R$
        - There are $N = R + P$ agents in total
        - Each period each agent receives income y_i, $i = r, p$, naturally $y_r > y_p$
        - Each agent pays income tax τy_i, $i = r, p$, where each faces the common tax rate τ
        - Taxes are distortionary so that $C(\tau) \in (0, 1)$ of every dollar in tax revenue is wasted
        - $C(\tau)$ is increasing and convex, so $C'(\tau) > 0$ and $C''(\tau) > 0$

The Economic Origins of Democracy

- Workhorse Model
    - Assume
        - Society consist of two groups, rich r and poor p
        - There are R rich and P poor agents in the society, naturally $P > R$
        - There are $N = R + P$ agents in total
        - Each period each agent receives income y_i, $i = r, p$, naturally $y_r > y_p$
        - Each agent pays income tax τy_i, $i = r, p$, where each faces the common tax rate τ
        - Taxes are distortionary so that $C(\tau) \in (0, 1)$ of every dollar in tax revenue is wasted
        - $C(\tau)$ is increasing and convex, so $C'(\tau) > 0$ and $C''(\tau) > 0$
        - Each agent receives a transfer T

The Economic Origins of Democracy

- Workhorse Model

The Economic Origins of Democracy

- Workhorse Model
  - The government budget constraint

$$T = \frac{\tau(Ry_r + Py_p) - C(\tau)(Ry_r + Py_p)}{N}$$
$$= (\tau - C(\tau))\bar{y}$$

  where $\bar{y} \equiv \frac{Ry_r + Py_p}{N}$ is mean income

The Economic Origins of Democracy

- Workhorse Model
    - The government budget constraint

$$T = \frac{\tau(Ry_r + Py_p) - C(\tau)(Ry_r + Py_p)}{N}$$
$$= (\tau - C(\tau))\bar{y}$$

    where $\bar{y} \equiv \frac{Ry_r + Py_p}{N}$ is mean income
    - The indirect utility functions of rich and poor

$$V(y_r|\tau) = (1 - \tau)y_r + (\tau - C(\tau))\bar{y}$$
$$V(y_p|\tau) = (1 - \tau)y_p + (\tau - C(\tau))\bar{y}$$

The Economic Origins of Democracy

- Workhorse Model

The Economic Origins of Democracy

- Workhorse Model
  - The most preferred tax rates of rich and poor

The Economic Origins of Democracy

- Workhorse Model
  - The most preferred tax rates of rich and poor
    - First order conditions

$$V'(y_r|\tau) = -y_r + (1 - C'(\tau))\bar{y} = 0$$
$$V'(y_p|\tau) = -y_p + (1 - C'(\tau))\bar{y} = 0$$

The Economic Origins of Democracy

- Workhorse Model
  - The most preferred tax rates of rich and poor
    - First order conditions

$$V'(y_r|\tau) = -y_r + (1 - C'(\tau))\bar{y} = 0$$
$$V'(y_p|\tau) = -y_p + (1 - C'(\tau))\bar{y} = 0$$

  - Implicit solutions

$$C'(\tau_r^*) = \frac{\bar{y} - y_r}{\bar{y}} = 1 - \rho_r$$

$$C'(\tau_p^*) = \frac{\bar{y} - y_p}{\bar{y}} = 1 - \rho_p$$

where $\rho_r = \frac{y_r}{\bar{y}} > \frac{y_p}{\bar{y}} = \rho_p$

The Economic Origins of Democracy

- Workhorse Model
  - The most preferred tax rates of rich and poor
    - First order conditions

$$V'(y_r|\tau) = -y_r + (1 - C'(\tau))\bar{y} = 0$$
$$V'(y_p|\tau) = -y_p + (1 - C'(\tau))\bar{y} = 0$$

    - Implicit solutions

$$C'(\tau_r{}^*) = \frac{\bar{y} - y_r}{\bar{y}} = 1 - \rho_r$$
$$C'(\tau_p{}^*) = \frac{\bar{y} - y_p}{\bar{y}} = 1 - \rho_p$$

where $\rho_r = \frac{y_r}{\bar{y}} > \frac{y_p}{\bar{y}} = \rho_p$

    - Given $C(\tau)$ is increasing and convex $\tau_p{}^* > \tau_r{}^* \Rightarrow$ the poor prefer higher tax rates than the rich $\Rightarrow$ **Redistributive conflict**

The Economic Origins of Democracy

- Revolutions

The Economic Origins of Democracy

- Revolutions
  - Suppose now that the poor may threaten to engage in a revolution

The Economic Origins of Democracy

- Revolutions
  - Suppose now that the poor may threaten to engage in a revolution
    - If a revolution occurs the poor set taxes instead of the rich and do so forever

