Economic Development: Theory and Policy

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5.3.1 Introduction

Source: Acemoglu (2008)
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5.3.1 Introduction

- Rich countries tend to be more democratic
- There is no correlation between growth in incomes and changes in democracy scores
- This filters out country fixed effects which affect income and democracy at the same time.
5.3.1 Introduction

- Agents $i$ maximize their income $y^i$.
- But $y^i$ depends on political institutions which depend on political power that in turn is used to shape economic institutions like property rights and tax rates

$\Rightarrow$ political conflict

$\Rightarrow$ solution depends on political power
  - de jure
  - de facto
  - In the absence of any law, man is indistinguishable from beast (Hobbes’s state of nature) $\rightarrow$ this status is not desirable $\rightarrow$ state = Leviathan that monopolizes power
  $\rightarrow$ state of nature = de facto power
  $\rightarrow$ political system allocates de jure power
  $\Rightarrow$ actual political power = de facto + de jure political power
  - political institutions = social/political arrangements that allocate de jure political power, i.e. dictatorship vs. democracy
5.3.1 Introduction

- Political conflict arises between different groups of a society, let's say the elite and the citizens (rich/poor, landowner/poor, black/white,...)
- democracy = pro majoritan ⇒ citizens tend to be pro democracy
- democracy → redistribution from the elite to the citizen
  ⇒ elites tend to be pro dictatorship
  → decisive is balance of powers
    - political institutions regulate future allocation of political power (solution of the commitment problem faced by the elite as promises to redistribute may not be credible)
    - transition to democracy: citizens use their de facto political power → change political institutions → citizens have de jure political power
- balance of powers is not written in stone → masses need to solve their collective action problem (sometimes possible only in a crisis → their power is transitory)
5.3.1 Introduction

Time inconsistency

\[
\hat{\mathcal{W}} \Rightarrow \text{Revolution} \quad \text{No Revolution}
\]

\[
\hat{\tau} \Rightarrow \text{Rich} \quad \text{Poor}
\]

\[
\text{Poor} \quad \text{Revolution} \quad \text{No Revolution}
\]

\[
\text{Rich} \quad \text{Revolution} \quad \text{No Revolution}
\]
5.3.1 Introduction

- Revolutionary Threat
  - Consession
  - Repression
    - Not Credible
      - Revolution
      - Change in Political Institutions
        - Coup
          - Democracy
5.3.1 Introduction

- Apparently there is a difference between the transition to and the consolidation of democracy.

- Consolidation depends on the burden faced by the elite which depends in turn on their source of income and the amount of inequality
  - Landowning elite prefers repression rather than concession (land is easier to tax; labor repressive institutions)
  - Social turbulence is more harmful to physical and human capital (coup and repression is less likely) $\rightarrow$ democratization is more likely in an industrialized society
  - Inequality increases the burden of democracy for the elite $\rightarrow$ repression is more attractive when inequality is high

- If inequality is low, the citizens may not be interested in a democratization (Singapore)
  $\rightarrow$ The relationship between democratization and inequality is hump-shaped.
During the transition to a democracy, the middle class may constitute a critical catalyst towards democratization. It may be sufficient for the elite to cooperate with the middle class in order to avoid a revolution. The middle class is a buffer between the poor and the rich, since it asks not for so much redistribution. Globalization goes parallel with political integration which makes repression more unlikely. Moreover disruptions due to revolts are more costly.
5.3.2 A Three-Class Model

- There are three groups of agents: rich, middle class and poor
- The size of these groups is denoted by $\delta^r, \delta^m, \delta^p$ respectively, where
  \[ \sum_{i=r,m,p} \delta_i = 1 \]
  
  $\delta^p > \delta^m > \delta^r$
- Group $i$ has a share $\theta^i$ of the economy’s total income, with $\sum_i \theta^i = 1$ and
  
  \[ y^i = \frac{\theta^i}{\delta^i \bar{y}}, \quad i = r, m, p \] 
  \[ \bar{y} \]: average income.

