The Economics of State Capacity

Ely Lectures

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LSE

The Big Questions

- Economists who study public policy and markets begin by assuming that governments have the power to raise taxes and enforce contracts.

- But historians more often view the existence of states with such powers to be something that needs explanation.

- Moreover, anybody interested in comparative development would recognize that there are big differences in the ability of states to implement policy, raise taxes and to support markets.

- These lectures will discuss some thinking about these issues.

- The work is part of a large body of emerging literature that combines political economy, economic history and economics to look at growth and development issues.

  - one feature of the work is to see development shaped by slow moving and pesistent influences.

- I will (perhaps naturally) be biased towards some of my own work on these issues, especially recent work with Torsten Persson.

- At this point, this is more like a report on work in progress rather than providing anything very coherent or finished.

- I will range over some issues that economists have begun to think about only fairly recently:

  - the role of political as well as economic factors in shaping patterns of development.

  - the role of war (civil and external) in the development of the state.

The Idea of State Capacity

- The idea that the growth of state capacity is important is a long-standing theme in analyses of the state by historical sociologists such as Charles Tilly.

  - it has also figured (implicitly) in studies of many economic historians who have studied the evolution of fiscal systems.

- However, it has not figured in the political economy literature.

- Generally, speaking it is used to describe the power of the state collect tax revenues and is proxied by measures of size of government.

- We broaden this out to look both the state's capacity to tax, but also the power of the state in enforcing contracts.

Today's Lecture

- I will lay out a model that includes the notion of state capacity – decomposed into fiscal and legal capacity

- I will use this to think about what drives investments in state capacity.

- Let me begin with an empirical observation that over a wide range of countries, (financial) market development and state development (measured by tax take) are positively correlated.