The Economic Origins of Democracy

- Revolutions
    - Suppose now that the poor may threaten to engage in a revolution
        - If a revolution occurs the poor set taxes instead of the rich and do so forever
        - A revolution is costly - μ of all incomes are destroyed in perpetuity by the conflict

The Economic Origins of Democracy

- Revolutions
    - Suppose now that the poor may threaten to engage in a revolution
        - If a revolution occurs the poor set taxes instead of the rich and do so forever
        - A revolution is costly - μ of all incomes are destroyed in perpetuity by the conflict
    - No revolution constraint (NRC)

$$V(y_p, \mu | \tau_p{}^*) \leq V(y_p | \tau_r)$$

$$\Rightarrow (1 - \mu)((1 - \tau_p{}^*)y_p + (\tau_p{}^* - C(\tau_p{}^*))\bar{y})$$
$$\leq (1 - \tau_r)y_p + (\tau_r - C(\tau_r))\bar{y}$$

The Economic Origins of Democracy

- Revolutions

The Economic Origins of Democracy

- Revolutions
  - Notice

The Economic Origins of Democracy

- Revolutions
    - Notice
        - If $\mu \to 0$ then the NRC requires

$$V(y_p, \mu|\tau_p{}^*) \le V(y_p|\tau_r)$$
$$\Rightarrow (1 - \tau_p{}^*)y_p + (\tau_p{}^* - C(\tau_p{}^*))\bar{y})$$
$$\le (1 - \tau_r)y_p + (\tau_r - C(\tau_r))\bar{y}$$
$$\Rightarrow \tau_r = \tau_p{}^*$$

The Economic Origins of Democracy

- Revolutions
  - Notice
    - If $\mu \to 0$ then the NRC requires

$$V(y_p, \mu | \tau_p{}^*) \leq V(y_p | \tau_r)$$
$$\Rightarrow (1 - \tau_p{}^*) y_p + (\tau_p{}^* - C(\tau_p{}^*)) \bar{y}$$
$$\leq (1 - \tau_r) y_p + (\tau_r - C(\tau_r)) \bar{y}$$
$$\Rightarrow \tau_r = \tau_p{}^*$$

    - If $\mu \to 1$ then the NRC requires

$$V(y_p, \mu | \tau_p{}^*) \leq V(y_p | \tau_r)$$
$$\Rightarrow 0 \leq (1 - \tau_r) y_p + (\tau_r - C(\tau_r)) \bar{y}$$
$$\Rightarrow \tau_r = \tau_r{}^*$$

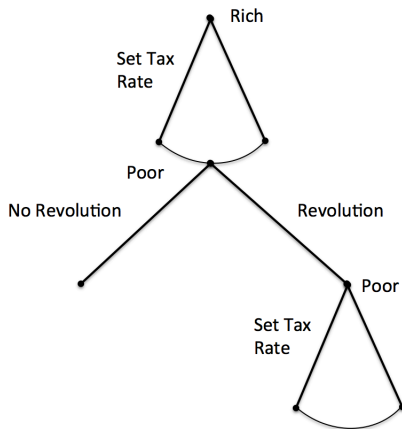## The Economic Origins of Democracy

- Revolutions

The Economic Origins of Democracy

- Revolutions
  - Timing

The Economic Origins of Democracy

- Revolutions
    - Timing
        - Suppose that the rich move first and set the tax rate before the poor choose revolution or not

The Economic Origins of Democracy

- Revolutions

The Economic Origins of Democracy

- Revolutions
  - Rich move first

The Economic Origins of Democracy

- Revolutions
  - Rich move first
    - Use backwards induction to solve the model

The Economic Origins of Democracy

- Revolutions
  - Rich move first
    - Use backwards induction to solve the model
    - After a revolution the poor will choose τ_p^* giving payoffs

$$V(y_p, \mu | \tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_p + (\tau_p^* - C(\tau_p^*))\bar{y})$$
$$V(y_r, \mu | \tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_p^*))\bar{y})$$

The Economic Origins of Democracy

- Revolutions
    - Rich move first
        - Use backwards induction to solve the model
        - After a revolution the poor will choose τ_p^* giving payoffs

        $$V(y_p, \mu | \tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_p + (\tau_p^* - C(\tau_p^*))\bar{y})$$
        $$V(y_r, \mu | \tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_p^*))\bar{y})$$

        - If there is no revolution the rich will choose τ_r giving payoffs

        $$V(y_p | \tau_r) = (1 - \tau_r)y_p + (\tau_r - C(\tau_r))\bar{y}$$
        $$V(y_r | \tau_r) = (1 - \tau_r)y_r + (\tau_r - C(\tau_r))\bar{y}$$

The Economic Origins of Democracy

- Revolutions
    - Rich move first
        - Use backwards induction to solve the model
        - After a revolution the poor will choose τ_p^* giving payoffs

        $$V(y_p, \mu | \tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_p + (\tau_p^* - C(\tau_p^*))\bar{y})$$
        $$V(y_r, \mu | \tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_p^*))\bar{y})$$

