The Political Economy of Development: PPHA 42310

Lecture 8

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Interactions between 'Culture' and Institutions

- We've seen a few examples of how what one might broadly call 'culture' influences equilibria
  - kinship in the Philippines
  - pro-sociality and reciprocity in Paraguay
  - social norms with respect to bridewealth payments in South Sudan, or cows in Lesotho.
- Much of political economy is about how institutions condition equilibria (think of Fujiwara's empirical paper in Brazil about electronic voting) and this research has extended to endogenizing such institutions.
- What the above findings suggest is that holding institutions constant, there are interesting interactions with broader 'cultural' traits - e.g the way democracy works depends on the nature of kinship.
- But it seems likely that these things interact. Culture may influence the equilibria holding institutions constant, but when both are endogenous they may mutually interact in interesting ways,
- In this lecture, I overview of some related research.

Endogenous Culture: Basic Models

- Cavalli-Sforza and Feldman (1981) and to Boyd and Richerson (1985), based on models of evolutionary biology applied to the transmission of cultural traits.
- Suppose that there is a dichotomous cultural trait in the population, $\{a, b\}$. Let the fraction of individuals with trait $i \in \{a, b\}$ be q^i.
- Focus on a continuous time model with "a-sexual" reproduction where each parent has one child at the rate λ and is replaced by the child.
- Two types of cultural transmission:
  1. *direct/vertical* (parental) socialization and
  2. *horizontal/socialization* by the society at large.

Intergenerational Transmission (continued)

- Suppose that direct vertical socialization of the parent's trait, say i, occurs with probability d^i.
- Then, if a child from a family with trait i is not directly socialized, which occurs with probability $1 - d^i$, he/she is horizontally/obliquely socialized by picking the trait of a role model chosen randomly in the population (i.e., he/she picks trait i with probability q^i and trait $j \neq i$ with probability $q^j = 1 - q^i$).
- Therefore, the probability that a child from family with trait i is socialized to have trait j, P^{ij}, is:

$$
\begin{aligned}
P^{ii} &= d^i + (1 - d^i)q^i \\
P^{ij} &= (1 - d^i)(1 - q^i).
\end{aligned} \tag{1}
$$

Intergenerational Transmission (continued)

- Now noting that each child replaces their parent in the population (at the rate λ), we have that

$$\dot{q}^i = \lambda \left[\left(d^i + (1 - d^i) q^i \right) q^i + (1 - d^j) q^i \left(1 - q^i \right) \right] - \lambda q^i .$$

- Simplifying this equation, we obtain:

$$\dot{q}^i = \lambda q^i (1 - q^i) \left(d^i - d^j \right) . \tag{2}$$

- This is a version of the replicator dynamics in evolutionary biology for a two-trait population dynamic model—i.e., a logistic differential equation.
- If $\left(d^i - d^j \right) > 0$ cultural transmission represents a selection mechanism in favor of trait i, due to its differential vertical socialization.
- However, this selection mechanism implies that there will not be cultural heterogeneity, i.e., a steady-state with $0 < q^{i*} < 1$.

Intergenerational Transmission (continued)

- The following result is now immediate.
- Let $q^i(t, q_0^i)$ denotes the fraction with trait q^i at time t starting with initial condition q_0^i. Then:

Proposition

Suppose $d^i > d^j$. Then, steady states are culturally homogeneous. Moreover, for any $q_0^i \in (0, 1]$, $q^i(t, q_0^i) \to 1$. If instead $d^i = d^j$, then $q^i(t, q_0^i) = q_0^i$, for any $t \geq 0$.

Intergenerational Transmission: Bisin-Verdier Model

- Bisin and Verdier (2000, 2001) introduce "imperfect empathy" into this framework, whereby parents look at the world with their own preferences and thus wants to socialize their offspring according to their preferences.
- Formally, suppose that individuals choose an action $x \in X$ to maximize a utility function $u^i(x)$, which is a function of the cultural trait $i \in \{a, b\}$. Suppose that this utility function is strictly quasi-concave.

Intergenerational Transmission (continued)

- Let V^{ij} denote the utility of a type i parent of a type j child, $i, j \in \{a, b\}$. Then clearly, we have

$$V^{ij} = u^i(x^j)$$

And

$$x^j = \arg\max_{x \in X} \; u^j(x)$$

- This implies the "imperfect empathy" feature:

$$V^{ii} \geq V^{ij}$$

holding with $>$ for generic preferences (i.e., in particular when the maximizers for the two types are different).

Intergenerational Transmission (continued)

- Suppose also that parents have to exert costly effort in order to socialize their children. In particular, parents of type i choose some variable τ^i, which determines

$$d^i = D\left(q^i, \tau^i\right).$$

  The dependence on q captures other sources of direct transmission working from the distribution of traits in the population.
- The cost of τ^i is assumed to be $C\left(\tau^i\right)$.
- Suppose that D is continuous, strictly increasing and strictly concave in τ^i, and satisfies $D\left(q^i, 0\right) = 0$, and C is also continuous, strictly increasing and convex. Moreover, suppose also that $D\left(q^i, \tau^i\right)$ is nonincreasing in q^i.
- Parents of type i will solve the following problem:

$$\max_{\tau^i} -C(\tau^i) + P^{ii}V^{ii} + P^{ij}V^{ij},$$

  where P^{ii} and P^{ij} depend on τ^i via d^i.

Intergenerational Transmission (continued)

- Let us say that the *cultural substitution property* holds if the solution to this problem d^{i*} is is strictly decreasing function of q^i and takes a value $d^{i*} = 0$ at $q^i = 1$. Intuitively, this implies that parents have less incentives to socialize their children when their trait is more popular/dominant in the population.
- This cultural substitution property is satisfied in this model.
- Then, the dynamics of cultural transmission can be more generally written as

$$\dot{q}^i = \lambda q^i (1 - q^i) \left(d^i \left(q^i \right) - d^j \left(1 - q^i \right) \right). \tag{3}$$

- We can also verify that this differential equation has a unique interior steady state, q^{i*}, and moreover,

Proposition

The steady states are now culturally heterogeneous. In particular, $q^i(t, q_0^i) \to q^{i*}$, for any $q_0^i \in (0, 1)$.

Intergenerational Transmission (continued)

- Intuition: the cultural substitution property implies that parents put more effort in socializing their children, i.e., passing on their traits, when their traits are less common in the population.
- The proof of this result follows from the following observations:
  1. Clearly, an interior steady state satisfies
  $$d^i\left(q^i\right) - d^j\left(1 - q^i\right) = 0,$$
  and since both d^i and d^j are strictly decreasing, there can at most be one such steady state q^{i*}.
  2. Moreover, since $d^i(1) = 0$, existence is guaranteed.
  3. Global stability then follows from the fact that this pattern implies that $\dot{q}^i > 0$ whenever $q^i \in \left(0, q^{i*}\right)$ and at $\dot{q}^i < 0$ whenever $q^i \in \left(q^{i*}, 1\right)$.

Culture, Values and Cooperation

- Tabellini (2009) considers the following variation on the static prisoners' dilemma game.
- Individuals incur a negative disutility from defecting, but the extent of this disutility depends on how far their partner is according to some distance metric.
    - The most interesting interpretations of this distance are related to "cultural distance" or "kinship distance". For example, some individuals may not receive any disutility from defecting on strangers, but not on cousins.
    - This captures notions related to "generalized trust".

Model

- A continuum of one-period lived individuals, with measure normalized to 1, is uniformly distributed on the circumference of a circle of size $2S$, so that the maximum distance between two individuals is S.
- A higher S implies a more “heterogeneous” society—in geography, ethnicity, religion or other cultural traits.
- Each individual is (uniformly) randomly matched with another located at distance y with probability $g(y) > 0$, and naturally

$$\int_0^S g(y) = 1.$$

Model (continued)

- A matched pair play the following prisoners' dilemma:

$$\begin{array}{ccc} & C & D \\ C & c, c & h-l, c+w \\ D & c+w, h-l & h, h \end{array}$$

- Naturally, $c > h$ and $l, w > 0$. Let us also suppose that $l \geq w$, so that the loss of being defected when playing cooperate is no less than the reverse benefit.

Model (continued)

- In addition, each individual enjoys a non-economic (psychological or moral) benefit

$$de^{-\theta y}$$

  whenever she plays "cooperate" (regardless of what her opponent plays) but as a function of the distance between herself and the other player, y, with the benefit declining exponentially in distance.
- Let us assume that

$$d > \max\{l, w\},$$

  which ensures that this benefit is sufficient to induce cooperation with people very close.