- Assumption
  
  \[ \frac{\theta^r}{\delta^r} > \frac{\theta^m}{\delta^m} > \frac{\theta^p}{\delta^p} \]
5.3.2 A Three-Class Model

- The political system determines a non-negative income tax, i.e. $\tau \geq 0$
- Proceeds are redistributed lump sum $\rightarrow$ each agent receives $T$
- Taxation creates distortions (‘leaky bucket’, bureaucracy, corruption). These costs are captured by

$$C(\tau) n\bar{y},$$

with $C'(\tau) > 0$, $C''(\tau) > 0$, $C'(0) = 0$, $C''(1) = 1$.
- Hence

$$T = \frac{1}{n} \left( \sum_{i=1}^{n} \tau y^i - C(\tau) n\bar{y} \right) = (\tau - C'(\tau))\bar{y}.$$
5.3.2 A Three-Class Model

- Given that individual’s political preferences are captured by their post-tax income, the indirect utility of agent \( i \) reads
  \[
  V(y^i|\tau) = (1 - \tau)y^i + (\tau - C(\tau))\bar{y}
  \]
  (5)

\( \Rightarrow \) individual \( i \)'s optimal tax rate maximizes \( V(y^i|\tau) \), such that \( \tau^i \) needs to satisfy

\[
-y^i + (1 - C''(\tau^i))\bar{y} = 0, \quad \text{and} \quad \tau^i > 0 \quad \text{or} \\
-y^i + (1 - C'(\tau^i))\bar{y} \leq 0, \quad \text{and} \quad \tau^i = 0,
\]

(6) (7)

with

\[
\tau'(y^i) = -\frac{1}{C'''(\tau(y^i))\bar{y}} < 0 \quad \text{[Implicit function theorem]}
\]

(8)

and

- \( \tau^i = 0, \text{ if } y^i > \bar{y} \)
- \( \tau^i > 0, \text{ if } y^i < \bar{y} \)
5.3.2 A Three-Class Model

- Using the definitions for $y^i$, we obtain

\[
\left(\frac{\delta^i - \theta^i}{\delta^i}\right) - C'(\tau^i) = 0 \rightarrow \tau^i > 0 \text{ or } \tau^i = 0
\] (9)

\[
\left(\frac{\delta^i - \theta^i}{\delta^i}\right) - C'(\tau^i) \leq 0 \rightarrow \tau^i = 0
\] (10)

- As $y^r > \bar{y}$ it follows that $\tau^r = 0$.

- Assuming realistically that $y^p$ and $y^m < \bar{y}$ it follows that $\tau^j > 0, j = p, m$ where $\tau^j$ is specified by

\[
\left(\frac{\delta^j - \theta^j}{\delta^j}\right) = C'(\tau^j).
\] (11)

- Given $y^p < y^m$ it follows

\[
\tau^p > \tau^m
\] (12)

$\Rightarrow$ the poor vote for more redistribution than the middle class.
Because preferences are single-peaked and the Downsian policy convergence theorem holds we can apply the median-voter theorem.

Since, $\delta^p > \delta^m > \delta^r$ implies $\delta^r < 1/2$

- if $\delta^p < 1/2$: $\tau = \tau^m$
- if $\delta^p \geq 1/2$: $\tau = \tau^p$

From the first-order condition (11) we obtain

$$\frac{d\tau^j}{d\theta^j} < 0, j = p, m \quad (13)$$

⇒ equilibrium policy depends on the gap between income of group $j$ and the mean income!
The middle class and the poor are disenfranchised.  
The middle class and the poor may pose a revolutionary threat, but if the middle class withdraws the revolution won’t be successful.  
Initially the rich decide about the tax - no democracy \((N)\)  
If the middle class is enfranchised - partial democracy \((PD)\) and  
\[ \tau = \tau^m \]  
In a democracy \((D)\) the median voter is decisive, i.e.  
\[ \tau = \tau^m \text{ or } \tau = \tau^p. \]  
Solution by backward-induction
5.3.3 Emergence of Partial Democracy

\[ V^i(R, \mu) = [V^{p}(R, \mu), V^{m}(R, \mu), V^{m'}(R, \mu)] \] and so on
5.3.3 Emergence of Partial Democracy

