Political Economy of Labor Control and Coercion

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Introduction

> "In the context of universal history, free labor, wage labor, is the peculiar institution"—M.I. Finley

- Throughout history, control of labor, often through coercion, has been the main objective of states and empires.
  - loot and minerals important, but small relative to tribute and also dependent on labor.
- Forced labor (**slavery, serfdom**) basis of ancient Greece, Egypt and Rome; several Islamic and Asian empires; most pre-Colombian civilizations; plantation economies in Latin America and the U.S. South; European agriculture until the 19th century (feudalism).
- Important to study political economy of labor control and coercion to understand the nature of institutions today.
  - Though, also the case that coercion is still important today. The ILO estimates that there are still millions of forced laborers worldwide.
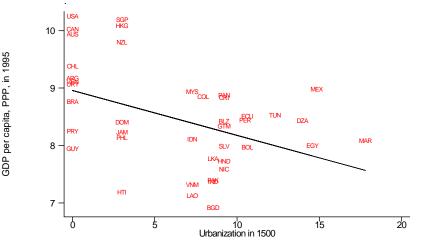 - Moreover, massively underappreciated.

Outline

- Historical examples
  - Colonial Latin America
  - Overall patterns of European colonization
  - Nature of Southeast Asian empires
  - European feudalism
- Theory
  - Economics of labor coercion: principal-agent models meet coercion
  - Factor price manipulation and labor control
  - Politics of coercion
- End of coercion
  - Adoption of labor-saving technologies
  - Political revolutions
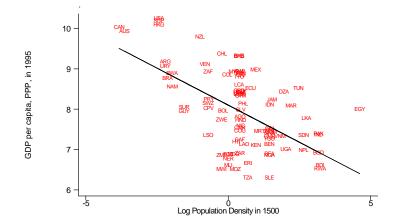- Conclusions

Colonial Latin America

- Juan Díaz de Solís colonizes Río de la Plata in 1516, 'River of Silver' and Pedro de Mendoza founds Buenos Aires in 1534.
- But Solís and de Mendoza unable to enslave and put to work the hunter gatherer Indians of the area, Charrúas and the Querandí. Starving Spaniards soon left the area.
- In 1537, Juan de Ayolas found the sedentary and more densely settled Guaraní up the Paraná river, in Paraguay. The Spaniards could successfully take over the Guaraní hierarchy, enslave them and put them to work to produce food for them.
- A very similar pattern to the colonization of the Aztecs and the Incas.

Reversal of Fortune

- More general pattern (from *Acemoglu, Johnson and Robinson, 2002*):

Reversal of Fortune (continued)

"High population density, by providing a supply of labor that could be forced to work in agriculture or mining, made extractive institutions more profitable for the Europeans"
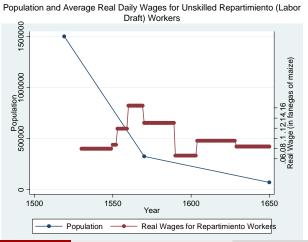
Southeast Asia

- *James Scott*, **The Art of Not Being Governed**: East Asian empires based on labor control and coercion, and many peoples in Southeast Asia fleeing the state's authority to resist this.
- Parallels elsewhere.

Feudalism

- European Feudalism: mainly a system of labor coercion (evolving as a continuation of slavery and other forms of coercion from Roman times).
- Why did feudalism collapsed?
- One answer: the Black Death.
  - **The neo-Malthusian story** (*Habakkuk, Postan, North and Thomas*): rising wages due to lower population made feudalism untenable.
- Evidence from 14th century England suggests that there there was a sharp increase in real wages following population decline (e.g., *Phelps Brown and Hopkins, 1956*).
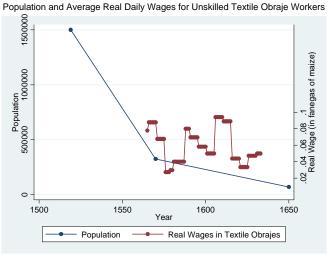- But what is the economic mechanism?