Model (continued)

- Finally, suppose that there are two types of player indexed by $k = 0, 1$, "bad" and "good," modeled as having different rates at which the benefit from cooperation declines. In particular,

$$\theta^0 > \theta^1.$$

- This captures the idea that what varies across individuals (and perhaps across societies) is the level of "generalized trust".
- The fraction of good $(k = 1)$ types in the population is the same at any point in the circle is $1 > n > 0$.

Equilibrium

- Consider a player in a match of distance y.
- Let $\pi(y)$ denote the probability that her opponent will play C.
- We can express the player's net expected *material* gain from defecting instead of playing C as:

$$T(\pi(y)) = [l - \pi(y)(l - w)] > 0 \tag{4}$$

- This is strictly positive, as it is always better not to cooperate given the prisoners' dilemma nature of the game.
- Note also that cooperation decisions are strategic complements, since, given the assumption that $l \geq w$, the function $T(\pi(y))$ is non-increasing in $\pi(y)$

Equilibrium (continued)

- The temptation to defect will be potentially balanced by the non-economic benefit of cooperation, $de^{-\theta^k y}$, as a function of a player's type.
- To simplify the analysis, let us suppose that

$$\frac{\theta^0}{\theta^1} > \frac{\ln(l/d)}{\ln(w/d)} \tag{A0}$$

and also focus on "best" (Pareto superior) and symmetric (independent of location on the circle) equilibria.
- Then a player of type $k = 0, 1$ will be indifferent between cooperating and not cooperating with a partner of distance $\tilde{y}^k$ defined as

$$T(\pi(\tilde{y}^k)) = de^{-\theta^k \tilde{y}^k}, \tag{5}$$

Or as

$$\tilde{y}^k = \left\{ \ln d - \ln \left[(w - l)\, \pi(\tilde{y}^k) + l \right] \right\} / \theta^k. \tag{6}$$

Equilibrium (continued)

- Thus given the equilibrium probability of cooperation $\pi(y)$ (for all y), each individual will cooperate with players closer than $\tilde{y}^k$ ($y < \tilde{y}^k$) and defect against those farther than $\tilde{y}^k$ as a function of her type k.
- Note that if $l > w$, then the right hand side of (6) is increasing in $\pi(y)$, and there may be multiple equilibria, though we are ignoring this by focusing on best equilibria.
- Now consider a bad player, $k = 0$, and suppose that she/he expects the opponent always to cooperate, so that $\pi(y) = 1$ (which will be true, since both types of players will cooperate whenever this player is choosing to cooperate along the equilibrium path).
- Then (6) reduces to:

$$Y^0 = \left[\ln d - \ln w\right] / \theta^0, \tag{7}$$

and player $k = 0$ will cooperate up to distance $y \leq Y^0$.

Equilibrium (continued)

- The problem of a good player is a little more complicated.
- She will necessarily cooperate up to distance $y \leq Y^0$. But beyond that, she recognizes that only other good players will cooperate, and thus $\pi(y) = n$.
- Using this with (6)

$$Y^1 = \left[\ln d - \ln\left[\left(w - l\right) n + l\right]\right] / \theta^1. \tag{8}$$

- And good players cooperate up to Y^1 (which is strictly greater than Y^0 given the assumption above).

Equilibrium (continued)

- Thus summarizing:

Proposition

In the Pareto superior symmetric equilibrium, a player of type k cooperates in a match of distance $y \leq Y^k$ and does not cooperate if $y > Y^k$, where Y^k is given (7)-(8), for $k = 0, 1$.

- This proposition captures, in a simple way, the role of "generalized trust" in society.
- It also highlights the strategic complementarity in trust, as Y^1 is increasing in n: thus good players trust others more when there are more good players. Interestingly, this does not affect bad types, given the simple structure of the prisoners' dilemma game coupled with the assumption that $l \geq w$.

Endogenous Values

- Values can now be endogenized using the same approach as Bisin and Verdier.
- Parents choose socialization effort τ at cost

$$\frac{1}{2\varphi}\tau^{2},$$

  and as a result, their offspring will be over the "good type," i.e., $\theta^k = \theta^1$, with probability $\delta + \tau$.
- As in Bisin and Verdier, they evaluate this with their own preferences, i.e., there is "imperfect empathy".

Endogenous Values (continued)

- Let V_t^{pk} denote the parent of type p's evaluation of their kid of type k's overall expected utility in the equilibrium of the matching game.
- Since the probability of a match with someone located at distance z is denoted $g(z)$, we have

$$V_t^{pk} = U_t^k + d \int_0^{Y_t^k} e^{-\theta^p z} g(z) dz, \tag{9}$$

  where $U_t^k = U(\theta^k, n_t)$ denotes the expected equilibrium material payoffs of a kid of type k, in a game with a fraction n_t of good players. The integral gives the parent's evaluation of their kid's expected non-economic benefit from their offspring's cooperating in matches of distance smaller than Y_t^k.
- This is where imperfect empathy comes in, as this integral term uses the parent's value parameter, θ^p, rather than with the kid's value.

Endogenous Values (continued)

- With the same argument as in Bisin and Verdier, we have that whenever $k \neq p$, then

$$V_t^{pp} > V_t^{pk}$$

where recall that, given the assumptions, $Y^1 > Y^0$.

- The fact that parents of bad type, according to their values, have nothing to gain from exerting effort to socialize their children to be good (as they do not internalize the "moral" benefit from cooperation with farther away partners), and the fact that the marginal cost of exerting effort at zero is zero, implies the following simple result:

Proposition

A "good" parent $(p = 1)$ exerts strictly positive effort $\tau_t > 0$. A "bad" parent $(p = 0)$ exerts no effort.

Endogenous Values (continued)

- Therefore, the law of motion of types in the population follows the following difference equation:

$$n_t = n_{t-1}(\delta + \tau_t) + (1 - n_{t-1})\delta = \delta + n_{t-1}\tau_t. \qquad (10)$$

- It can also be shown that the optimal level of effort for good type parents is

$$\begin{aligned} \tau_t &= F\left(Y_t^1\right) \equiv \qquad (11) \\ \varphi d[-e^{-\theta^1 Y_t^1} + E[e^{-\theta^1 y} \mid Y_t^1 &\geq y \geq Y^0]] \Pr(Y_t^1 \geq y \geq Y^0), \end{aligned}$$

where intuitively the benefit to good parents depends on the likelihood that their children will play against an opponent of good type, again highlighting the strategic complementarities. The right-hand side of (11), $F\left(Y_t\right)$, is as a result strictly increasing in Y_t^1.

Endogenous Values (continued)

- This means that (10) can be written as

$$n_t = \delta + n_{t-1} F(Y_t^1) \equiv N(Y_t^1, n_{t-1}), \tag{12}$$

with the date t equilibria value of Y_t^1 being defined as:

$$Y_t^1 = \left[\ln d - \ln\left[(w - l)\, n_t + l\right]\right] / \theta^1 \equiv Y(n_t).$$

- Now using the fact that n_t itself is a function of n_{t-1} and Y_t^1 from (10), we can express endogenous value dynamics as in two equations system:

$$Y_t^{1*} = G^Y(n_{t-1}) \tag{13}$$

$$n_t^* = G^n(n_{t-1}) \tag{14}$$

- Strategic complementarities now imply multiple steady state are possible.

Endogenous Values (continued)

- Naturally, additional conditions ensure uniqueness. One such condition would be
$$\frac{1}{\varphi} > l - w \tag{A1}$$
which ensures that the marginal cost of effort, $1/\varphi$, rises sufficiently rapidly, relative to the strategic complementarity captured by $(l - w)$.
- Given uniqueness, global stability of dynamics can also be ensured. The following proposition gives one sufficient condition

Proposition

Suppose (A1) holds and $\varphi > 0$ is sufficiently small. Then the equilibrium is unique and is globally stable, i.e., it asymptotically reaches the unique steady state (Y_s^{1*}, n_s^*). Moreover, adjustment to steady state is monotone, i.e., the fraction of what types, n_t^*, and the cooperation threshold, Y_t^{1*}, andmonotonically increase or decrease along the adjustment path.