- A postrevolutionary society is characterized by equal division of resources among the citizens where a fraction of $\mu$ of $\bar{y}$ will be destroyed

$$V^p(R, \mu) = V^m(R, \mu) = \frac{(1 - \mu)\bar{y}}{\delta^p + \delta^m} \quad \text{and} \quad V^r(R, \mu) = 0 \quad (14)$$

- Both the middle class and the poor will prefer a revolution to the status quo, if

$$\frac{(1 - \mu)\bar{y}}{\delta^p + \delta^m} > y^p \quad \text{and} \quad y^m, \quad (15)$$

i.e. the revolution constraint is binding!

- Since $y^m > y^p$ the constraint will bind for the poor whenever it is binding for the middle class.
5.3.3 Emergence of Partial Democracy

- The revolution constraint is therefore determined by

\[ \mu < 1 - \left( \frac{\delta^p}{\delta^m} + 1 \right) \theta^m \quad (16) \]

→ ↓ \( \theta^m \) and ↑ \( \delta^m \) make a revolution more likely, given \( \mu \).

- The rich may avoid a revolution by promising to redistribute at \( \tau^N \) which may in turn not be time consistent, i.e. the rich reset the tax rate with probability \( 1 - p \).

⇒ when the rich keep power

\[ V_i(N, \tau^N) = y^i + p(\tau^N(\bar{y} - y^i) - C(\tau^N)\bar{y}), \quad i = p, m, r. \quad (17) \]
5.3.3 Emergence of Partial Democracy

If the rich choose partial democracy $\tau^{PD} = \tau^m$, since $\delta^r < \delta^m$ and

$$V^i(PD) = y^i + (\tau^m(\bar{y} - y^i) - C(\tau^m)\bar{y}). \quad (18)$$

In democracy the values depend on $\delta^p >> 1/2$ where

$$V^i(D) = y^i + (\tau^D(\bar{y} - y^i) - C(\tau^D)\bar{y}), \quad (19)$$

$$\tau^D = \begin{cases} 
\tau^m & \text{if } \delta^p < 1/2, \\
\tau^p & \text{if } \delta^p \geq 1/2 
\end{cases} \quad (20)$$

$\Rightarrow$ if $\delta^p < 1/2$ then the rich are indifferent between $PD$ and $D$ since $\tau^{PD} = \tau^D = \tau^m$.

$\Rightarrow$ if $\delta^p \geq 1/2$ then $\tau^D = \tau^p > \tau^m$ and therefore $V^r(PD) > V^r(D)$. 

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5.3.3 Emergence of Partial Democracy

- Whether or not a revolution can be prevented depends on the promise \((\tau^N)\) by the rich. In order to prevent a revolution

\[
V^m(N, \tau^N) \geq V^m(R, \mu) \tag{21}
\]

- In order to please the middle class, the rich would promise \(\tau^N = \tau^m\) which is different from assuring \(\tau^m\)!

\[\Rightarrow\] From \(V^m(N, \tau^N) \geq V^m(R, \mu)\)

\[
y^m + p(\tau^m(\bar{y} - y^m) - C(\tau^m)\bar{y}) \geq \frac{(1 - \mu)\bar{y}}{\delta^p + \delta^m} \tag{22}
\]

- Hence there exists a \(\mu^*\), such that \(V^m(N, \tau^N) = V^m(R, \mu)\), with

\[
\mu^* = 1 - \frac{\delta^p + \delta^m}{\delta^m}(\theta^m + p(\tau^m(\delta^m - \theta^m) - \delta^m C(\tau^m))) \tag{23}
\]
Partial democratization is sufficient to prevent revolution, since $V^m(PD) \geq V^m(D)$, if

$$V^m(PD) \geq V(R, \mu)$$  \hspace{1cm} (24)

$$\frac{1}{\delta m}(\theta^m + \tau^m(\delta^m - \theta^m) - \delta^m C(\tau^m)) \geq \frac{1 - \mu}{\delta p + \delta m},$$  \hspace{1cm} (25)

otherwise democratization cannot prevent a revolution.
5.3.3 Emergence of Partial Democracy