Figure 1
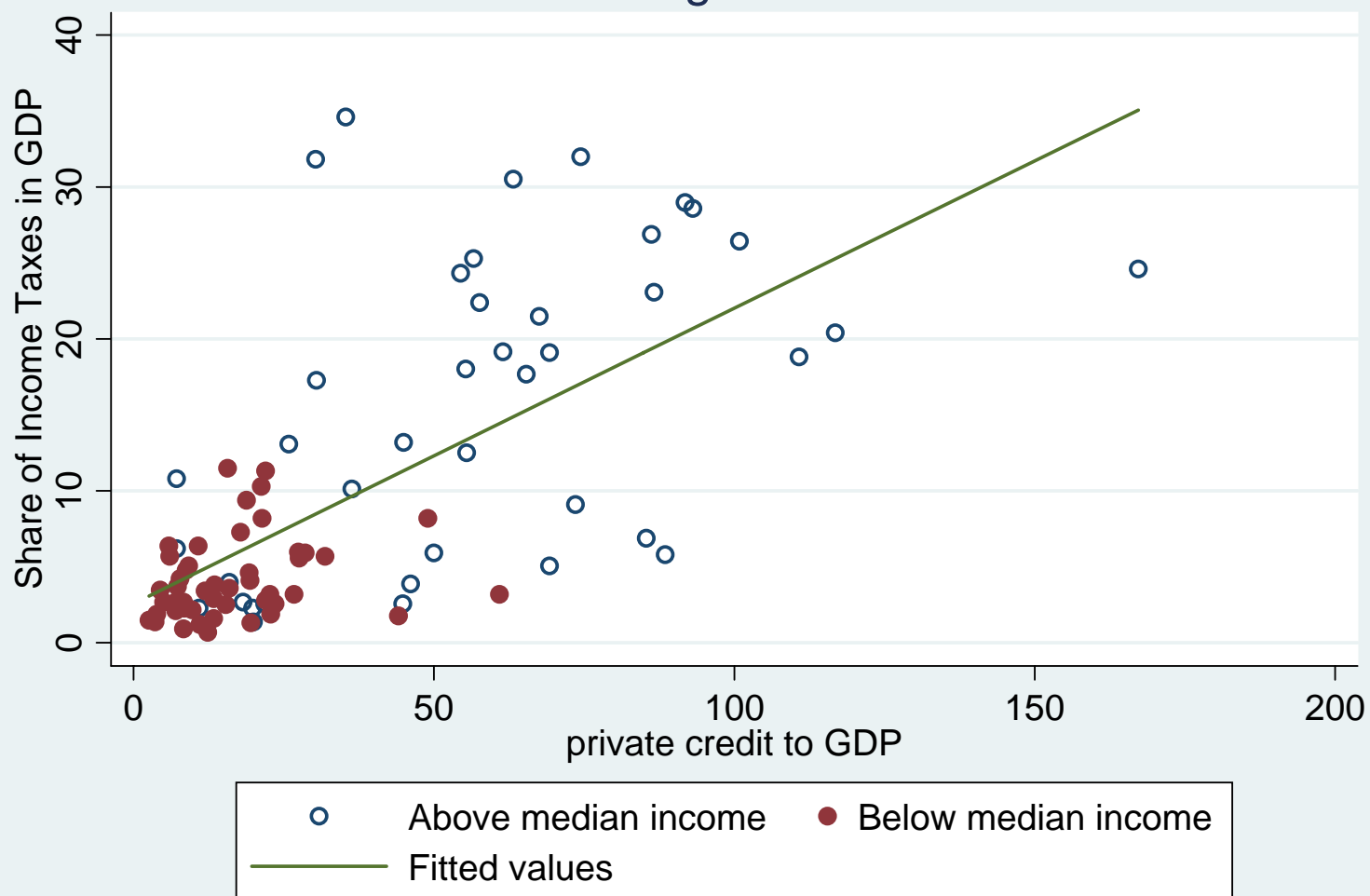
Overview of the Approach

- State capacity is a costly investment – requiring public resources

  - fiscal capacity $==$ creating monitoring and accounting systems.

  - legal capacity $==$ funding courts, training judges.

    * how far does state capacity depreciate?

- State capacity – increases ability to tax and enhances the extent of market trade.

  - expands set of feasible policies

- Government can spend tax revenues on transfers and/or general public goods.

- Groups may differ in their interests – due to economic differences (e.g. wealth).

- Political institutions shape how that these policy instruments will be used.

Overview of Some Results

- Investments in fiscal capacity and legal capacity (supporting markets) are complements if there are sufficient common interests.

- Why?

  - Diamond and Mirrlees effect – a better tax system encourages efficiency enhancing investments in markets

    * markets create wealth and taxes redistribute it.

  - Market development also encourages investing in a tax system

    * but this requires that there is sufficient common agreement over how the proceeds of tax revenue are to be used.

- The model creates a theory of endogenous growth based on institutional development

  - along the "growth" path, the state is getting larger, markets are getting more important in facilitating gains from trade and national income is rising.

- However, if we add capital accumulation, then in the "long-run" investment in fiscal capacity can exert the standard downward disincentive effect on accumulation.

- But the complementarity in the model undermines any simplistic view that sees state led and market lead development as alternatives.

The Model

- Model is very simple

- It has two main moving parts

  - private sector capital market which allocates capital to projects

  - government which taxes and spends

    * spending is either transfers or public goods

- Two groups $J \in \{A, B\}$ with fraction β^J of the population

- Two time periods $s \in \{1, 2\}$

- Each person can engage in projects, which come in two types with different (gross) returns, $r_{I,s} \in \{r_L, r_H\}$ and $r_H > r_L$.

  - The share of group J agents with high returns is σ^J (the same in each time period).

- Entrepreneurs can expand the size of projects by outside borrowing in a competitive capital market.

- Each member of group J has an initial wealth w^J

- Utility is linear in income.

- To prevent default, borrowing requires collateral.

  - Only a share $p_s^J \leq 1$ of collateral serves as effective collateral.

  - This depends on investments in legal capacity, π_s, i.e.: $p_s^J \in [0, \pi_s]$

  - The initial stock is π_1 and the investment in period 1 is thus given by $\pi_2 - \pi_1$.

  - The costs of such investments are given by $L(\pi_2 - \pi_1)$, an increasing convex function with $L(0) = L_\pi(0) = 0$.

- We assume that the maximum supply of lending exceeds the maximum demand for borrowing.

  – This will be the case if the number of high-return projects is relatively low.