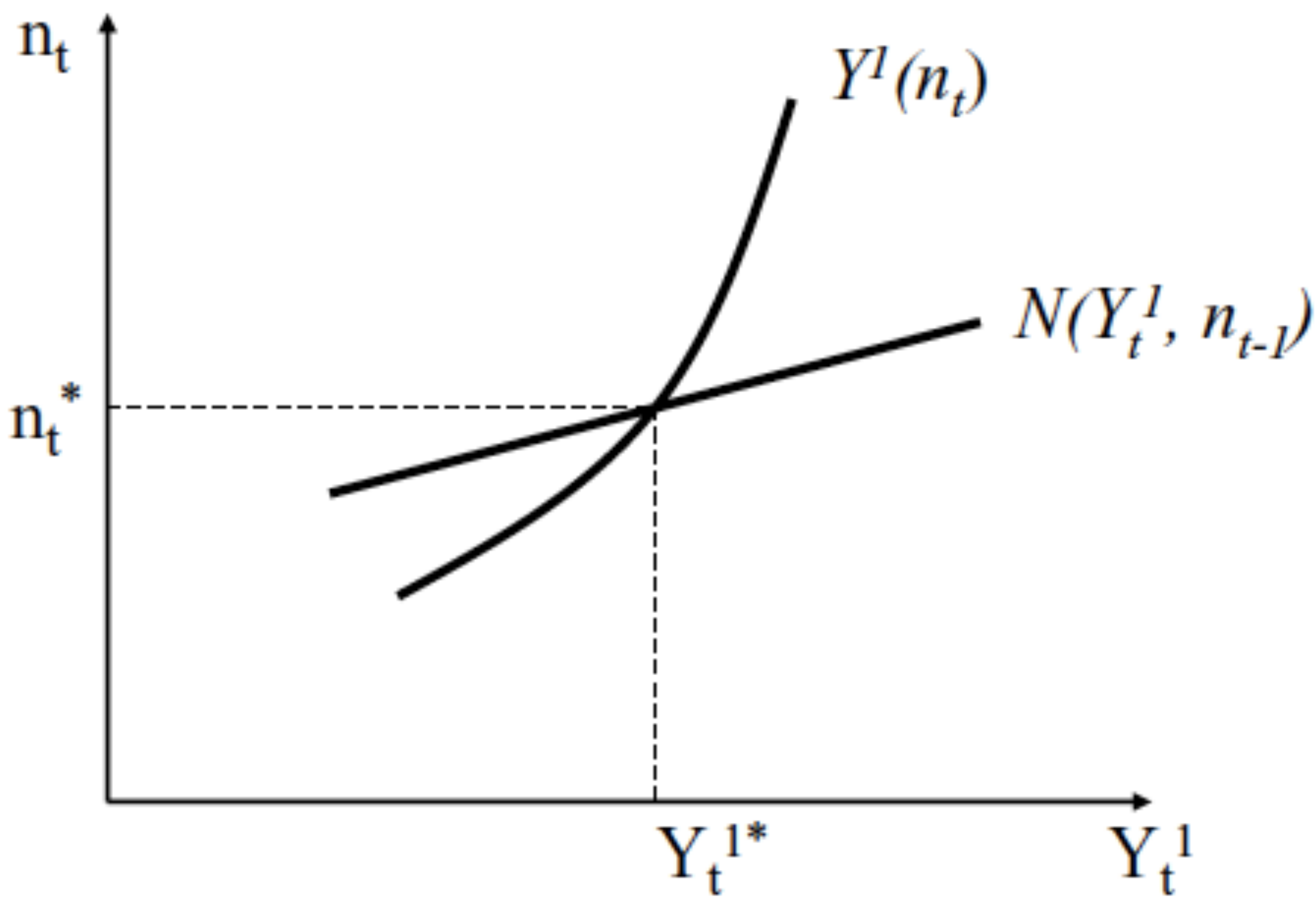


FIGURE II

Effects of Institutions

- Let us introduce institutional enforcement of cooperation simply by assuming that there is a probability $\chi(y)$ that defection gets detected when it takes place in a match of distance y and it gets punished.
- We can think of different types of shifts up the schedule $\chi(y)$ as corresponding to different types of changes in institutions.
- In particular, we can imagine that χ increases for high y. This will encourage more broad-based cooperation and it will also incentivize parents to socialize their children to be of the "good" type. As a result, both n_t^* and Y_t^{1*} will increase.
- At the other extreme, we can think of an improvement in local enforcement, with no change in enforcement for faraway matches. This would increase Y^0, so its static effect is good. However, it would also reduce the parental efforts for good socialization, so ultimately it would reduce n_t^* and Y_t^{1*}.

Endogenous Institutions

- One could also endogenize enforcement through a voting or political economy process.
- In this case, one can obtain richer dynamics, where parental socialization interacts with political economy. For example, more good types today leads to greater enforcement, which then encourages more good socialization.
- Multiple steady states are again possible, this time resulting from the interaction of culture and institutions.

Empirical Expectations

- Though theoretically things could go in different directions in this model, there has been a presumption that there is a complementarity between desirable cultural traits (cooperate) and better institutions.
- The canonical example would be Putnam's research on Italy whereby the history of communes and republican government in the North of Italy is supposed to have created high levels of trust and social capital.
- Here the causality flows from better institution to more socially desirable cultural traits (trust).
- Tabellini's empirical paper "Culture and Institutions: Economic Development in the Regions of Europe." *Journal of European Economic Association*, 8, 677-716. is exactly about this.
- But how general is this finding?