Proposition

There is a unique subgame perfect equilibrium. Given $\mu^*$, then:

1. If the revolution constraint does NOT bind, the rich set their most preferred tax rate, i.e. $\tau^N = \tau^r = 0$.

2. If the revolution constraint does bind and $V^m(PD) < V(R, \mu)$, there is a revolution.

3. If the revolution constraint does bind and $\mu \geq \mu^*$, the rich prevent democratization by $\tau^N = \hat{\tau} \leq \tau^m$, such that $V^m(N, \tau^N = \hat{\tau}) = V^m(R, \mu)$

4. If the revolution constraint does bind and $\mu < \mu^*$ and $V^m(PD) \geq V(R, \mu)$, the rich democratize. If $\delta^p \geq 1/2$, the rich prefer PD. If $\delta^P < 1/2$ the rich are indifferent between D and PD.
5.3.3 Emergence of Partial Democracy

⇒ Intuition:

- democracy arises to avoid a revolution when pro-citizen policies proposed by the rich are not sufficiently credible \((p \text{ low } \Rightarrow \uparrow \mu^* \text{ and the less likely that concessions avoid revolution})\).
- Higher inequality in the sense that \(\theta^m\) shrinks, makes a revolution more attractive

- Institutional change arises as a way of transferring political power from one group to another in order to guarantee certain policies in the future.
- This results may explain why early in the 19th century, democracy was first extended to the middle class.
- Moreover it can be shown that \(\frac{d\mu^*}{d\theta^m} < 0 \Rightarrow \text{the rich can buy off the middle class for a larger range of parameter values.}\)

⇒ The relevant concept of inequality is not the gap between rich and poor! Decisive is the gap between the ruling elite and the pivotal social group!
- A richer middle class makes partial democratization more likely
5.3.4 From Partial to Full Democracy

- The literature proposes two competing views regarding the transition from partial to full democracy:
  1. Intra-elite conflict → people at power have strong preferences for staying in power and extend the franchise in expectation that the newly enfranchised will vote for them.
  2. Threat of revolution → the disenfranchised poor pose a revolutionary threat.

- Historical evidence is more in favor of the revolutionary threat argument (Great Britain, Germany, France, Sweden).
5.3.4 From Partial to Full Democracy

- The starting point is a regime of partial democracy \((PD)\rightarrow\) the middle class is politically decisive.
- Since \(\bar{y} > y^m\) there will be a positive tax and redistribution to yet disenfranchised poor.
- A revolutionary threat is imposed by the poor, where a revolution generates

\[
V^p(R, \mu) = \frac{(1 - \mu)\bar{y}}{\delta^p}\tag{26}
\]

where \(V^m(R, \mu) = V^r(R, \mu) = 0\).
5.3.4 From Partial to Full Democracy

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5.3.4 From Partial to Full Democracy

- The presence of redistribution in $PD$ changes the revolution constraint to

$$V^p(R, \mu) > V^p(PD),$$

such that

$$\mu < 1 - \theta^p - (\tau^m(\delta^p - \theta^p) - \delta^p C'(\tau^m))$$

- The middle class may promise a tax rate $\tau^{PD} > \tau^m$ in order to avoid a revolution.
- Again this promise may not be time consistent depending of the state of nature in the future.
- Values of the three social groups ($i = p, m, r$) following the promise of future redistribution

$$V^i(PD, \tau^{PD}) = y^i + p(\tau^{PD}(\bar{y} - y^i) - C(\tau^{PD})\bar{y}) + (1 - p)(\tau^m(\bar{y} - y^i) - C(\tau^m)\bar{y}).$$
5.3.4 From Partial to Full Democracy