  – In a competitive equilibrium, the interest rate will be r_L.

- Thus l_s solves:

$$(\sigma^A \beta^A p_s^A w^A + \sigma^B \beta^B p_s^B w^B) = l_s((1-\sigma^A)\beta^A w^A + (1-\sigma^B)\beta^B w^B) \, . \tag{1}$$

- Tax rates in period s can be made group specific, t_s^J, but not project specific.

- High taxation is constrained by the fact that an individual can earn a fraction $(1 - \tau_s)$ of her returns – either from projects or lending – in an informal sector where he/she avoids taxation.

- Tax rates in period s must satisfy $t_s^J \leq \tau_s$

- Let τ_1 be the initial (i.e., period 1) value of "fiscal capacity" (a higher τ raises the feasible tax rate).

- Fiscal capacity can be augmented by nonnegative investment in period 1, which costs $F(\tau_2 - \tau_1)$. We assume $F(0) = F_\tau(0) = 0$.

- There is public-goods (non-transfer) motive for raising taxes..

- This is represented by a linear payoff, $\alpha_s G_s$, common to all individuals.

  - α_s has a distribution H of possible realizations distributed on $[0, X]$ where $X > 1$.

  - The shock is assumed to be iid over time.

  - The realized value of α_s is known when taxes t_s^J are set.

Indirect Utility

- For the two investment types, $I = H, L$ in group J, indirect utility can be written:

$$v_{H,s}^J(t_s^J, p_s^J, G_s) = \alpha_s G_s + (1 - t_s^J)(r_H + p_s^J(r_H - r_L))w^J \qquad (2)$$

and

$$v_{L,s}^J(t_s^J, p_s^J, G_s) = \alpha_s G_s + (1 - t_s^J)r_L w^J \ . \qquad (3)$$

The Government Budget Constraint

- Let

$$Y(p_s^J, \sigma^J, w^J) = \{\sigma^J(1 + p_s^J)(r_H - r_L) + r_L\}w^J \ . \qquad (4)$$

- $Y_s = \beta^A Y(p_s^A, \sigma^A, w^A) + \beta^B Y(p_s^B, \sigma^B, w^B)$

- The government budget constraints are

$$\sum_J t_1^J \beta^J Y(p_1^J, \sigma^J, w^J) = G_1 + [L(\pi_2 - \pi_1) + F(\tau_2 - \tau_1)] \qquad (5)$$

in period 1, and

$$\sum_J t_2^J \beta^J Y(p_2^J, \sigma^J, w^J) = G_2 \qquad (6)$$

in period 2.

Government

- There is a government in power in each period, which (over)represents the interests either of group A or group B.

- Let $\phi_J^J \geq \beta^J$ denote the weight that group J gives to itself when holding political power, and $\phi_J^K \leq \beta^K$ the weight that group J gives to group $K \neq J$.

  - We normalize so that $\phi_J^J + \phi_J^K = 1$.

  - In this notation, $\phi_J^J = \beta^J$ represents the Utilitarian case.

- Let $\rho = \phi/\beta$ and consider a symmetric case where:

$$\overline{\rho} = \frac{\phi_A^A}{\beta^A} = \frac{\phi_B^B}{\beta^B} \geq \underline{\rho} = \frac{\phi_A^B}{\beta^B} = \frac{\phi_B^A}{\beta^A}.$$

- We use the binary indicator $\gamma_s \in \{A, B\}$ to denote the type of government in period s, and the parameter $\gamma^J \in [0, 1]$ to denote the (exogenously given) probability that the policy maker is of type J in each period.

- We shall interpret larger $(\overline{\rho} - \underline{\rho})$ as representing a more polarized society and γ^J as a measure of political stability.

Timing

- The economy starts out with an initial level of fiscal and legal capacity, given by history: $\{\pi_1, \tau_1\}$.

1. Nature determines which private agents have first-period investment opportunities, the first-period value of public goods (military threat), α_1 and first-period political control, γ_1.

2. The first-period policy maker picks a policy vector comprising taxes, property-rights protection levels, government spending and investments in state capacity (economic institutions): $\left\{ t_1^A, t_1^B, p_1^A, p_1^B, G_1, \pi_2 - \pi_1, \tau_2 - \tau_1 \right\}$ subject to the government budget constraint and anticipating equilibrium private sector responses.