Figure 1. Per capita income in 1995-2000

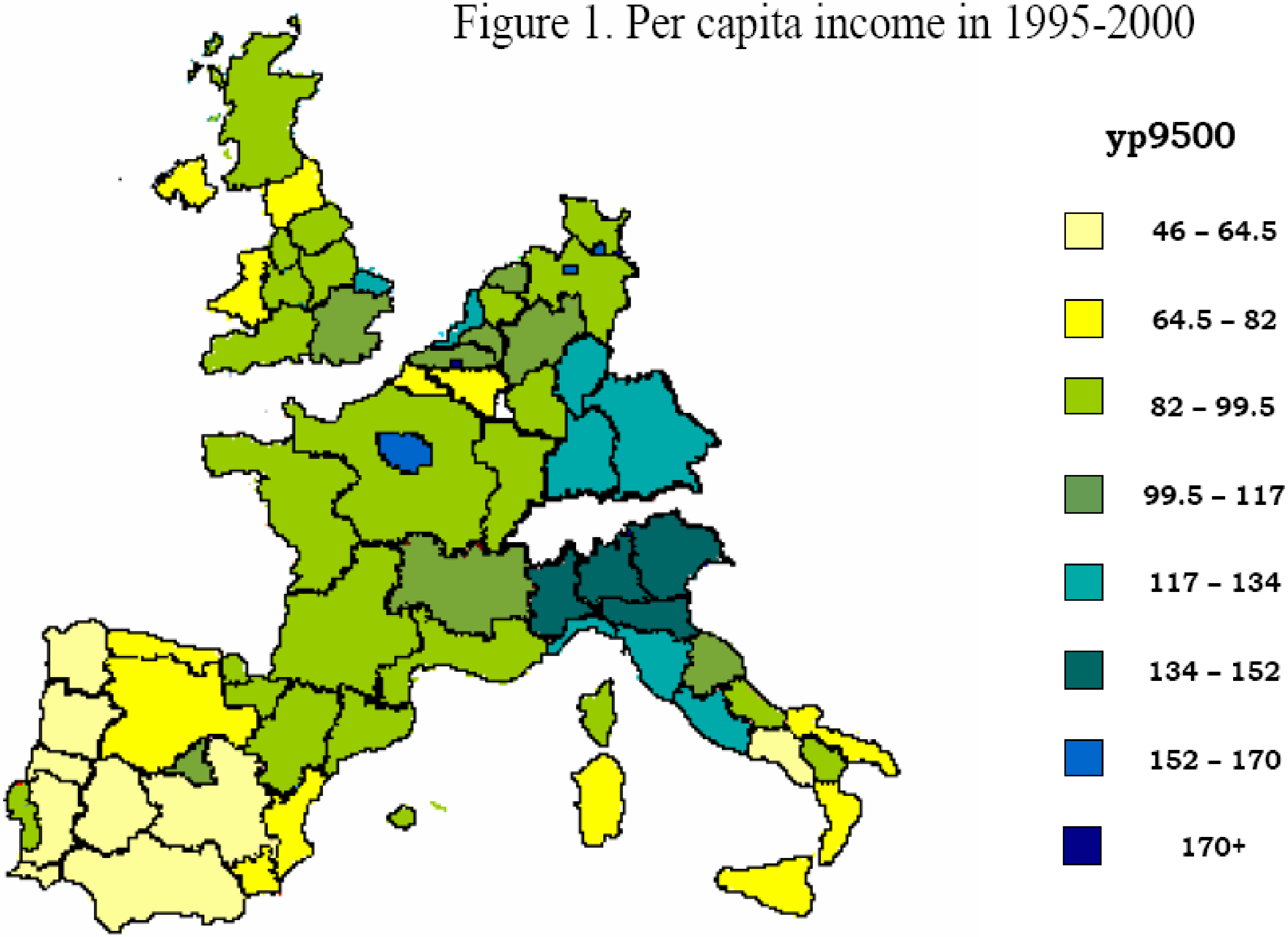


Figure 2b. Cultural map of Europe in the 1990s

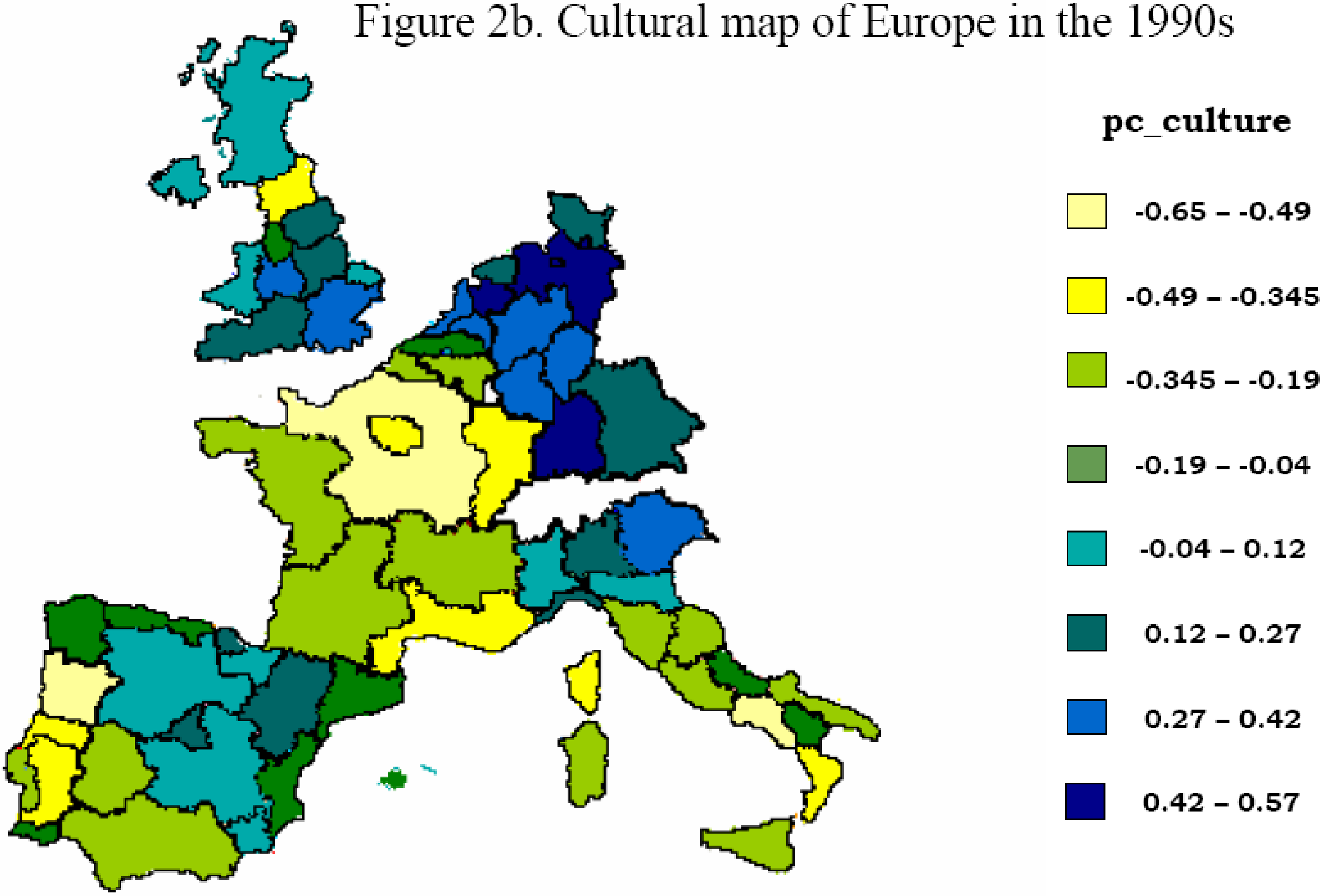
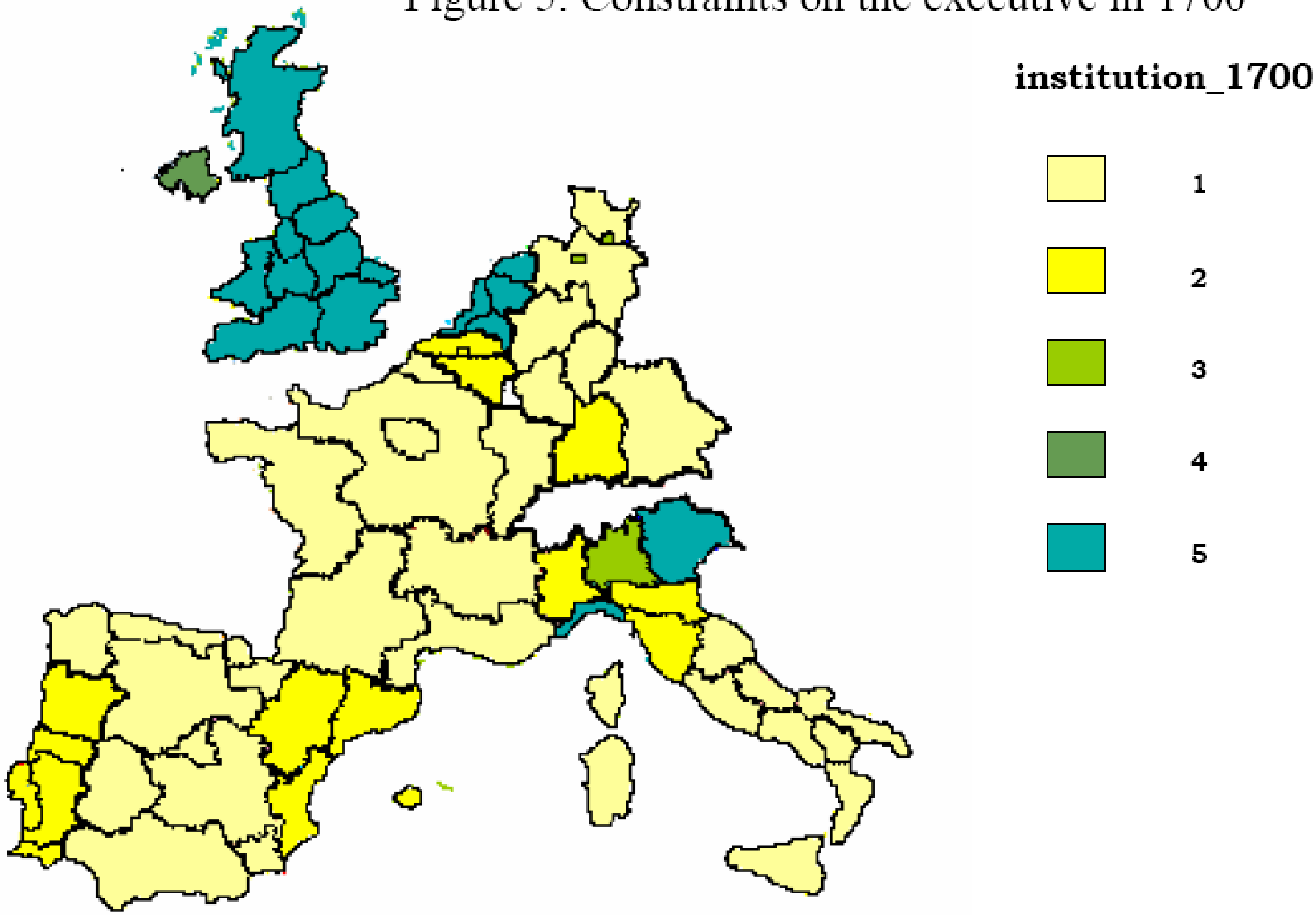


Figure 5. Constraints on the executive in 1700



The Evolution of Culture and Institutions: Evidence from the Kuba Kingdom

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March 3, 2016

Introduction

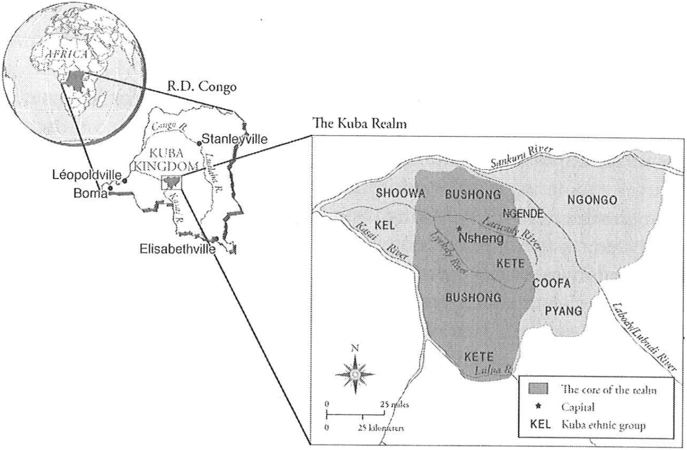
The broader research question:

- How do formal institutions affect internal cultural norms?