- Again promising a tax rate $\tau^{PD} > \tau^m$ is different from being sure.
- If the middle class gets to reset the tax rate it will set $\tau^m$.
- In order to avoid a revolution we have

$$V^p(PD, \tau^{PD} = \tau^p) = V^p(R, \mu^*), \quad (30)$$

such that

$$\mu^* = 1 - \theta^p - \left( p[\tau^p(\delta^p - \theta^p) - \delta^pC(\tau^p)] ight)$$

$$+ (1 - p)[\tau^m(\delta^p - \theta^p) - \delta^pC(\tau^m)]. \quad (31)$$

$$\Rightarrow \frac{\partial \mu^*}{\partial \tau^m} < 0$$

which means that it is easier stave off a revolution, if the current regime is more redistributive because even if the middle class does not stick to their promise the difference won’t be that large.
5.3.4 From Partial to Full Democracy

- Does a transition to full democracy prevent revolution?
- Full democratization does not change anything, if $\delta^p < 1/2$ because then the median voter is a member of the middle class.
- If $\delta^p \geq 1/2$ and full democracy leads to $\tau^D = \tau^p$
- Full democratization prevents revolution, if

$$V^p(R, \nu) \leq V^p(D),$$  \hspace{1cm} (32)

such that

$$\mu \geq 1 - \theta^p - (\tau^p (\delta^p - \theta^p) - \delta^p C(\tau^p))$$ \hspace{1cm} (33)
Proposition

There is a unique subgame perfect equilibrium, such that

(1) If the revolution constraint \( V^p(R, \mu) > V^p(PD) \) does not bind, PD sets the most preferred tax rate of the middle class, i.e. \( \tau^{PD} = \tau^m \).

(2) If \( V^p(R, \mu) > V^p(PD) \) binds and \( \delta^p \geq 1/2 \) and \( V^p(R, \nu) \leq V^p(D) \) fails to hold OR \( \delta^p < 1/2 \) and \( \mu < \mu^* \), then there is a revolution.

(3) If \( V^p(R, \mu) > V^p(PD) \) binds and \( \mu \geq \mu^* \), a revolution is prevented by promising \( \tau^{PD} = \hat{\tau} \), such that \( V^p(PD, \tau^{PD} = \hat{\tau}) = V^p(R, \mu) \).

(4) If \( V^p(R, \mu) > V^p(PD) \) binds, \( V^p(R, \nu) \leq V^p(D) \) binds, \( \delta \geq 1/2 \) and \( \mu < \mu^* \), then transition to D happens as a credible commitment to future redistribution toward the poor.
5.3.4 From Partial to Full Democracy

- Results are comparable to the last section
- Important new result:
  - A high $\tau^m$ makes a revolution less likely
  - If $\tau^m$ is high, the distance to $\tau^p$ will be low, such that it is not so important for the poor if $\tau^p$ is not realized and revolution is not very attractive
  - $\tau^m$ in turn will be high, if the middle class is relatively poor

⇒ $D$ is more likely, when the poor are poor AND the middle class is rich.

- This result is in line with findings suggesting that the affluence of middle class is crucial in the process of democratization
5.3.5 Repression and the Middle Class

- Middle class and poor are disenfranchised
- Revolutionary threat is posed by the poor
- The rich can use repression to prevent revolution, or choose between \( D \) and \( PD \)
- Here the presence of a middle class may act as a buffer between the rich and the poor and allow society to avoid repression
  \( \rightarrow \) repression is more likely to occur if the middle class is poor or relatively small
5.3.5 Repression and the Middle Class

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5.3.5 Repression and the Middle Class

- The returns from revolting read as

\[
V^p(R, \mu) = \frac{(1 - \mu)\bar{y}}{\delta p},
\]

and \( V^m(R, \mu) = V^r(R, \mu) = 0 \).

- The revolution constraint is binding if

\[
V^p(R, \mu) = \frac{(1 - \mu)\bar{y}}{\delta p} > y^p
\]

\[\Rightarrow \theta^p = 1 - \mu.\]

- If the rich offer redistribution in order to avoid revolution at \( \tau^N = \hat{\tau} \), the respective values read as

\[
V^i(N, \tau^N) = y^i + p(\tau^N(\bar{y} - y^i) - C(\tau^N)\bar{y})
\]

with \( i = p, m, r \).
5.3.5 Repression and the Middle Class

- If the rich offer $PD$, the middle class is enfranchised, and since $\delta^m > \delta^R$ it follows that $\tau^{PD} = \tau^m$ which is always positive, since the middle class is poorer than the mean. Moreover,

$$V^i(PD) = y^i + (\tau^m(\bar{y} - y^i) - C(\tau^m)\bar{y}), \quad (37)$$

with $i = p, m, r$.