        - If there is no revolution the rich will choose τ_r giving payoffs

        $$V(y_p | \tau_r) = (1 - \tau_r)y_p + (\tau_r - C(\tau_r))\bar{y}$$
        $$V(y_r | \tau_r) = (1 - \tau_r)y_r + (\tau_r - C(\tau_r))\bar{y}$$

        - τ_r will be set by the rich as low as possible so as to satisfy the NRC that is

        $$(1 - \tau_r)y_p + (\tau_r - C(\tau_r))\bar{y} \geq (1 - \mu)((1 - \tau_p^*)y_p \\ + (\tau_p^* - C(\tau_p^*))\bar{y})$$

The Economic Origins of Democracy

- Revolutions
  - Rich move first
    - Use backwards induction to solve the model
    - After a revolution the poor will choose τ_p^* giving payoffs

$$V(y_p, \mu | \tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_p + (\tau_p^* - C(\tau_p^*))\bar{y})$$
$$V(y_r, \mu | \tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_p^*))\bar{y})$$

  - If there is no revolution the rich will choose τ_r giving payoffs

$$V(y_p | \tau_r) = (1 - \tau_r)y_p + (\tau_r - C(\tau_r))\bar{y}$$
$$V(y_r | \tau_r) = (1 - \tau_r)y_r + (\tau_r - C(\tau_r))\bar{y}$$

  - τ_r will be set by the rich as low as possible so as to satisfy the NRC that is

$$(1 - \tau_r)y_p + (\tau_r - C(\tau_r))\bar{y} \geq (1 - \mu)((1 - \tau_p^*)y_p$$
$$+ (\tau_p^* - C(\tau_p^*))\bar{y})$$

- **No revolution and no democracy!**

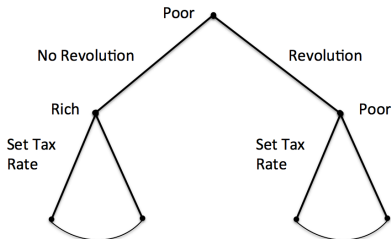**The Economic Origins of Democracy**

- Revolutions

The Economic Origins of Democracy

- Revolutions
    - Timing

The Economic Origins of Democracy

- Revolutions
  - Timing
    - Suppose that the poor move first and choose revolution or not before the tax rate is set

The Economic Origins of Democracy

- Revolutions

The Economic Origins of Democracy

- Revolutions
  - Poor move first

The Economic Origins of Democracy

- Revolutions
    - Poor move first
        - If the poor choose no revolution the rich set $\tau_r = \tau_r^*$ and the payoff are

$$V(y_p|\tau_r^*) = (1 - \tau_r^*)y_p + (\tau_r^* - C(\tau_r^*))\bar{y}$$
$$V(y_r|\tau_r^*) = (1 - \tau_r^*)y_r + (\tau_r^* - C(\tau_r^*))\bar{y}$$

The Economic Origins of Democracy

- Revolutions
  - Poor move first
    - If the poor choose no revolution the rich set $\tau_r = \tau_r^*$ and the payoff are

$$V(y_p|\tau_r^*) = (1 - \tau_r^*)y_p + (\tau_r^* - C(\tau_r^*))\bar{y}$$
$$V(y_r|\tau_r^*) = (1 - \tau_r^*)y_r + (\tau_r^* - C(\tau_r^*))\bar{y}$$

    - If the poor choose revolution they then set $\tau_p = \tau_p^*$ and the payoff are

$$V(y_p, \mu|\tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_p + (\tau_p^* - C(\tau_p^*))\bar{y})$$
$$V(y_r, \mu|\tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_p^*))\bar{y})$$

The Economic Origins of Democracy

- Revolutions
  - Poor move first
    - If the poor choose no revolution the rich set $\tau_r = \tau_r^*$ and the payoff are

      $$V(y_p|\tau_r^*) = (1 - \tau_r^*)y_p + (\tau_r^* - C(\tau_r^*))\bar{y}$$
      $$V(y_r|\tau_r^*) = (1 - \tau_r^*)y_r + (\tau_r^* - C(\tau_r^*))\bar{y}$$

    - If the poor choose revolution they then set $\tau_p = \tau_p^*$ and the payoff are

      $$V(y_p, \mu|\tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_p + (\tau_p^* - C(\tau_p^*))\bar{y})$$
      $$V(y_r, \mu|\tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_p^*))\bar{y})$$

  - If

    $$V(y_p, \mu|\tau_p^*) \geq V(y_p|\tau_r^*)$$

    There is always a revolution followed by democracy

The Economic Origins of Democracy

- Revolutions
  - Poor move first
    - If the poor choose no revolution the rich set $\tau_r = \tau_r^*$ and the payoff are

$$V(y_p|\tau_r^*) = (1 - \tau_r^*)y_p + (\tau_r^* - C(\tau_r^*))\bar{y}$$
$$V(y_r|\tau_r^*) = (1 - \tau_r^*)y_r + (\tau_r^* - C(\tau_r^*))\bar{y}$$