The more narrow research question:

- Do stronger, more formal, and more centralized institutions cause stronger internal norms against rule-breaking/cheating and greater respect for authority?

The Kuba Kingdom

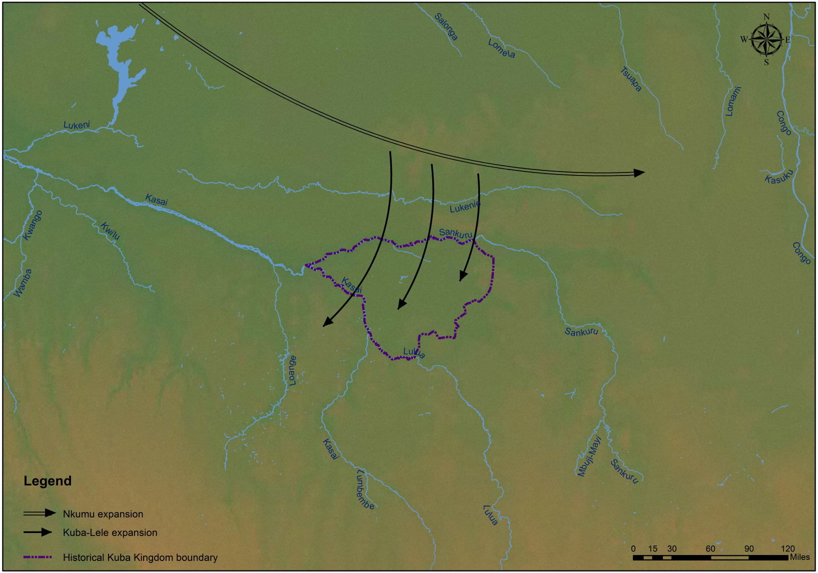


The Kuba realm: General orientation

The Kuba Kingdom: A near “natural experiment”

Migration, approx. 1400–1500:

- According to common oral histories, the following groups originally descend from a common ancestor named Woot: Lele, Bushong, Bieeng, Pyaang, and Ngeende.
- After committing incest with his sister Mweel, Woot and Mweel fled from their village upstream (on the Sankuru).
- This migration is dated to be approximately during the 15th century.


Salonga
Lomela
Tsuapa
Lomami
Congo
Kasuku
Congo
Lukeni
Kasai
Kwango
Kwilu
Wamba
Lukenie
Sankuru
Kasai
Lulua
Sankuru
Loange
Kasai
Lumbembe
Lulua
Mbuji-Mayi
Sankuru
N
W
E
S
Legend
Nkumu expansion
Kuba-Lele expansion
Historical Kuba Kingdom boundary
0 15 30 60 90 120
Miles

The Kuba Kingdom: A near "natural experiment"

Formation of the Kuba Kingdom, approx. 1620:

- The origin of the Kingdom is traced back to Shyaam, the son of a slave woman (i.e., foreigner).
- Lived among the Mbuun, who were traders connected to the Atlantic trade via the Kongo.
- Transformed a collection of autonomous Bushong chieftaincies into a centralized state, the Kuba Kingdom.
- Kingdom included:
  - Descendants of Woot: Bushong, Bieeng, Pyaang, and Ngeende, but not the Lele.
  - And local groups not descended from Woot: Kete, Cwa, and Coofa.
- Kingdom's boundaries were determined by surrounding rivers and remained stable over time.

Characteristics of the Kuba Kingdom

The Kingdom developed more ‘sophisticated’ state institutions than neighboring groups:

- More complex and formal political structures
  - Political offices and a balance/division of power (King and councils)
  - Unwritten constitution
  - Bureaucracy with upward political mobility (*kolms*)
  - Capital city
- Taxation and public goods provision
  - Universal taxation (for all villages) based on a system of tribute
  - Elaborate court system that included a judge, jury, and appellate courts
  - Police force and a military
  - Elaborate road network

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  - Elaborate road network
- **What impact did Kuba institutions have on internal norms of obedience towards laws?**

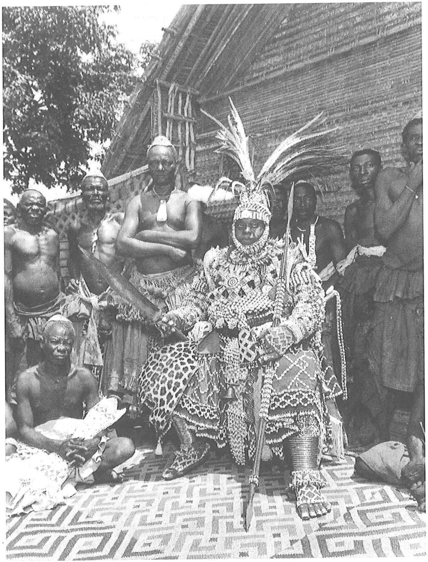
Mary Douglas' comparison: Bushong and Lele

- Already exists an established anthropological literature documenting institutional and economic differences between the:
  1. Central Kuba and Lele.
  2. Bushong and Lele.
- Example from Anthropologist Mary Douglas (1963):
  - "They are historically related, and share many cultural values. On the surface, Lele material culture looks so like a counterpart of Bushong that it is worth comparing the two tribes... Everything that the Lele have or do, the Bushong have more and can do better. They produce more, live better, as well as populating the region more densely than the Lele." (pp. 41–42)
  - "The Bushong managed to develop a well-organized political system embracing 70,000 people... By contrast, the largest political unit of the Lele, the village, was smaller than the smallest political unit in the Bushong system." (pp. 50–51)

Overview of the analysis

1. Estimate the reduced-form effect of the Kuba Kingdom on cultural norms of descendants today.
    - Three samples of interest:
        1. Kuba vs. rest of the sample
        2. Central Kuba vs. Lele (children of Woot)
        3. Bushong vs. Lele (children of Woot)
2. Examine potential confounding factors:
    - Selection of migrants into sample
    - Geography
3. Examine potential (alternative) channels:
    - Income
    - Colonial history
    - Post-colonial history (Mobutu)
    - Other cultural characteristics
        - Altruism
        - Trust and confidence

King Mbop Mabinc maKyeen, 1947



King Mbop Mabinc maKyeen (1939–69) (photograph by Eliot Elisofon, 1947, Eliot Elisofon Photographic Archives 22923-P5, #10, National Museum of African Art, Smithsonian Institution)

Title holders (*kolm*), 1956

The Kuba today: Members of the Royal Court

Title holders (*kolm*)

Head of the military

Research design

- Examine the rule-following behavior of individuals with ancestors from inside and outside of the Kuba Kingdom.
- All individuals sampled live in the Provincial capital, Kananga (about 300km South of Mushenge).
  - Logistically much easier.
  - Experiments are less likely to directly reflect the current institutional environment.
  - This helps isolated deeply-held values.

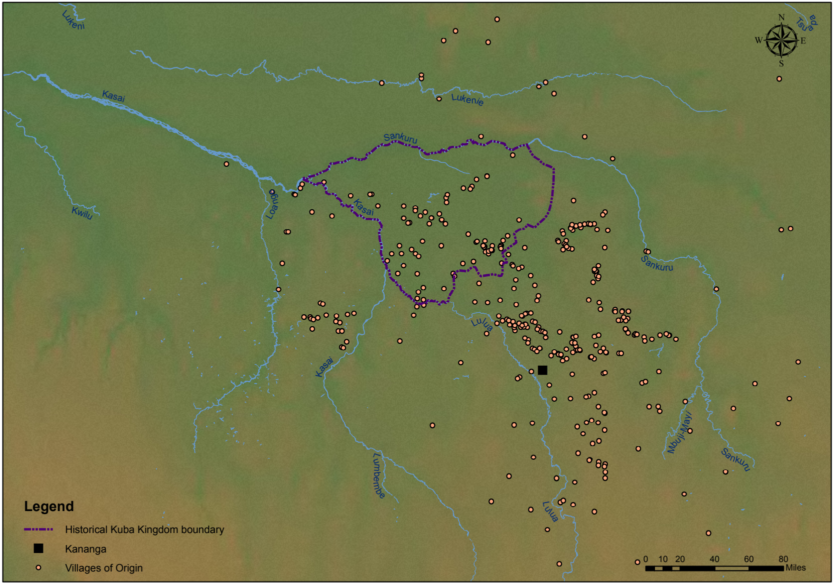
The sample

- Surveys and games were undertaken in June, July, & August of 2013 and 2014.
  - Visit 0: Screening survey
  - Visit 1: Full survey
  - Visit 2: DG/UG
  - Visit 3: RAG
- Sample includes individuals for which:
  - Their origin territory is Mweka or a contiguous territory.
  - Their self-reported ethnicity is one of the ethnicities found within Mweka territory (Kuba, Lele, Kete).
- The final (full) sample includes 499 individuals.