- If $D$ is implemented the respective values depend on whether $\delta^p < 1/2 \rightarrow \tau^D = \tau^m$ and $V^r(PD) = V^r(D)$ or $\delta \geq 1/2 \rightarrow \tau^D = \tau^p$ and $V^r(PD) > V^r(D)$, where

$$V^i(D) = y^i + (\tau^D(\bar{y} - y^i) - C(\tau^d)\bar{y}), \quad (38)$$

and $i = p, m, r$. 
5.3.5 Repression and the Middle Class

- For revolution to be prevented

\[ V^p(N, \tau^N = \tau^p) \geq V^p(R, \mu) \]  \hspace{1cm} (39)

remember: \( \tau^p \) is the maximum concession the rich can make to the poor. This condition holds with equality if

\[ \mu^* = 1 - \theta^p - p(\tau^p(\delta^p - \theta^p) - \delta^p C(\tau^p)) \]  \hspace{1cm} (40)

- Offering PD may avoid revolution, if

\[ V^p(PD) \geq V^p(R, \mu), \]  \hspace{1cm} (41)

where \( \tau^{PD} = \tau^m \) and

\[ \mu \geq 1 - \theta^p - (\tau^m(\delta^p - \theta^p) - \delta^p C'(\tau^m)) \]  \hspace{1cm} (42)
If the rich decide to repress, each agent loses a fraction $\kappa$ of his income

\[ V_i(O|\kappa) = (1 - \kappa)y_i, \quad (43) \]

with $i = p, m, r$.

Then the rich are indifferent between redistribution and repression, if

\[ V^r(O|\kappa) = V^r(N, \tau^N = \hat{\tau}) = V^p(R, \mu), \quad (44) \]

such that

\[ \hat{\kappa} = \frac{p}{\theta^r} (\delta^r C(\hat{\tau}) - \hat{\tau}(\delta^r - \delta^r)) \quad (45) \]

\[ \Rightarrow \text{Repression occurs, if } \kappa < \hat{\kappa} \text{ and } \mu \geq \mu^* \]
Whether or not, the rich are indifferent between $D$ and repression depends on $\tau$. Hence

$$V^r(O|\tilde{\kappa}(\tau)) = V^r(D) \text{ or } V^r(O|\tilde{\kappa}(\tau)) = V^r(PD)$$ (46)

implying that

$$\tilde{\kappa}(\tau) = \frac{1}{\theta^r}(\delta^r C(\tau) - \tau(\delta^r - \theta^r))$$ (47)

$\Rightarrow$ $\kappa = \tilde{\kappa}(\tau)$ implies indifference between repression and $D$ or $PD$, such that $\tau \in \{\tau^D, \tau^{PD}\}$.

Repression is an equilibrium outcome for $\mu < \mu^*$ and $\kappa < \tilde{\kappa}(\tau)$.
5.3.5 Repression and the Middle Class

Proposition

Given \( \mu^*, \tilde{\kappa}(\tau), \hat{\kappa} \) and \( V^p(R, \mu) \leq V^p(D) \), i.e. \( D \) avoids revolution, there exists a unique subgame perfect equilibrium.

1. If \( \theta^p < 1 - \mu \) does not bind, the rich set \( \tau^N = \tau^r = 0 \).

2. If \( \theta^p < 1 - \mu \) binds, then
   
   (i) If \( \mu < \mu^* \) and \( V^p(PD) \geq V^p(R, \mu) \) holds, \( \delta^p \geq 1/2 \), and \( \kappa \geq \tilde{\kappa}(\tau^{PD}) \), the rich offer \( PD \).