    - If the poor choose revolution they then set $\tau_p = \tau_p^*$ and the payoff are

$$V(y_p, \mu|\tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_p + (\tau_p^* - C(\tau_p^*))\bar{y})$$
$$V(y_r, \mu|\tau_p^*) = (1 - \mu)((1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_p^*))\bar{y})$$

  - If

$$V(y_p, \mu|\tau_p^*) \geq V(y_p|\tau_r^*)$$

    There is always a revolution followed by democracy
  - If

$$V(y_p, \mu|\tau_p^*) \leq V(y_p|\tau_r^*)$$

    There is never a revolution or democracy

The Economic Origins of Democracy

- Revolutions and Commitment Problems

The Economic Origins of Democracy

- Revolutions and Commitment Problems
  - Notice that it doesn't matter who moves first we do not get the result of no revolution followed by democracy

The Economic Origins of Democracy

- Revolutions and Commitment Problems
    - Notice that it doesn't matter who moves first we do not get the result of no revolution followed by democracy
    - That is we cannot explain a peaceful transition to democracy .... but his happens as for example in the UK!

The Economic Origins of Democracy

- Revolutions and Commitment Problems
    - Notice that it doesn't matter who moves first we do not get the result of no revolution followed by democracy
    - That is we cannot explain a peaceful transition to democracy .... but his happens as for example in the UK!
    - What's missing is any form of commitment problem

The Economic Origins of Democracy

- Revolutions and Commitment Problems
    - Notice that it doesn't matter who moves first we do not get the result of no revolution followed by democracy
    - That is we cannot explain a peaceful transition to democracy .... but his happens as for example in the UK!
    - What's missing is any form of commitment problem
    - Every period in the models above is the same, so anything that holds in one period holds forever

The Economic Origins of Democracy

- Revolutions and Commitment Problems

The Economic Origins of Democracy

- Revolutions and Commitment Problems
  - Suppose the destructiveness of a revolution can vary from time-to-time

The Economic Origins of Democracy

- Revolutions and Commitment Problems
  - Suppose the destructiveness of a revolution can vary from time-to-time
    - $\mu = 1$ with probability η - revolution destroys everything - so it is not a genuine threat

The Economic Origins of Democracy

- Revolutions and Commitment Problems
  - Suppose the destructiveness of a revolution can vary from time-to-time
    - $\mu = 1$ with probability η - revolution destroys everything - so it is not a genuine threat
    - $\mu = \bar{\mu} \in [0, 1)$ with probability $1 - \eta$ - here revolution is a genuine threat

The Economic Origins of Democracy

- Revolutions and Commitment Problems
  - Suppose the destructiveness of a revolution can vary from time-to-time
    - $\mu = 1$ with probability η - revolution destroys everything - so it is not a genuine threat
    - $\mu = \bar{\mu} \in [0, 1)$ with probability $1 - \eta$ - here revolution is a genuine threat
  - This generates a commitment problem

The Economic Origins of Democracy

- Revolutions and Commitment Problems
    - Suppose the destructiveness of a revolution can vary from time-to-time
        - $\mu = 1$ with probability η - revolution destroys everything - so it is not a genuine threat
        - $\mu = \bar{\mu} \in [0, 1)$ with probability $1 - \eta$ - here revolution is a genuine threat
    - This generates a commitment problem
        - A revolution is permanent and gives the poor a payoff forever

The Economic Origins of Democracy

- Revolutions and Commitment Problems
  - Suppose the destructiveness of a revolution can vary from time-to-time
    - $\mu = 1$ with probability η - revolution destroys everything - so it is not a genuine threat
    - $\mu = \bar{\mu} \in [0, 1)$ with probability $1 - \eta$ - here revolution is a genuine threat
  - This generates a commitment problem
    - A revolution is permanent and gives the poor a payoff forever
    - The rich therefore need to offer a tax rate consistent with the NRC for every period to avoid revolution

The Economic Origins of Democracy

- Revolutions and Commitment Problems
    - Suppose the destructiveness of a revolution can vary from time-to-time
        - $\mu = 1$ with probability η - revolution destroys everything - so it is not a genuine threat
        - $\mu = \bar{\mu} \in [0, 1)$ with probability $1 - \eta$ - here revolution is a genuine threat
    - This generates a commitment problem
        - A revolution is permanent and gives the poor a payoff forever
        - The rich therefore need to offer a tax rate consistent with the NRC for every period to avoid revolution
        - When $\mu = \bar{\mu}$ the rich are under threat and will set a tax which if maintained forever would satisfy the NRC