Sampling procedure

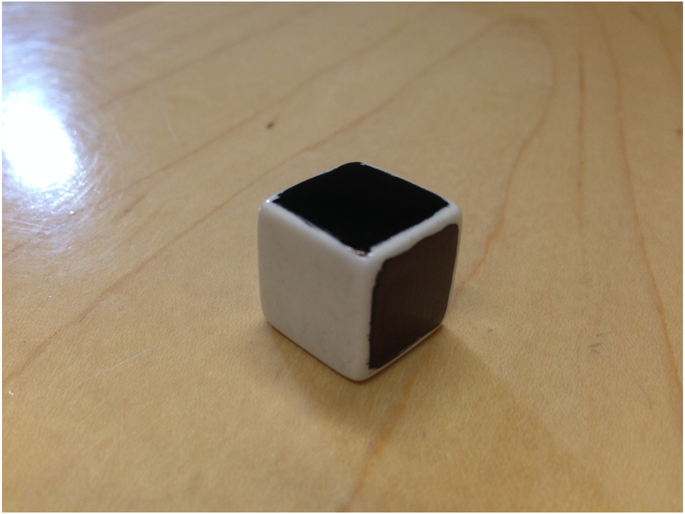
Ethnic groups in the sample

Reported Ethnicity	Number of Participations	Percentage of Participants
Luluwa	160	27.97
Kuba	80	13.99
Kete	63	11.01
Luntu	58	10.14
Lele	44	7.69
Bindi	40	6.99
Luba	22	3.85
Dekese	10	1.75
Songe	9	1.57
Tetela	7	1.22
Tshokwe	2	0.35
Others (1 of each)	4	0.70
Total	499	100


Lukeni
Kasai
Lukenie
Sankuru
Kwilu
Loange
Kasai
Sankuru
Lulua
Kasai
Lumbembe
Lulua
Mbuji-Mayi
Sankuru
N
W
E
S
Legend
Historical Kuba Kingdom boundary
Kananga
Villages of Origin
0 10 20 40 60 80
Miles

The experimental setting

First experiment: The resource allocation game (RAG)



Resource allocation game

- In each of four rounds, an individual has 3,000CF (30×100) to divide between themselves and another 'player'.
  - (Note: 3,000CF is twice the median daily income in our sample)
- The division rules are:
  1. In your mind, associate a color (black or white) with yourself and the other color with the other player.
  2. Roll the die (3 sides are black and 3 sides are white).
  3. If the color associated with yourself is rolled, put the money in the envelope marked for yourself.
  4. If the color associated with the other player is rolled, put the money in the envelope marked for them.
  5. Perform this division task 30 times.

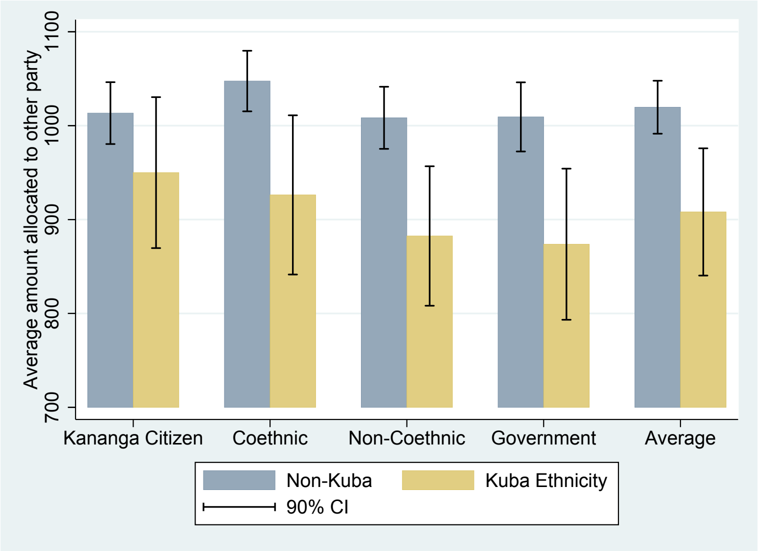
Resource allocation game

- During the RAG, the game was played in private (in the tent).
- After the division was made, envelopes were sealed and the envelop for the other player was placed in a bag outside of the tent door.
- At the end of experiment, the bag with the envelopes was taken by the enumerator and brought back to the main office.

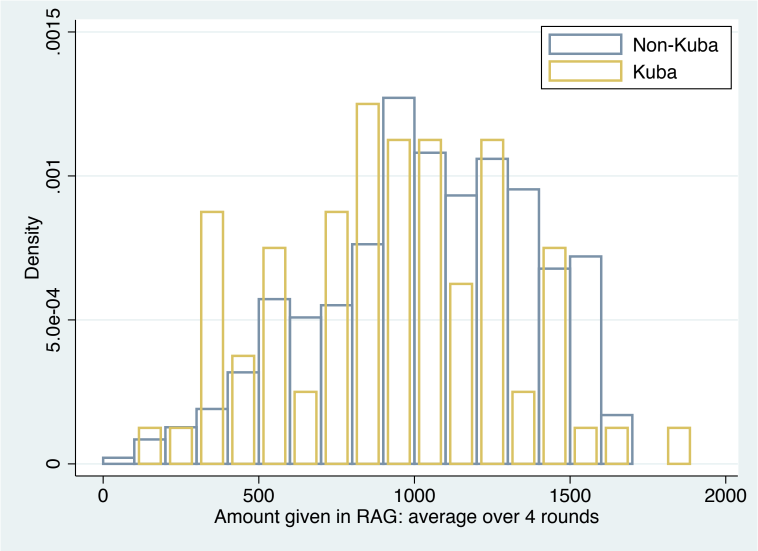
Resource allocation game

- Four variants:
  1. Division: oneself vs. citizen of Kananga.
  2. Division: oneself vs. coethnic.
  3. Division: oneself vs. non-coethnic.
  4. Division: oneself vs. provincial government.
- On average, 1,500 CF (of 3,000) should be allocated to the other party in each game.

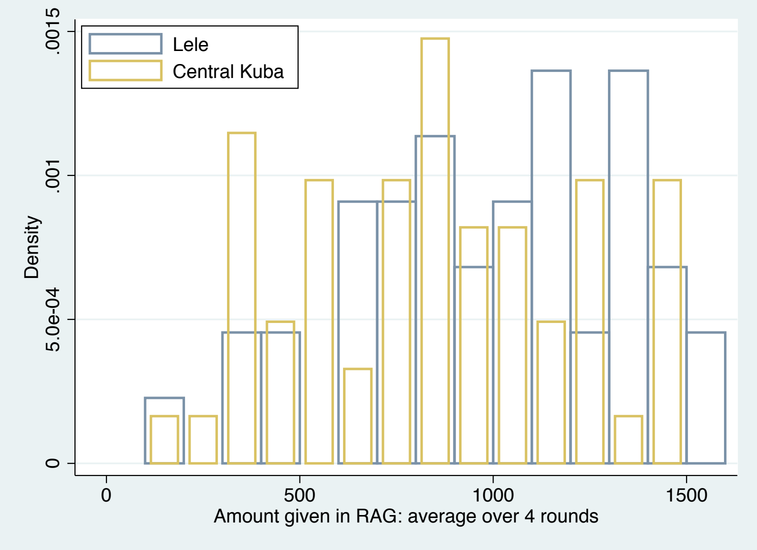
Kuba vs. non-Kuba: All rounds



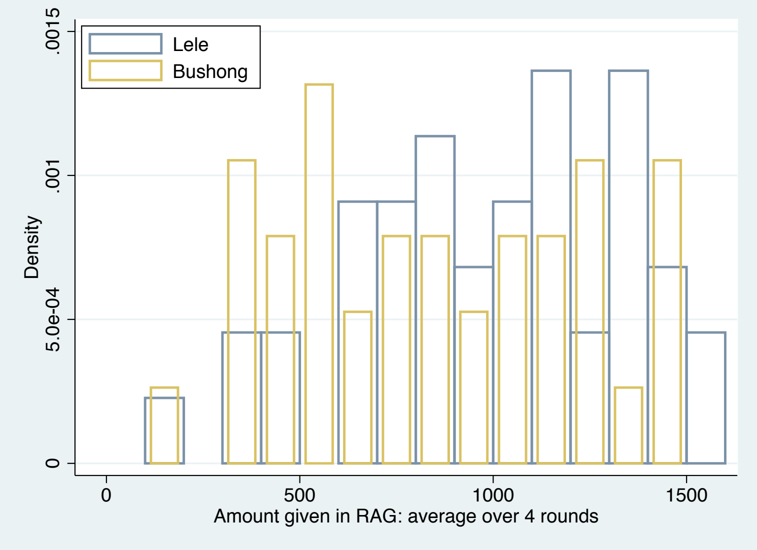
Distribution differences: Kuba vs. non-Kuba