Meanwhile in Mexico: Implications of Coercion

- The effects of lower population very different when there is more extensive coercion (from *Acemoglu, Robinson and Querubín*):

Population and Average Real Daily Wages for Unskilled Repartimiento (Labor Draft) Workers

Meanwhile in Mexico (continued)

Population and Average Real Daily Wages for Unskilled Textile Obraje Workers
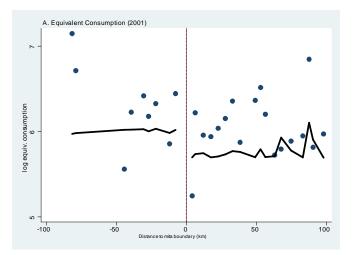
Source: Own Calculations based on Borah and Cook (1958), Gibson (1964) and Viqueira and Urquiola (1990)

Persistent Effects of Labor Coercion

- Regression discontinuity effects of *Mita* from *Dell (2011)*:

Model—Economics of Labor Coercion

- *Acemoglu and Wolitzky (2011)*: effort, productivity and coercion.
- Mass 1 of *producers*, mass $L < 1$ of *agents*. All risk-neutral and identical
- Each producer has a project that yields x units of a consumption good if successful, 0 if unsuccessful.
- $x \sim F(x)$, density $f(x)$, on $[\underline{x}, \bar{x}]$, $\underline{x} > 0$.
- Market price P.
- Producers and agents matched at random.
- Once matched, producer chooses "guns" $g \geq 0$ at cost $\eta \chi(g)$, and offers a contract (w^y, p^y). $\chi(g)$ convex.
- $w =$ wage, $p =$ punishment.
- $w^y \geq 0$, $p^y \geq 0$ for $y \in \{0, x\}$ ("y^l, y^h").
- Important: g is "coercion", not p.

Model (continued)

- Agent accepts or rejects contract. If rejects, gets

$$\bar{u} - g.$$

- If accepts, chooses $a \in [0, 1]$, "effort", at cost $c(a)$.
- $a =$ probability that project succeeds. $c(a)$ convex.
- Given contract (w^y, p^y), effort a, guns g, and output y, producer gets

$$Py - w^y - \eta \chi(g),$$

and agent gets

$$w^y - p^y - c(a).$$

- Given price P, outside option $\bar{u}$, and productivity x, what level of guns/what is the profit maximizing contract for a (matched) producer?

Model (continued)

- Similar to a standard principal-agent problem:

$$\max_{(a,g,w^h,w^l,p^h,p^l)} a\left(Px - w^h\right) + (1-a)\left(-w^l\right) - \eta\chi(g)$$

subject to

$$a\left(w^h - p^h\right) + (1-a)\left(w^l - p^l\right) - c(a) \geq \bar{u} - g, \qquad \text{(IR)}$$

and

$$a \in \arg\max_{\tilde{a}\in[0,1]} \tilde{a}\left(w^h - p^h\right) + (1-\tilde{a})\left(w^l - p^l\right) - c(\tilde{a}). \qquad \text{(IC)}$$

- Call solutions to this *equilibrium contract*.

Characterization of Equilibrium Contracts

- First, taking P and $\bar{u}$ as given. Then:

Any equilibrium contract is a solution to

$$\max_{(a,g)} Pxa - a(1-a)c'(a) - ac(a) - a\bar{u} + ag - \eta\chi(g).$$

- This problem is supermodular in $(a, g, x, P, -\bar{u}, -\eta)$.
- Complementarity between a and g derived from principal-agent model.
- This problem gives "robust" comparative statics.
  - In particular, the set of equilibrium contracts (a, g) is a lattice, and its largest and smallest elements are increasing in x and P and decreasing in $\bar{u}$ and η.

Implications

- The set of equilibrium contracts for a producer of type x forms a lattice and greatest and smallest equilibrium contracts are increasing in x and P and decreasing in $\bar{u}$ and η.
- This implies that:
    1. Agents with worse outside options (lower $\bar{u}$) are subject to more coercion.
    2. Easier coercion (lower η) leads to higher effort.
    3. Easier coercion reduces agent welfare.
    4. Agents are better off when matched with less productive producers

Interpretation

- Agents with worse outside options (lower $\bar{u}$) are subject to more coercion:

- Key formula is

$$\max_{(a,g)} Pxa - a(1-a)c'(a) - ac(a) - a\bar{u} + ag - \eta\chi(g).$$

- Recall that this is supermodular in $(a, g, -\bar{u})$. So lower $\bar{u}$ leads to higher a and g.