3. Private agents pick their first-period projects, the capital market clears, and agents consume.

4. Nature determines which private agents have second-period investment opportunities, the second-period value of public goods, α_2 and second-period political control, γ_2.

5. The second-period policy maker picks a policy vector comprising taxes, property-rights protection levels, and government spending: $\left\{ t_2^A, t_2^B, p_2^A, p_2^B, G_2 \right\}$ subject to the government budget constraint and anticipating equilibrium private sector responses.

6. Private agents pick their second-period projects, the capital market clears, and agents consume.

Policy

Utilitarian Benchmark

Proposition 1 *In the utilitarian case* $(\overline{\rho} = \underline{\rho} = 1)$*, then policy is as follows:*
(a) For $s \in \{1, 2\}$ *and any* $\gamma_s \in \{A, B\}$*,* $\alpha_s \in [0, \overline{\alpha}]$*, equilibrium property rights always fully utilize all legal capacity*

$$p_s^J = p_s^K = \pi_s.$$

(b) If $\alpha_s \geq 1$*, then taxable capacity on both groups is fully utilized,*

$$t_s^J = t_s^K = \tau_s \ ,$$

and public goods are provided as

$$G_1 = \tau_1 Y_1 - L(\pi_2 - \pi_1) - F(\tau_2 - \tau_1) \ \text{ and } \ G_2 = \tau_2 Y_2.$$

(c) If $\alpha_s < 1$, for all $J, K \in \{A, B\}$, $G_s = 0$, for $s \in \{1, 2\}$ and $t_2^J = t_2^K = 0$ with $t_1^J = t_1^K = \hat{t}_1$ where:

$$\hat{t}_1 Y_1 = L(\pi_2 - \pi_1) + F(\tau_2 - \tau_1)$$

Proposition 2 *With political control $(\overline{\rho} > 1 > \underline{\rho})$, then policy is as follows:*
(a) For $s \in \{1, 2\}$ and any $\gamma_s \in \{A, B\}$, $\alpha_s \in [0, \overline{\alpha}]$, equilibrium property rights always fully utilize all legal capacity

$$p_s^J = p_s^K = \pi_s.$$

(b) If $\alpha_s \geq \overline{\rho}$, then taxable capacity on both groups is fully utilized,

$$t_s^J = t_s^K = \tau_s \, ,$$

and public goods are provided as

$$G_1 = \tau_1 Y_1 - L(\pi_2 - \pi_1) + F(\tau_2 - \tau_1) \ \text{ and } \ G_2 = \tau_2 Y_2 \, .$$

(c) If $\alpha_s < \bar{\rho}$, for all $J, K \in \{A, B\}$, public goods provision is set equal to zero, i.e., $G_s = 0$ for $s \in \{0, 1\}$, the first-period tax on the ruling group is

$$t_1^J = \frac{[L(\pi_2 - \pi_1) + F(\tau_2 - \tau_1)] - \tau_1 \beta^K Y(\pi_1, \sigma^K, w^K)}{\beta^J Y(\pi_1, \sigma^J, w^J)} ,$$

while the second-period tax on the ruling group is:

$$t_2^J = -\frac{\tau_2 \beta^K Y(\pi_2, \sigma^K, w^K)}{\beta^J Y(\pi_2, \sigma^J, w^J)} .$$

Investment in State Capacity

- Period two objective function from J's perspective:

$$
\begin{aligned}
W^J(\tau_2, \pi_2) \;=\; & (1 - \tau_2)[\overline{\rho}\beta^J Y(\pi_2, \sigma^J, w^J) + \underline{\rho}\beta^K Y(\pi_2, \sigma^K, w^K)] && (7) \\
& + \tau_2\{([1 - H(\overline{\rho})]\, E(\alpha_2|\alpha_2 \geq \overline{\rho}) \\
& + H(\overline{\rho})\,[\gamma^J \overline{\rho} + (1 - \gamma^J)\,\underline{\rho}]) \\
& \times [\beta^J Y(\pi_2, \sigma^J, w^J) + \beta^K Y(\pi_2, \sigma^K, w^K)]\} \,. && (8)
\end{aligned}
$$

- The optimal investment decision in state capacity maximizes:

$$W^J\left(\tau_2, \pi_2\right) - \lambda\left(\alpha_1\right)\left[L(\tau_2 - \tau_1) + F(\tau_2 - \tau_1)\right] ,$$

where $\lambda\left(\alpha_1\right) = \mathsf{max}\{\alpha_1, \bar{\rho}\}$ is the *realized* (marginal) cost of public funds in period 1.