The Economic Origins of Democracy

- Revolutions and Commitment Problems
    - Suppose the destructiveness of a revolution can vary from time-to-time
        - $\mu = 1$ with probability η - revolution destroys everything - so it is not a genuine threat
        - $\mu = \bar{\mu} \in [0, 1)$ with probability $1 - \eta$ - here revolution is a genuine threat
    - This generates a commitment problem
        - A revolution is permanent and gives the poor a payoff forever
        - The rich therefore need to offer a tax rate consistent with the NRC for every period to avoid revolution
        - When $\mu = \bar{\mu}$ the rich are under threat and will set a tax which if maintained forever would satisfy the NRC
        - When $\mu = 1$ the rich are under no threat and will abandon the tax which if maintained forever would satisfy the NRC

The Economic Origins of Democracy

- Revolutions and Commitment Problems
    - Suppose the destructiveness of a revolution can vary from time-to-time
        - $\mu = 1$ with probability η - revolution destroys everything - so it is not a genuine threat
        - $\mu = \bar{\mu} \in [0, 1)$ with probability $1 - \eta$ - here revolution is a genuine threat
    - This generates a commitment problem
        - A revolution is permanent and gives the poor a payoff forever
        - The rich therefore need to offer a tax rate consistent with the NRC for every period to avoid revolution
        - When $\mu = \bar{\mu}$ the rich are under threat and will set a tax which if maintained forever would satisfy the NRC
        - When $\mu = 1$ the rich are under no threat and will abandon the tax which if maintained forever would satisfy the NRC
    - The rich cannot credibly promise a tax rate that will satisfy the NRC and this is known by the poor. **This is the commitment problem**

The Economic Origins of Democracy

- Revolutions and Commitment Problems

The Economic Origins of Democracy

- Revolutions and Commitment Problems
  - Solution to the Commitment Problem - Introduce Democracy

The Economic Origins of Democracy

- Revolutions and Commitment Problems
  - Solution to the Commitment Problem - Introduce Democracy
    - Under democracy the tax is set by the median voter who is a poor agent

The Economic Origins of Democracy

- Revolutions and Commitment Problems
    - Solution to the Commitment Problem - Introduce Democracy
        - Under democracy the tax is set by the median voter who is a poor agent
        - The median voter chooses $\tau_p{}^*$

The Economic Origins of Democracy

- Revolutions and Commitment Problems
    - Solution to the Commitment Problem - Introduce Democracy
        - Under democracy the tax is set by the median voter who is a poor agent
        - The median voter chooses $\tau_p{}^*$
        - If the democracy is secure $\tau_p{}^*$ will be chosen in every period and will satisfy the NRC

The Economic Origins of Democracy

- Revolutions and Commitment Problems
    - Solution to the Commitment Problem - Introduce Democracy
        - Under democracy the tax is set by the median voter who is a poor agent
        - The median voter chooses τ_p^*
        - If the democracy is secure τ_p^* will be chosen in every period and will satisfy the NRC
    - It is the threat of revolution that induces the rich to peacefully introduce democracy.

The Economic Origins of Democracy

- Revolutions and Commitment Problems
    - Solution to the Commitment Problem - Introduce Democracy
        - Under democracy the tax is set by the median voter who is a poor agent
        - The median voter chooses τ_p^*
        - If the democracy is secure τ_p^* will be chosen in every period and will satisfy the NRC
    - It is the threat of revolution that induces the rich to peacefully introduce democracy.
    - **Strategic delegation solves the commitment problem**

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Analysis

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Analysis
  - The preceding arguments describe an infinitely repeated game with discounting which is quite complicated (mathematically tractable but complex)

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Analysis
    - The preceding arguments describe an infinitely repeated game with discounting which is quite complicated (mathematically tractable but complex)
    - We shall follow Acemoglu and Robinson and analyze an equivalent one-shot game as below

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Analysis
  - The preceding arguments describe an infinitely repeated game with discounting which is quite complicated (mathematically tractable but complex)
  - We shall follow Acemoglu and Robinson and analyze an equivalent one-shot game as below
    - The rich choose between oligarch or democracy

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Analysis
    - The preceding arguments describe an infinitely repeated game with discounting which is quite complicated (mathematically tractable but complex)
    - We shall follow Acemoglu and Robinson and analyze an equivalent one-shot game as below
        - The rich choose between oligarch or democracy
        - If the rich choose democracy the poor set taxes

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Analysis
    - The preceding arguments describe an infinitely repeated game with discounting which is quite complicated (mathematically tractable but complex)
    - We shall follow Acemoglu and Robinson and analyze an equivalent one-shot game as below
        - The rich choose between oligarch or democracy
        - If the rich choose democracy the poor set taxes
        - If the rich choose oligarchy nature then chooses $\mu \in \{\bar{\mu}, 1\}$