- Intuitively, it is cheaper to induce high effort when agents have bad outside options, so agents with worse outside options work harder. By supermodularity, this implies that agents with worse outside options are also subject to more coercion.

- Implication: the **neo-Malthusian** idea that agents with low outside wages face more coercion.

Further Implications

1. If coercion is sufficiently easy ($\eta < \eta^*$), effort is above first-best
2. Banning coercion increases social welfare.
3. The correlation between expected wage payments and coercion is ambiguous (positive if $\partial w^h / \partial a > 0$, and negative if $\partial w^h / \partial a < 0$).

- Contrast to Fogel and Engerman:
  - Coercion increases effort, but generally this is not efficient. It also reduces "social welfare".
  - The fact that the end of slavery did not increase wages is **not** a puzzle.
  - The fact that gang labor did not arise after the end of slavery is **not** a puzzle.

Decline of Labor Coercion

- Contrast of neo-Malthusian and Domar hypothesis:

    "I would... expect to find a positive statistical correlation between free land and serfdom (or slavery)"—E. Domar (1970)

- In fact, Similar to the starting point of the famous **Brenner critique** of neo-Malthusian theories of feudal decline.

- How to reconcile them?

    1. **Price effect:** Labor scarcity increases P making coercion more likely (*Domar channel*).
    2. **Outside option effect:** Labor scarcity increases outside options, making coercion less likely (*neo-Malthusian channel*).

Decline of Labor Coercion

- Whether the price effect or the outside option effect dominates depends on the strength of the two effects.
- Price effect more likely to dominate when labor scarcity causes a large increase in price of goods produced by coerced labor (second serfdom in Eastern Europe?) and when outside option effect is more muted (perhaps because of relative lack of towns in Eastern Europe).
- But also politics of coercion crucial.

Economies of Scales in Coercion

- Above-discussed idea: coercion worthwhile only in the colonies were there are large native populations to coerce.
- This can be captured by assuming that producers choose g before they learn whether they are matched with an agent, or introduce other fixed costs associated with coercion.
- Then all of the same insights and results apply, but in addition, a new channel through which labor abundance increases coercion.

Control of Labor and Factor Price Manipulation

- From *Acemoglu (2005)*.
- Consider an infinite horizon economy populated by a continuum $1 + \theta_e + \theta_m$ of risk neutral agents, each with a discount factor equal to $\beta < 1$.
- Unique non-storable final good denoted by y.
- The expected utility of agent j at time 0 is given by:

$$U_0^j = \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t c_t^j, \tag{1}$$

where $c_t^j \in \mathbb{R}$ denotes the consumption of agent j at time t and $\mathbb{E}_t$ is the expectations operator conditional on information available at time t.

Environment

- Agents are in three groups.
    1. workers, mass 1, supplying labor inelastically.
    2. elite (denoted by e), total mass θ^e (set S^e); initially hold political power in this society and engage in entrepreneurial activities
    3. middle class (denoted by m), total mass θ^m (set S^m); engage in entrepreneurial activities

- Each member of the elite and middle class has access to production opportunities, represented by the production function

$$y_t^j = \frac{1}{1-\alpha}(A_t^j)^\alpha (k_t^j)^{1-\alpha}(l_t^j)^\alpha, \tag{2}$$

where k denotes capital and l labor.

- Capital is assumed to depreciate fully after use.
- Productivity of each elite agent is A^e in each period, and that of each middle class agent is A^m.

Policies

- Taxes: activity-specific tax rates on production, $\tau^e \geq 0$ and $\tau^m \geq 0$.
- No other fiscal instruments to raise revenue. (in particular, no lump-sum non-distortionary taxes).
- The proceeds of taxes and revenues from natural resources can be redistributed as nonnegative lump-sum transfers targeted towards each group, $T^w \geq 0$, $T^m \geq 0$ and $T^e \geq 0$.
- $\phi \in [0, 1]$ reduced form measure of "state capacity,"
- Government budget constraint:

$$T_t^w + \theta^m T_t^m + \theta^e T_t^e \leq \phi \int_{j \in S^e \cup S^m} \tau_t^j y_t^j dj. \tag{3}$$

Employment

- Maximum scale for each firm, so that

$$l_t^j \leq \lambda \text{ for all } j \text{ and } t.$$

- This prevents the most productive agents in the economy from employing the entire labor force.
- Market clearing:

$$\int_{j \in S^e \cup S^m} l_t^j dj \leq 1. \tag{4}$$

- Since $l_t^j \leq \lambda$, (4) implies that if

$$\theta^e + \theta^m \leq \frac{1}{\lambda}, \tag{ES}$$

there can never be full employment.