- Define

$$\lambda_2^J = [1 - H(\overline{\rho})] E(\alpha_2 | \alpha_2 \geq \overline{\rho}) + H(\overline{\rho}) [(\gamma^J - \omega^J)(\overline{\rho} - \underline{\rho})] , \quad (9)$$

where $\omega^J = \frac{\sigma^J w^J \beta^J}{\Omega}, \omega^K = \frac{\sigma^K w^K \beta^K}{\Omega}$ and $\Omega = \left[\sigma^A w^A \beta^A + \sigma^B w^B \beta^B \right]$.

- Define:

$$\rho^J = \underline{\rho} + \omega^J(\overline{\rho} - \underline{\rho}) . \qquad (10)$$

First order conditions

$$\left(\rho^J + \tau_2 \lambda_2^J\right)\left(r_H - r_L\right)\Omega \;\leqslant\; \lambda\left(\alpha_1\right) L_\pi \left(\pi_2 - \pi_1\right) \tag{11}$$

$$\text{c.s. } \pi_2 - \pi_1 \;\geqslant\; 0$$

and

$$\lambda_2^J \left[\left(1 + \pi_2\right)\left(r_H - r_L\right)\Omega + r_L \left(\beta^J w^J + \beta^K w^K\right)\right] \;\leqslant\; \lambda\left(\alpha_1\right) F_\tau \left(\tau_2 - \tau_1\right) \tag{12}$$

$$\text{c.s. } \tau_2 - \tau_1 \;\geqslant\; 0 \,.$$

Basic Result

Proposition 3 (a) *In the utilitarian case* $(\bar{\rho} = \underline{\rho} = 1)$, *there is always invest-ment in both types of state capacity.*

(b) *With political control* $(\bar{\rho} > 1 > \underline{\rho})$, *a necessary and sufficient condition for both groups to invest in both types of state capacity is*

$$\lambda_2^J > 0, \quad \text{for} \;\; J = A, B.$$

If this condition does not hold, then at most one group invests in fiscal capacity.

- We focus on case where $\lambda_2^J > 0$ in which case state capacities are complements.

- This has economic content, generating a complementarity between state and market

- It also allows us to exploit the fact that the payoffs are supermodular in generating comparative statics results.

Proposition 4 *Countries with higher wealth, as measured by Ω, optimally choose larger state capacity of both kinds. Larger gains from trade in markets, as measured by higher σ^A, σ^B, or $(r_H - r_L)$, also raise investment in both fiscal and legal capacity.*

Proposition 5 *A higher expected demand for public goods, a first order stochastically dominating shift in α, raises λ_2^J and thereby investment in state capacity. Investments in fiscal and legal capacity are decreasing in $\lambda(\alpha_1)$.*

Proposition 6 *Greater political stability, represented by an increase in γ^J, increases λ_2^J and thereby investment in state capacity.*

- To see this, observe that

$$\frac{\partial \lambda_2^J}{\partial \gamma^J} = H\left(\overline{\rho}\right)\left(\overline{\rho} - \underline{\rho}\right) \geq 0 \quad ,$$

Proposition 7 *If $\beta^J \approx \omega^J \approx \gamma^J$, a more representative political system, in the sense of a lower $\overline{\rho} - \underline{\rho}$, raises investment in both fiscal and legal capacity.*

Proposition 8 *Under a regularity requiring that $L_{\pi\pi}/L_\pi$ and $F_{\tau\tau}/F_\tau$ are large enough, then greater economic power of the ruling group, i.e., a higher value of ω^J, increases investment in legal capacity and reduces investment in fiscal capacity.*

Growth

- Investments in state capacity generate "endogenous" growth:

$$\frac{Y_2 - Y_1}{Y_1} = \frac{(\pi_2 - \pi_1)(r_H - r_L)\Omega}{(1 + \pi_1)(r_H - r_L)\Omega + r_L \sum_J \beta^J w^J}.$$

- Government is growing in size too as is financial development.