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Analysis
    - The preceding arguments describe an infinitely repeated game with discounting which is quite complicated (mathematically tractable but complex)
    - We shall follow Acemoglu and Robinson and analyze an equivalent one-shot game as below
        - The rich choose between oligarch or democracy
        - If the rich choose democracy the poor set taxes
        - If the rich choose oligarchy nature then chooses $\mu \in \{\bar{\mu}, 1\}$
        - The rich then set taxes

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Analysis
    - The preceding arguments describe an infinitely repeated game with discounting which is quite complicated (mathematically tractable but complex)
    - We shall follow Acemoglu and Robinson and analyze an equivalent one-shot game as below
        - The rich choose between oligarch or democracy
        - If the rich choose democracy the poor set taxes
        - If the rich choose oligarchy nature then chooses $\mu \in \{\bar{\mu}, 1\}$
        - The rich then set taxes
        - The poor then choose revolution or not

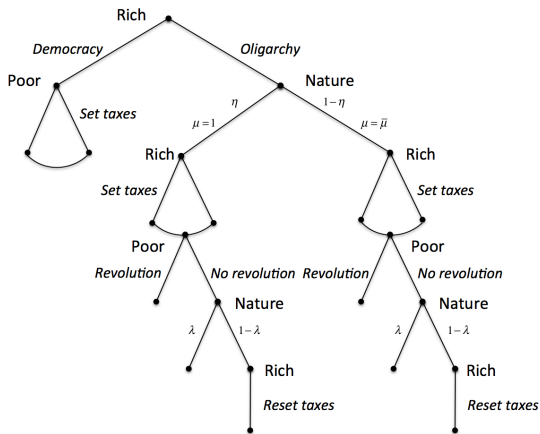### The Economic Origins of Democracy

- Revolutions and Commitment Problems - Analysis
    - The preceding arguments describe an infinitely repeated game with discounting which is quite complicated (mathematically tractable but complex)
    - We shall follow Acemoglu and Robinson and analyze an equivalent one-shot game as below
        - The rich choose between oligarch or democracy
        - If the rich choose democracy the poor set taxes
        - If the rich choose oligarchy nature then chooses $\mu \in \{\bar{\mu}, 1\}$
        - The rich then set taxes
        - The poor then choose revolution or not
        - If the poor choose revolution they then set taxes

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Analysis
    - The preceding arguments describe an infinitely repeated game with discounting which is quite complicated (mathematically tractable but complex)
    - We shall follow Acemoglu and Robinson and analyze an equivalent one-shot game as below
        - The rich choose between oligarch or democracy
        - If the rich choose democracy the poor set taxes
        - If the rich choose oligarchy nature then chooses $\mu \in \{\bar{\mu}, 1\}$
        - The rich then set taxes
        - The poor then choose revolution or not
        - If the poor choose revolution they then set taxes
        - If the poor do not choose revolution nature then chooses whether or not to let the rich reset taxes (Acemoglu's trick)

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Analysis

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
  - Democracy

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
  - Democracy
    - Poor set taxes at $\tau_p{}^*$

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
    - Democracy
        - Poor set taxes at $\tau_p{}^*$
        - Payoffs are

$$V(y_p|\tau_p{}^*) = (1 - \tau_p{}^*)y_p + (\tau_p{}^* - C(\tau_p{}^*))\bar{y}$$
$$V(y_r|\tau_p{}^*) = (1 - \tau_p{}^*)y_r + (\tau_p{}^* - C(\tau_p{}^*))\bar{y}$$

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
  - Revolution

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
    - Revolution
        - Poor set taxes at $\tau_p{}^*$

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
  - Revolution
    - Poor set taxes at τ_p^*
    - Payoffs are

$$V(y_p|\tau_p^*) = (1-\mu)[(1-\tau_p^*)y_p + (\tau_p^* - C(\tau_p^*))\bar{y}]$$
$$V(y_r|\tau_p^*) = (1-\mu)[(1-\tau_p^*)y_r + (\tau_p^* - C(\tau_p^*))\bar{y}]$$

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
    - Revolution
        - Poor set taxes at τ_p^*
        - Payoffs are

$$V(y_p|\tau_p^*) = (1 - \mu)[(1 - \tau_p^*)y_p + (\tau_p^* - C(\tau_p^*))\bar{y}]$$
$$V(y_r|\tau_p^*) = (1 - \mu)[(1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_p^*))\bar{y}]$$

        - $\mu = 1$ *with probability* λ, $\mu = \bar{\mu}$ *with probability* $1 - \lambda$

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
  - Rich reset taxes

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
    - Rich reset taxes
        - Payoffs are

$$V(y_p|\tau_r^*) = (1 - \tau_r^*)y_p + (\tau_r^* - C(\tau_r^*))\bar{y}$$
$$V(y_r|\tau_r^*) = (1 - \tau_r^*)y_r + (\tau_r^* - C(\tau_r^*))\bar{y}$$