- Depending on whether Condition (ES) holds, there will be excess demand or excess supply of labor in this economy.

Economic Equilibrium

- Each producer takes wages, w_t, as given, and maximizes

$$\max_{k_t^j, l_t^j} \frac{1 - \tau_t^j}{1 - \alpha} (A^j)^\alpha (k_t^j)^{1-\alpha} \left(l_t^j \right)^\alpha - w_t l_t^j - k_t^j.$$

- Solution:

$$k_t^j = (1 - \tau_t^j)^{1/\alpha} A^j l_t^j, \text{ and} \tag{5}$$

$$l_t^j \begin{cases} = 0 & \text{if } w_t > \frac{\alpha}{1-\alpha}(1 - \tau_t^j)^{1/\alpha} A^j \\ \in [0, \lambda] & \text{if } w_t = \frac{\alpha}{1-\alpha}(1 - \tau_t^j)^{1/\alpha} A^j \\ = \lambda & \text{if } w_t < \frac{\alpha}{1-\alpha}(1 - \tau_t^j)^{1/\alpha} A^j \end{cases}. \tag{6}$$

- Note: $\alpha(1 - \tau_t^j)^{1/\alpha} A^j / (1 - \alpha)$ is the net marginal product of a worker employed by a producer of group j.

Equilibrium Wages

- Combining (6) with (4), equilibrium wages are obtained as follows:

  (i) If Condition (ES) holds, there is excess supply of labor and $w_t = 0$.

  (ii) If Condition (ES) does not hold, then there is "excess demand" for labor and the equilibrium wage is

$$w_t = \min \left\langle \frac{\alpha}{1-\alpha}(1 - \tau_t^e)^{1/\alpha} A^e, \frac{\alpha}{1-\alpha}(1 - \tau_t^m)^{1/\alpha} A^m \right\rangle.$$
$$(7)$$

- Note that when Condition (ES) does not hold, the equilibrium wage is equal to the net productivity of one of the two groups of producers, so either the elite or the middle class will make zero profits in equilibrium.

Revenue Extraction

- To highlight this mechanism, suppose that Condition (ES) holds, so wages are constant at zero.
- This removes any effect of taxation on factor prices.
- Also assume that $\phi > 0$ (for example, $\phi = 1$).
- Tax revenues to be distributed back to the elite

$$\text{Revenue}_t = \frac{\phi}{1 - \alpha} \tau_t^m (1 - \tau_t^m)^{(1-\alpha)/\alpha} A^m \lambda \theta^m + R. \tag{8}$$

- Clearly this is maximized at

$$\tau_t^m = \tau^{RE} \equiv \alpha. \tag{9}$$

- Thus, equilibrium involves taxes at the top of the Laffer curve
  - High taxes distortionary, but fiscal policies are not used to harm the middle class.

Factor Price Manipulation

- Factor price manipulation contrasting with revenue extraction—**much more pernicious.**
- To highlight this mechanism in the simplest possible way, let us first assume that $\phi = 0$ so that there are no direct benefits from taxation for the elite.
- There are indirect benefits, because of the effect of taxes on factor prices, which will be present as long as the equilibrium wage is positive.
- Suppose that Condition (ES) does not hold, so that equilibrium wage is given by (7).
- Therefore, choose taxes to minimize equilibrium wages $\rightarrow$ maximum taxes on the middle class.
- **Implication:** factor price manipulation much more damaging to output.