   (ii) If \( \mu < \mu^* \) and \( V^p(PD) \geq V^p(R, \mu) \) does not hold, \( \delta^p \geq 1/2 \), and \( \kappa \geq \tilde{\kappa}(\tau^{PD}) \), the rich offer \( D \).

   (iii) The rich use repression, if
   
   - \( \mu < \mu^* \), \( V^p(PD) \geq V^p(R, \mu) \) does not hold, and \( \delta^p < 1/2 \)
   - \( \mu < \mu^* \), \( V^p(PD) \geq V^p(R, \mu) \) does not hold, \( \kappa < \tilde{\kappa}(\tau^{D}) \), and \( \delta^p \geq 1/2 \)
   - \( \mu < \mu^* \), \( V^p(PD) \geq V^p(R, \mu) \) holds, \( \kappa < \tilde{\kappa}(\tau^{PD}) \)
   - \( \mu \geq \mu^* \) and \( \kappa < \hat{\kappa} \)

   (iv) If \( \mu \geq \mu^* \) and \( \kappa \geq \hat{\kappa} \), the rich prevent democratization by promising to redistribute at \( \tau^N = \hat{\tau} \) such that \( V^p(N, \tau^N = \hat{\tau}) = V^p(R, \mu) \).
5.3.5 Repression and the Middle Class

→ Intuition of the results (given that the revolution constraint binds):

(1) $\mu < \mu^*$ means that the rich are unable to use concessions, but $V^p(PD) \geq V^p(R, \mu)$ holds and $\delta^p \geq 1/2$. Then PD is sufficient to avoid revolution because $\tau^{PD} > \tau^r = 0$. Since $\delta^p \geq 1/2$ the rich would like to avoid D. In this case PD is implement because repression is costly ($\kappa \geq \tilde{\kappa}(\tau^{PD})$)

(2) D arises because neither concessions nor PD works, i.e. $\mu < \mu^*$, but $V^p(PD) \geq V^p(R, \mu)$ does not hold and repression is costly, i.e. $\kappa \geq \tilde{\kappa}(\tau^D)$. Since $\delta^p \geq 1/2$ and $V^p(R, \mu) \leq V^p(D)$, $\tau^D = \tau^p$ which avoids revolution.
5.3.5 Repression and the Middle Class

→ Intuition of the results II (given that the revolution constraint binds):

(3) Repression arises in four types of situations

   a) $V^P(PD) \geq V^P(R, \mu)$ does not hold and $\delta^p < 1/2 \rightarrow$ concessions to the poor do not work. $PD$ is insufficiently redistributive to avoid revolution. $D$ would induce $\tau^m = \tau^{PD}$ and the failure of $V^P(PD) \geq V^P(R, \mu)$ to hold implies revolution. The rich can only repress in order to avoid revolution.

   b) Neither concessions nor $PD$ avoid revolution, but $\delta^p \geq 1/2$ and $V^P(R, \mu) \leq V^P(D)$ (rev. constr. holds), $D$ would avoid revolution. However, repression is relatively inexpensive ($\kappa < \tilde{\kappa}(\tau^D)$) and repression is prefers to $D$.

   c) Concessions do not work but $PD$ does and $\kappa < \tilde{\kappa}(\tau^{PD})$. $PD$ could avoid revolution, but repression is sufficiently inexpensive, so the rich opt for repression.

   d) Concessions work but $PD$ does not work ($\mu \geq \mu^*$ and $\kappa < \hat{\kappa}$)

(4) Concessions work and repressions are relatively costly, so rich maintain power by setting a tax sufficiently high to avoid revolution.
Intuition of the results III (given that the revolution constraint binds):

- The threshold \( \tilde{\kappa}(\tau) \) depends on the size and the level of income of the middle class. Moreover \( \tilde{\kappa}(\tau) \) is increasing in \( \tau \).

- A higher \( \tau \) makes repression more attractive

- \( \tau \) is high if the median voter is poor or if the median voter is a member of the middle class and the middle class is relatively poor.

- A richer (affluent) middle class makes democracy less costly for the rich and makes repression less likely.