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
  - No revolution, $\mu = 1$, rich don't reset taxes

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
  - No revolution, $\mu = 1$, rich don't reset taxes
    - Rich set $\tau_r = \tau_r^*$

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
  - No revolution, $\mu = 1$, rich don't reset taxes
    - Rich set $\tau_r = \tau_r^*$
    - Payoffs are

$$V(y_p | \tau_r^*) = (1 - \tau_r^*) y_p + (\tau_r^* - C(\tau_r^*)) \bar{y}$$
$$V(y_r | \tau_r^*) = (1 - \tau_r^*) y_r + (\tau_r^* - C(\tau_r^*)) \bar{y}$$

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
  - No revolution, $\mu = \bar{\mu}$, rich don't reset taxes

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
  - No revolution, $\mu = \bar{\mu}$, rich don't reset taxes
    - Rich set to satisfy NRC if possible

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
  - No revolution, $\mu = \bar{\mu}$, rich don't reset taxes
    - Rich set to satisfy NRC if possible
    - Requires τ_r satisfy

$$(1-\bar{\mu})(1-\tau_p{}^*)y_p + (\tau_p{}^* - C(\tau_p{}^*))\bar{y}$$
$$\leq \lambda[(1-\tau_r)y_p + (\tau_r - C(\tau_r))\bar{y}]$$
$$+(1-\lambda)[(1-\tau_r{}^*)y_p + (\tau_r{}^* - C(\tau_r{}^*))\bar{y}]$$

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
  - No revolution, $\mu = \bar{\mu}$, rich don't reset taxes
    - Rich set to satisfy NRC if possible
    - Requires τ_r satisfy

    $$(1 - \bar{\mu})(1 - \tau_p{}^*)y_p + (\tau_p{}^* - C(\tau_p{}^*))\bar{y}$$
    $$\leq \lambda[(1 - \tau_r)y_p + (\tau_r - C(\tau_r))\bar{y}]$$
    $$+ (1 - \lambda)[(1 - \tau_r{}^*)y_p + (\tau_r{}^* - C(\tau_r{}^*))\bar{y}]$$

    - It is not guaranteed that a τ_r exist that will satisfy this expression if it does the rich will choose oligarchy and to set taxes

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Payoffs
  - No revolution, $\mu = \bar{\mu}$, rich don't reset taxes
    - Rich set to satisfy NRC if possible
    - Requires τ_r satisfy

$$(1 - \bar{\mu})(1 - \tau_p{}^*)y_p + (\tau_p{}^* - C(\tau_p{}^*))\bar{y}$$
$$\leq \lambda[(1 - \tau_r)y_p + (\tau_r - C(\tau_r))\bar{y}]$$
$$+ (1 - \lambda)[(1 - \tau_r{}^*)y_p + (\tau_r{}^* - C(\tau_r{}^*))\bar{y}]$$

    - It is not guaranteed that a τ_r exist that will satisfy this expression if it does the rich will choose oligarchy and to set taxes
    - If a τ_r does not exist that will satisfy this expression then there will be a revolution

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
  - If the NRC constraint fails when $\mu = \bar{\mu}$ then the rich will choose democracy if

$$(1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_r^*))\bar{y}$$
$$\geq \eta[(1 - \tau_r^*)y_r + (\tau_r^* - C(\tau_r^*))\bar{y}]$$
$$+ (1 - \eta)(1 - \bar{\mu})[(1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_p^*))\bar{y}]$$

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
  - If the NRC holds the we get continued oligarchy as when

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
    - If the NRC holds the we get continued oligarchy as when
        - $\bar{\mu}$ is large - revolution unattractive to the poor

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
  - If the NRC holds the we get continued oligarchy as when
    - $\bar{\mu}$ is large - revolution unattractive to the poor
    - λ is large - low probability that rich will get to reset taxes - less of a commitment problem

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
    - If the NRC holds the we get continued oligarchy as when
        - $\bar{\mu}$ is large - revolution unattractive to the poor
        - λ is large - low probability that rich will get to reset taxes - less of a commitment problem
    - Often referred to as **secure oligarchy**

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
    - If the NRC holds the we get continued oligarchy as when
        - $\bar{\mu}$ is large - revolution unattractive to the poor
        - λ is large - low probability that rich will get to reset taxes - less of a commitment problem
    - Often referred to as **secure oligarchy**
    - Singapore?