- The growth is through greater gains from trade in more efficient capital markets.

A Look at The Data

- The approach described here emphasizes that determinants of investments in legal and fiscal capacity should be common.

- We expect an impact from things which represent common interest public goods (incidence of external wars)

- We would also expect Parliamentary democracy to be positively correlated with greater investment in state capacity

Legal Capacity

- Outcome measures

  - private credit to GDP

  - laws affecting private credit markets (Doing Business)

  - investor protection (Doing Business)

  - government anti-diversion policy (ICRG)

Table 1: Economic and Political Determinants of Legal Capacity

	(1) Private Credit to GDP	(2) Ease of Access to Credit (country rank)	(3) Investor Protection (country rank)	(4) Index of Government Anti-diversion Policies
Incidence of External Conflict up to 1975	0.573*** (0.138)	0.676*** (0.191)	0.436*** (0.147)	0.689*** (0.143)
Incidence of Democracy up to 1975	0.102 (0.079)	0.034 (0.130)	- 0.182 (0.121)	0.068 (0.060)
Incidence of Parliamentary Democracy up to 1975	– 0.037 (0.071)	0.219 (0.146)	0.396*** (0.126)	0.138** (0.067)
English Legal Origin	– 0.004 (0.038)	0.099 (0.073)	0.064 (0.070)	– 0.003 (0.051)
Socialist Legal Origin	0.000 (0.000)	– 0.180 (0.153)	– 0.117 (0.154)	0.008 (0.066)
German Legal Origin	0.396*** (0.094)	0.401*** (0.068)	– 0.011 (0.109)	0.290*** (0.055)
Scandinavian Legal Origin	0.164*** (0.033)	0.405*** (0.061)	0.221** (0.097)	0.362*** (0.057)
Observations	94	127	125	117
R-squared	0.601	0.480	0.314	0.603

Robust standard errors in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%.
All specifications include regional fixed effects (for eight regions).

Fiscal Capacity

- Outcome measures

  - trade/indirect taxes as share of tax revenue

  - income taxes as a share of GDP

  - total taxes as a share of GDP

Table 2: Economic and Political Determinants of Fiscal Capacity

	(1) One Minus Share of Trade Taxes in Total Taxes	(2) One Minus Share of Trade and Indirect Taxes in Total Taxes	(3) Share of Income Taxes in GDP	(4) Share of Taxes in GDP
Incidence of External Conflict up to 1975	0.921*** (0.229)	0.683*** (0.201)	0.747*** (0.246)	0.678*** (0.211)
Incidence of Democracy up to 1975	0.005 (0.085)	– 0.037 (0.096)	0.057 (0.062)	0.097 (0.064)
Incidence of Parliamentary Democracy up to 1975	0.123 (0.086)	0.208** (0.094)	0.231*** (0.074)	0.166** (0.069)
English Legal Origin	– 0.013 (0.069)	- 0.012 (0.061)	– 0.015 (0.056)	0.013 (0.051)
Socialist Legal Origin	0.051 (0.095)	– 0.332*** (0.084)	– 0.155** (0.065)	– 0.110 (0.082)
German Legal Origin	0.283*** (0.064)	0.290*** (0.093)	0.295*** (0.084)	0.206*** (0.065)
Scandinavian Legal Origin	0.333*** (0.068)	0.195** (0.078)	0.364** (0.141)	0.363*** (0.092)
Observations	104	104	104	104
R-squared	0.412	0.435	0.628	0.639

Robust standard errors in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%
All specifications include regional fixed effects (for eight regions).

Where next?

- The state capacity framework will is useful for looking a number of issues

  – strong states and weak states – why is it optimal to keep some states weak?

  – the role of history and institutions in affecting growth with private accumulation.

  – conflict and development