Distribution differences: Central Kuba vs. Lele



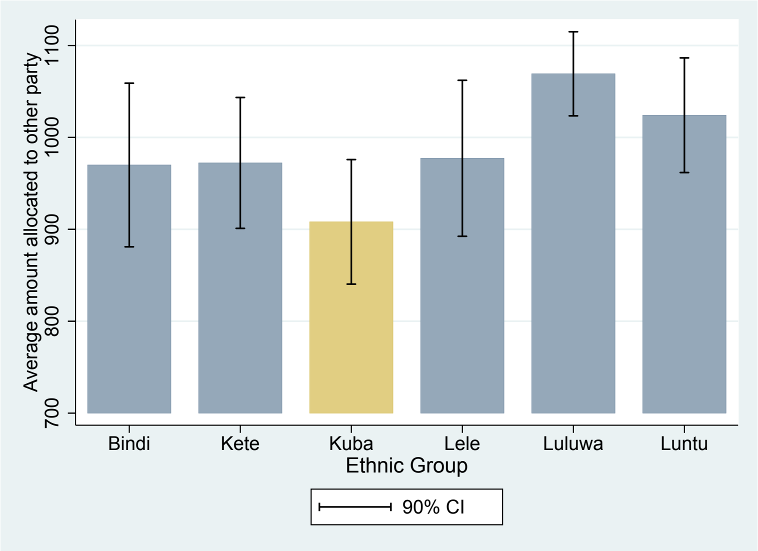
Distribution differences: Bushong vs. Lele



Kuba vs. others

Reported Ethnicity	Number of Participations	Percentage of Participants
Luluwa	**160**	**27.97**
Kuba	**80**	**13.99**
Kete	**63**	**11.01**
Luntu	**58**	**10.14**
Lele	**44**	**7.69**
Bindi	**40**	**6.99**
Luba	22	3.85
Dekese	10	1.75
Songe	9	1.57
Tetela	7	1.22
Tshokwe	2	0.35
Others (1 of each)	4	0.70
Total	499	100

RAG: Kuba vs. others



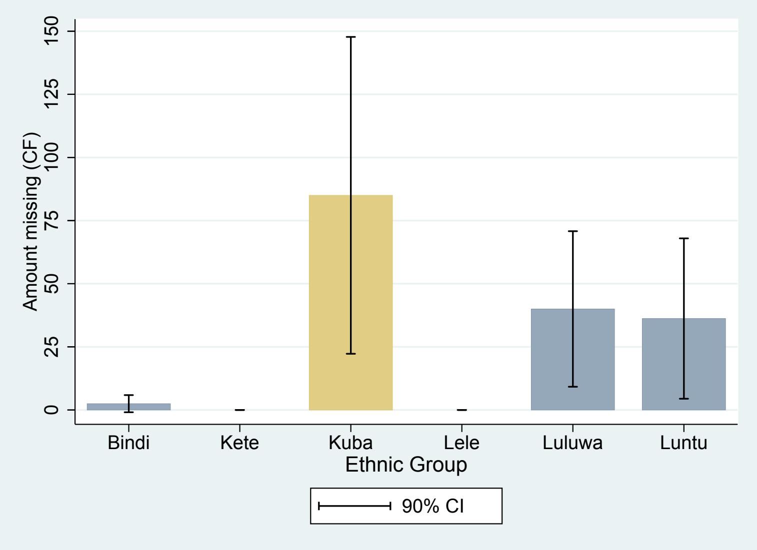
Second experiment: Ultimatum game with theft

- A second experiment provides an additional measure of an individual's proclivity to cheat vs. follow the rules.
- Had participants play a version of the standard ultimatum game (UG).
- Recall the sequence of play in the UG:
  1. Player 1 proposes a division between herself and player 2.
  2. Player 2 observes the division and chooses to either accept or reject the division.

Theft in the ultimatum game

- During the UG, proposals were made in private (in the tent).
- Player 1 proposed a division by dividing and placing ten 100CF-bills into two envelopes that were then sealed.
- Division was not observed by the enumerator and the sealed envelopes were brought back to office.
- Nothing prevented the participants from simply putting some of the money in their pockets instead of the envelopes.
  - 4.8% of all participants did this at least once.
    - **Kuba:** 10.0% stole.
    - **non-Kuba:** 3.8% stole.
  - The average amount stolen was 35 CF.
    - **Kuba:** 86 CF.
    - **non-Kuba:** 26 CF.

Are the Kuba exceptional?



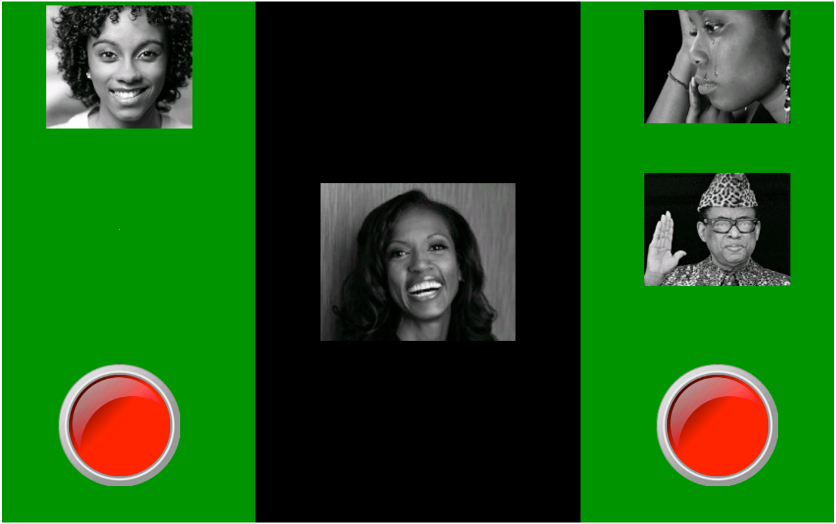
Regression estimates

	Average amount allocated to other party (of 3000 CF) in the RAG:			Amount of money missing in UG		
	Full sample	Central Kuba & Lele	Bushong & Lele	Full sample	Central Kuba & Lele	Bushong & Lele
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A. No covariates					
Kuba ethnicity indicator	-111.51***	-141.21**	-139.88*	59.46**	103.28*	121.05*
	(42.19)	(70.84)	-81.52	(25.09)	(57.22)	(65.99)
Observations	499	105	82	499	105	82
R-squared	0.01	0.04	0.04	0.01	0.03	0.04
	Panel B. With baseline covariates					
Kuba ethnicity indicator	-88.47**	-165.37**	-209.91**	58.23**	140.24**	150.70**
	(41.39)	(70.92)	(81.33)	(25.34)	(59.27)	(69.48)
Covariates:						
Age	1.72	-6.50	-17.50	6.53**	19.18*	16.91
	(5.18)	(13.47)	(17.08)	-3.17	(11.26)	(14.59)
Age squared	-0.008	0.071	0.237	-0.070**	-0.230*	-0.213
	(0.055)	(0.150)	(0.190)	(0.033)	(0.125)	(0.162)
Female	-2.99	-127.53*	-136.69	-2.32	-97.55	-86.58
	(30.41)	(73.70)	(89.56)	(18.62)	(61.59)	(76.52)
Survey year = 2014	182.00***	246.06***	259.30***	-16.84	-51.85	-39.62
	(31.03)	(72.58)	(83.12)	(19.00)	(60.66)	(71.01)
Mean of dep var	1,001.75	895.24	912.50	35.07	60.00	56.10
Observations	499	105	82	499	105	82
R-squared	0.08	0.16	0.17	0.02	0.09	0.08