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
    - If the NRC fails the rich will not instigate democracy and risk revolution if

$$(1 - \tau_p{}^*)y_r + (\tau_p{}^* - C(\tau_r{}^*))\bar{y}$$
$$< \eta[(1 - \tau_r{}^*)y_r + (\tau_r{}^* - C(\tau_r{}^*))\bar{y}]$$
$$+ (1 - \eta)(1 - \bar{\mu})[(1 - \tau_p{}^*)y_r + (\tau_p{}^* - C(\tau_p{}^*))\bar{y}]$$

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
  - If the NRC fails the rich will not instigate democracy and risk revolution if

$$(1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_r^*))\bar{y}$$
$$< \eta[(1 - \tau_r^*)y_r + (\tau_r^* - C(\tau_r^*))\bar{y}]$$
$$+ (1 - \eta)(1 - \bar{\mu})[(1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_p^*))\bar{y}]$$

  - Holds if

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
  - If the NRC fails the rich will not instigate democracy and risk revolution if

$$
\begin{aligned}
(1 - \tau_p{}^*)y_r &+ (\tau_p{}^* - C(\tau_r{}^*))\bar{y} \\
&< \eta[(1 - \tau_r{}^*)y_r + (\tau_r{}^* - C(\tau_r{}^*))\bar{y}] \\
&+ (1 - \eta)(1 - \bar{\mu})[(1 - \tau_p{}^*)y_r + (\tau_p{}^* - C(\tau_p{}^*))\bar{y}]
\end{aligned}
$$

  - Holds if
    - η is large - not much chance that the revolutionary threat will be credible

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
  - If the NRC fails the rich will not instigate democracy and risk revolution if

$$(1 - \tau_p{}^*)y_r + (\tau_p{}^* - C(\tau_r{}^*))\bar{y}$$
$$< \eta[(1 - \tau_r{}^*)y_r + (\tau_r{}^* - C(\tau_r{}^*))\bar{y}]$$
$$+ (1 - \eta)(1 - \bar{\mu})[(1 - \tau_p{}^*)y_r + (\tau_p{}^* - C(\tau_p{}^*))\bar{y}]$$

  - Holds if
    - η is large - not much chance that the revolutionary threat will be credible
    - $\bar{\mu}$ is small - rich are hurt less by a revolution if it does happen

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
    - If the NRC fails the rich will not instigate democracy and risk revolution if

$$(1 - \tau_p{}^*)y_r + (\tau_p{}^* - C(\tau_r{}^*))\bar{y}$$
$$< \eta[(1 - \tau_r{}^*)y_r + (\tau_r{}^* - C(\tau_r{}^*))\bar{y}]$$
$$+ (1 - \eta)(1 - \bar{\mu})[(1 - \tau_p{}^*)y_r + (\tau_p{}^* - C(\tau_p{}^*))\bar{y}]$$

    - Holds if
        - η is large - not much chance that the revolutionary threat will be credible
        - $\bar{\mu}$ is small - rich are hurt less by a revolution if it does happen
    - Often referred to as **insecure oligarchy**

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
  - If the NRC fails the rich will instigate democracy if

$$(1 - \tau_p{}^*)y_r + (\tau_p{}^* - C(\tau_r{}^*))\bar{y}$$
$$\geq \eta[(1 - \tau_r{}^*)y_r + (\tau_r{}^* - C(\tau_r{}^*))\bar{y}]$$
$$+ (1 - \eta)(1 - \bar{\mu})[(1 - \tau_p{}^*)y_r + (\tau_p{}^* - C(\tau_p{}^*))\bar{y}]$$

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
  - If the NRC fails the rich will instigate democracy if

  $$(1 - \tau_p{}^*)y_r + (\tau_p{}^* - C(\tau_r{}^*))\bar{y}$$
  $$\geq \eta[(1 - \tau_r{}^*)y_r + (\tau_r{}^* - C(\tau_r{}^*))\bar{y}]$$
  $$+ (1 - \eta)(1 - \bar{\mu})[(1 - \tau_p{}^*)y_r + (\tau_p{}^* - C(\tau_p{}^*))\bar{y}]$$

  - Holds if

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
    - If the NRC fails the rich will instigate democracy if

$$(1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_r^*))\bar{y}$$
$$\geq \eta[(1 - \tau_r^*)y_r + (\tau_r^* - C(\tau_r^*))\bar{y}]$$
$$+ (1 - \eta)(1 - \bar{\mu})[(1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_p^*))\bar{y}]$$

    - Holds if
        - η is small - the revolutionary threat will be credible

The Economic Origins of Democracy

- Revolutions and Commitment Problems - Peaceful Transition to Democracy
    - If the NRC fails the rich will instigate democracy if

$$(1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_r^*))\bar{y}$$
$$\geq \eta[(1 - \tau_r^*)y_r + (\tau_r^* - C(\tau_r^*))\bar{y}]$$
$$+ (1 - \eta)(1 - \bar{\mu})[(1 - \tau_p^*)y_r + (\tau_p^* - C(\tau_p^*))\bar{y}]$$

    - Holds if
        - η is small - the revolutionary threat will be credible
        - $\bar{\mu}$ is large - rich are hurt a lot a revolution if it does happen