- However, this need not always be the case. If \( \theta^m \) increases \( \tau^m \) declines and \( V^p(PD) \geq V^p(R, \mu) \) becomes less likely to hold. (why?)
5.3.6 Consolidation and the Middle Class

- The middle class may play an important role in democratic consolidation.

- If the median voter is a middle class agent, democracy may be less redistributive and the rich have less to gain from changing the regime by means of a coup

\[ \tau^D = \tau^m \text{ and } \]

\[ V^i(D) = y^i + (\tau^D(\bar{y} - y^i) - C(\tau^D)\bar{y}), \quad (48) \]

with \( i = p, m, r. \)

- The rich decide whether or not to mount a coup, such that payoffs read as

\[ V^i(C, \varphi) = (1 - \varphi)y^i, \quad (49) \]

with \( i = p, m, r. \)
The middle class may meet the threat of a coup by promising $\tau^D \leq \tau^m$. But symmetrically to promises made by the rich this proposal may not be time consistent with probability $(1 - p)$

$$V^i(D, \tau^D) = y^i + (p(\tau^D(\bar{y} - y^i) - C(\tau^D)\bar{y})$$
$$+ (1 - p)(\tau^m(\bar{y} - y^i) - C(\tau^m)\bar{y})$$

(50)

A coup is attractive, if the coup constraint binds, such that

$$V^r(C, \varphi) > V^r(D),$$

(51)

$$\Rightarrow \varphi < \frac{1}{\theta^r}(C(\tau^m)\delta^r - \tau^m(\delta^r - \theta^r))$$

(52)

$\Rightarrow$ if $V^r(C, \varphi) > V^r(D)$ does not bind, democracy is fully consolidated (democracy is not redistributive enough or coups are too costly).
Since the middle class is richer than the poor, $\tau^m < \tau^p$ and therefore a coup is less attractive for the rich if the median voter is a member of the middle class rather than the poor.

The richer the middle class ($\theta^m$ large) the lower is $\tau^m$ which makes a coup even less attractive, given $\varphi$.

If $V^r(C, \varphi) > V^r(D)$ binds, there will be a coup unless the middle class would offer to reduce the tax burden, i.e.

\[
V^r(D, \tau^D = \tilde{\tau}) \geq V^r(C, \varphi)
\]

\[
\Rightarrow \varphi \geq \frac{p}{\theta^r} (\delta^r C(\tilde{\tau}) - \tilde{\tau}(\delta^r - \theta^r))
\]

\[
+ \frac{1 - p}{\theta^r} (\delta^r C(\tau^m) - \tau^m(\delta^r - \theta^r))
\]
Whenever $\varphi$ is smaller than a threshold $\varphi^{**}$, the promise to reduce $\tau^D$ is not sufficient, where $\varphi^{**}$ is defined by

\begin{equation}
V^r(D, \tau^D = 0) = V^r(C, \varphi),
\end{equation}

such that

\begin{equation}
\varphi^{**} = \frac{1 - p}{\theta^r} (\delta^r C(\tau^m) - \tau^m (\delta^r - \theta^r))
\end{equation}
5.3.6 Consolidation and the Middle Class

Proposition

In the game described above, there is a unique subgame perfect equilibrium such that

1. If the coup constraint does not bind, democracy is fully consolidated, and the middle class sets its optimal tax rate $\tau_m > 0$.
2. If the coup constraint binds and $\varphi \geq \varphi^{**}$, then democracy is not fully consolidated. The middle class sets $\tilde{\tau} < \tau_m$, such that $V^r(D, \tau^D = \tilde{\tau}) = V^r(C, \varphi)$.
3. If the coup constraint binds and $\varphi < \varphi^{**}$, then democracy is unconsolidated. There is a coup, the rich come to power, and set their most preferred tax rate, $\tau^r$. 

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5.3.6 Consolidation and the Middle Class

→ main insight:

- $\tau^D$ is higher when the median voter is a poor agent, i.e. $\delta^p \geq 1/2$, such that middle class of the society is small or the median voter is a member of the middle class but poor.

- Both cases make coups more attractive for the rich.

- Again, a large and affluent middle class makes consolidation of democracy more likely.