Combined Effects

- Straightforward to combine the two effects.
- Main results: the factor price manipulation effect will push the economy *beyond the peak* of the Laffer curve.
- In particular:

$$\tau_t^m = \tau^{COM} \equiv \frac{\kappa\left(\lambda, \theta^e, \alpha, \phi\right)}{1 + \kappa\left(\lambda, \theta^e, \alpha, \phi\right)}. \tag{10}$$

- *Comparative Statics:*
  1. ϕ reduces τ^{COM} because increased state capacity makes revenue extraction more important.
  2. θ^e increases τ^{COM} because revenue extraction becomes less important and factor price manipulation becomes more important.
  3. α increases taxes.

Politics Labor Control and Coercion

- Incentives for those controlling the state to use overwhelming force to control labor, but also incentives to resist.
  - analysis of state power, centralization and monopoly of violence.
- Incentives for competing elites to fight hard to come to power in order to control labor.
  - coercion and political instability.

End of Labor Control and Coercion

- How does labor coercion end?
  - We already seen some economic mechanisms leading to its end—or at the very least, reducing incentives for coercion.
  - But also political mechanisms—often in the form of a political revolution.

End of Labor Repression in the US South

Table 5

Percentage of Cotton Harvested Mechanically, by State										
	Delta states[a]			**Non-Delta states**						
Year	**AR**	**LA**	**MI**	**AL**	**GA**	**NC**	**SC**	**TN**	**TX**	**VA**
1949	1	b	4	b	b	b	1	b	11	b
1950	1	3	3	b	b	b	b	b	12	b
1951	2	11	7	b	2	1	3	b	19	b
1952	2	13	7	1	3	1	1	1	22	b
1953	9	34	13	3	6	3	7	1	24	b
1954	16	28	11	2	3	3	4	1	21	b
1955	25	28	23	2	3	2	2	2	24	b
1956	27	31	25	3	2	3	4	4	25	b
1957	16	35	17	2	2	b	1	1	37	b
1958	22	43	19	1	2	1	1	4	35	b
1959	36	50	38	6	4	5	1	8	44	b
1960	42	49	40	8	14	12	6	19	58	1

Technology and Coercion

- Adoption of "labor saving" technologies may make labor control and coercion less crucial for the elite.
- What determines the adoption and development of such technologies?
- Two answers:
  - Neoclassical—labor abundance good for technology.
  - Habakkuk—labor scarcity good for labor saving technology (see also *Allen, 2009*).
- *Acemoglu (2010)*:
  - The answer depends on whether technology and labor are strong complements or substitutes.
  - Standard growth models assume strong complements, but reality may be different.
- If so, then

  labor scarcity $\rightarrow$ labor-saving technology $\rightarrow$ potential end to coercion.

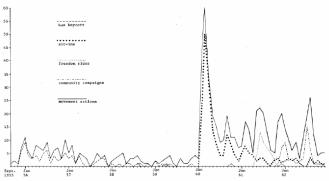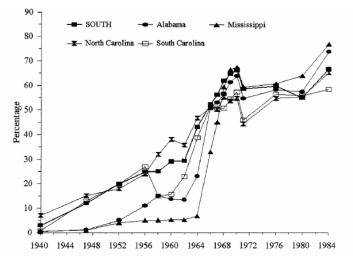# End of Labor Repression in the US South (continued)

Figure 3: Incidence of Different Types of Collective Action, 1955-62

Figure 2. Movement-Initiated Actions, September 1955 through December 1962
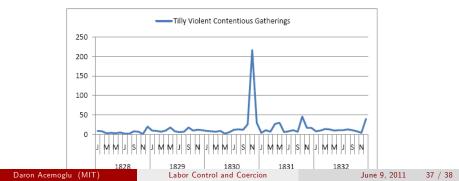Source: *Annual Index* of the *New York Times*, 1955–1962.

ource: McAdam (1983)

End of Labor Repression in the US South (continued)

Figure 4: Percentage of Voting-Age blacks registered, Southern States

Theory

- *Acemoglu and Robinson (2000, 2001, 2006)*: Conflict between elites and citizens on political rights.
- Emergence of democracy resulting from the conflict.In almost all cases of democratization, de facto power of the disenfranchised important.
- In the British case, leading up to the First Reform Act (from *Aidt, 2010*):

Conclusion

- Control and coercion of labor underappreciated in the political economy literature.
- They may be a key determinant of historical political dynamics and a crucial part of our understanding of the origins and nature of current political institutions.
- Area for more research.