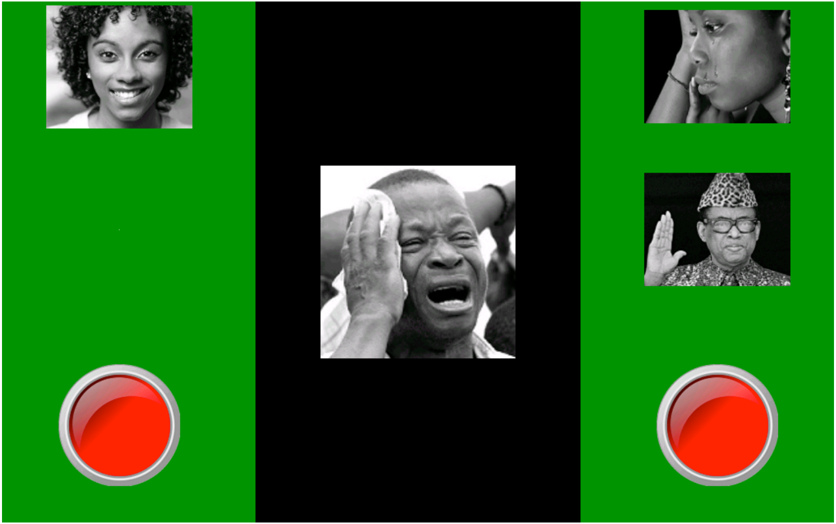
Measuring the post-colonial experience

- If the Kuba were treated differently by the Mobutu government, then today we may observe different attitudes towards the former President.
- We ask individuals their views about Mobutu (very negative, negative, neutral, positive, very positive).
  1. Their perception of Mobutu himself: 1–5 scale.
  2. Their view of the Mobutu's impact: 1–5 scale.
- However, respondents may not answer honestly and/or they may not be fully aware of their true attitudes.
- We also use an implicit association test (IAT) to measure these attitudes.
  - See Lowes, Nunn, Robinson, and Weigel (AERPP, 2015)

The single-target IAT



The single-target IAT



The single-target IAT

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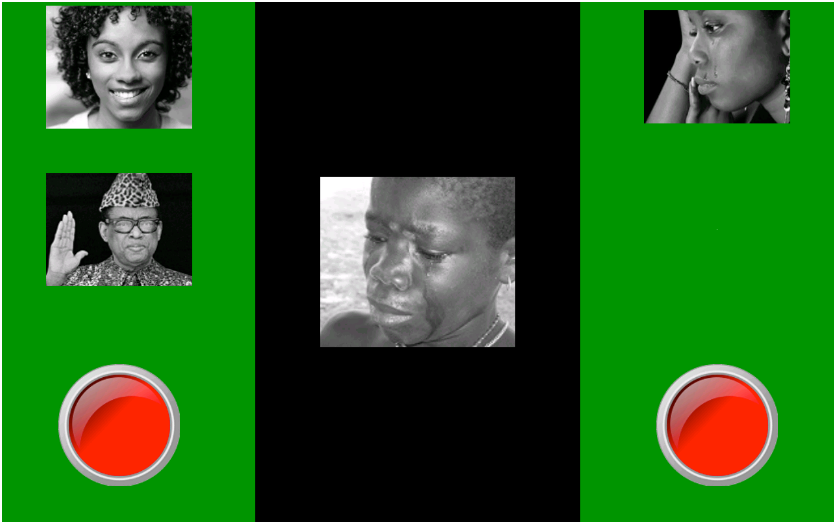
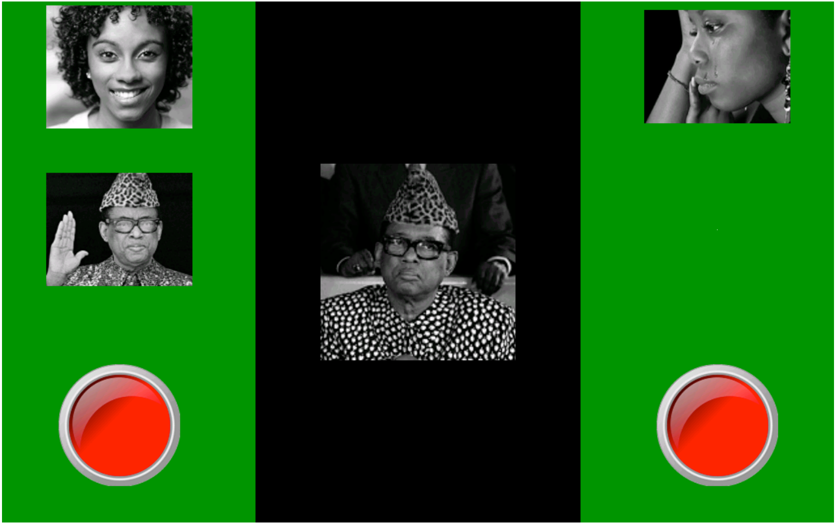
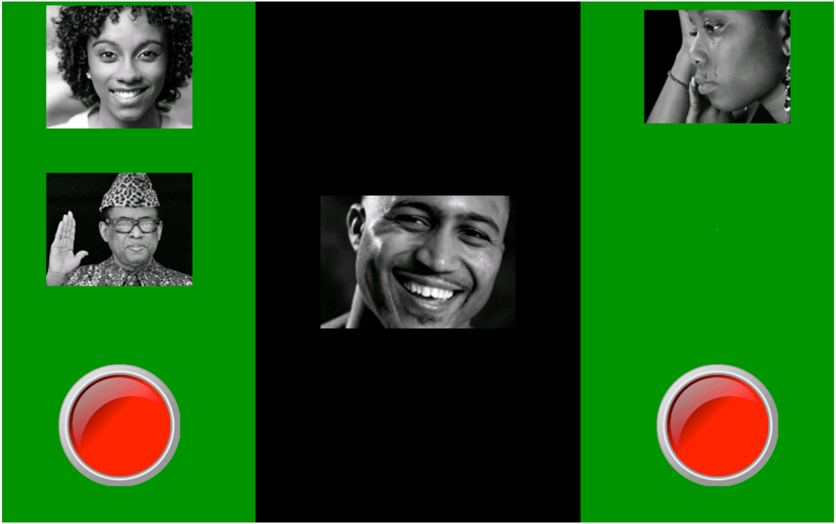


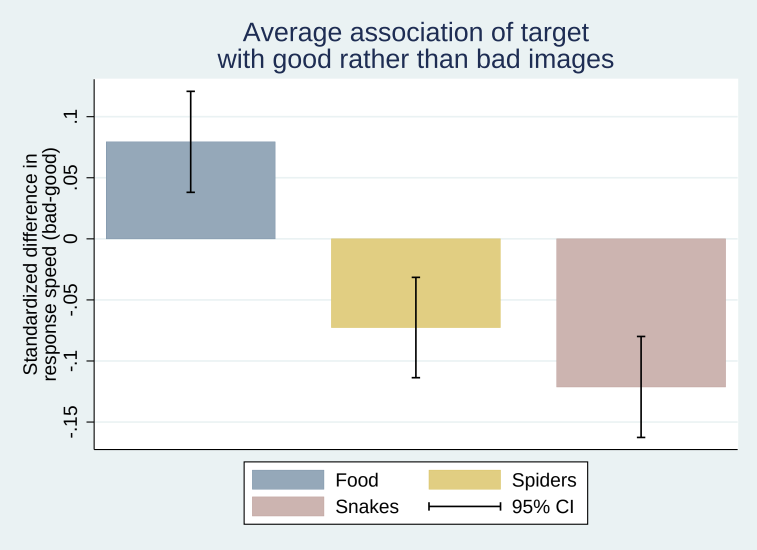
The single-target IAT



The single-target IAT



Validating the single-target IAT in Kananga (n=543)



Explicit and implicit views of Mobutu

	Impact of Mobutu, 1-5 scale	Perception of Mobutu, 1-5 scale	Mobutu ST-IAT D-Score
	(1)	(2)	(3)
		Panel A. Full sample	
Kuba ethnicity indicator	-0.043	0.026	-0.082
	(0.146)	(0.161)	(0.061)
Observations	465	464	465
Mean dep var	4.09	3.89	0.10
R squared	0.034	0.033	0.014
		Panel B. Central Kuba & Lele	
Kuba ethnicity indicator	-0.018	0.414	-0.056
	(0.272)	(0.305)	(0.097)
Observations	93	93	93
Mean dep var	3.86	3.57	0.16
R squared	0.039	0.060	0.092
		Panel C. Bushong & Lele	
Kuba ethnicity indicator	-0.032	0.562*	0.002
	(0.314)	(0.335)	(0.113)
Observations	71	71	71
Mean dep var	3.86	3.61	0.19
R-squared	0.084	0.138	0.135

Notes: The table reports OLS estimates of equation (1) with measures of the positivity of individuals' attitudes towards President Mobutu as the dependent variable. "Kuba ethnicity indicator" is a variable that equals one if the individual's self reported tribe is Kuba. *, **, and *** indicate significance at the 10, 5, and 1% levels.

Conclusions

- Descendants of those living within the Kuba Kingdom are measured to have less respect for authority and are more likely to cheat/steal.
- Consistent with formal state institutions having negative effects on intrinsic norms.