Fundamental Theory of Institutions
a lecture in honor of Leo Hurwicz (1917-2008)

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New Economic School 20th Anniversary, Dec 2012

"Fundamental theory of institutions: a lecture in honor of Leo Hurwicz,"
Review of Economic Design 13:59-75 (2009).
http://home.uchicago.edu/~rmyerson/research/hurwicz.pdf

"Perspectives on mechanism design in economic theory," in American
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Overview

- Hurwicz's idea of incentive compatibility has extended the framework of economic analysis to allow comparison of different economic systems.

- The advantages/disadvantages of private property or collectivization can be analyzed by models of *moral hazard* and *adverse selection*.

- Analyzing moral hazard problems in the state itself can help us to understand the foundations of the state and its constitutional limits.

Hayek: institutions as mechanisms for coordination

"The economic problem of society is not merely a problem of how to allocate 'given' resources. It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know. It is a problem of the utilization of knowledge not given to anyone in its totality."

"This character of the fundamental problem has, I am afraid, been rather obscured than illuminated by many of the recent refinements of economic theory, particularly by many of the uses made of mathematics."

F. A. Hayek, "The use of knowledge in society," Amer. Econ. Review (1945).

Inconclusiveness of old **debates about socialism vs. capitalism** (Barone, Lange; Mises, Hayek) showed limits of price theory for evaluating other institutions. (1-sided theorems, unconvincing complexity arguments)

Hayek (1945): To answer such questions about fundamental institutions, we must recognize that markets are mechanisms for communication.

Hurwicz introduced incentive compatibility

Hurwicz accepted this challenge, to show how mathematical models can provide a general framework for analyzing different institutions.

Hurwicz (1972) extended Samuelson's (1954) remark on misrepresentation of public-good benefits, and found incentives to misrepresent values in private-good markets too.
Then he introduced the general concept of **incentive compatibility**.

When Hurwicz defined incentive compatibility, "the issue of incentives surfaced forcefully, as if a pair of blinders had been removed" (Makowski-Ostroy, 1993).

The old debates did not consider incentive constraints

Before 1972, economists could model resource constraints, but not incentive constraints.

Hayek's arguments showed an awareness of incentive problems

But with no formal analytical models of incentives, his arguments were rhetoric without tight logical support.

Now economists have general tools for analyzing incentive problems in any economic system.

How can we formulate Mises and Hayek's arguments against socialism in the modern incentivist framework?

Mises saw the key problem arising in socialist allocation of capital, because state ownership of means of production implies lack of a capital market.

Corporate finance and allocation of capital

Questions about incentive mechanisms for allocating capital are a topic of corporate finance.

Jean Tirole's *Theory of Corporate Finance* (2006) has many models analyzing incentives in corporate finance, but these are based on two
- a basic model of **moral hazard** in capital allocation   ,
- a basic model of **adverse selection** in capital allocation

Each model describes a simple world which we can transform by socialist reforms and then see how the efficiency of capital allocation is affected. The result may show something about what is fundamental in this debate.

A basic adverse-selection model

A project's probability of success depends on the manager's hidden type, good or bad. The manager can misrepresent his type.

Socialist monopoly of capital can facilitate honest communication, as bad agents cannot gain from imitating good if nobody gets profits.

Given $p_G R > C > p_B R$ [*E(Return| GoodType)>Cost>E(Return| Bad)*], π=Pr(G) and A = (value of the agent's collateral assets) is small.

Choose (q_G, q_B, w_G, w_B) to maximize expected social profit:
$$V = \pi \, q_G[p_G(R - w_G) + (1 - p_G)A - C] + (1 - \pi)q_B[p_B(R - w_B) + (1 - p_B)A - C]$$
subject to: $w_G \geq -A$, $w_B \geq -A$, $0 \leq q_G \leq 1$, $0 \leq q_B \leq 1$,   [*resources*]
$\quad q_G[p_G w_G - (1 - p_G)A] \geq 0$, $\quad q_B[p_B w_B - (1 - p_B)A] \geq 0$,   [*participation*]
$\quad q_G[p_G w_G - (1 - p_G)A] \geq q_B[p_G w_B - (1 - p_G)A]$,   [*honesty-G*]
$\quad q_B[p_B w_B - (1 - p_B)A] \geq q_G[p_B w_G - (1 - p_B)A]$.   [*honesty-B*]

In socialism, the ideal $(q_G=1, q_B=0)$ is feasible even if A=0, with $w_G=0=w_B$.

In capitalism, competitive lending implies V=0 in equilibrium, but then the ideal $(q_G=1, q_B=0)$ is not feasible if agent's collateral A is small.

Socialism looks good in the adverse-selection model

Under socialism, there is no problem getting the manager to reveal type honestly: just pay him 0 (above standard wage) no matter what he says.

This example was interesting for Tirole (2006) because he assumed that perfect competition among investors would give them $E(Profit) = 0$ given their beliefs about the manager.
So bad-type managers who imitate good types would get favorable terms of credit.

Under socialism, the monopolistic state lender can fully exploit good types.

A basic moral-hazard model

A project's probability of success depends on manager's hidden effort.

To deter abuse of power, **manager must have stakes** to lose in failure.

Under socialist egalitarianism, who has stakes commensurate with the temptations in managing industrial concentrations of capital?

p_G = P(success if act good) = 1/2, p_B = P(success if act bad) = 1/4,
C = (capital input) = 100, R = (returns if success) = 240,
B = (agent's private benefit of bad action) = 30. *So $p_G R > C > p_B R + B$.*

Given agent's collateral A < 60, choose w = (wage if success) $\geq$ -A
to maximize expected social profit $V = p_G(R - w) + (1 - p_G)A - C$
subject to: $p_G w - (1 - p_G)A \geq 0$,   [*participation*]
$p_G w - (1 - p_G)A \geq B + p_B w - (1 - p_B)A$.   [*G-obedience*]

Solution: w = 120 - A, and so V = A - 40.
V $\geq$ 0 is not feasible unless the agent has collateral A $\geq$ 40.
The agent gets ***moral-hazard rents*** worth $p_G w - (1 - p_G)A = 60 - A$.

For egalitarianism, punish managers who fail?

In this example, even if we allow punishment of managers who fail, the investing society cannot expect to profit from the investment unless the manager has substantial assets to lose (A>20).

But the state could profitably motivate managers who have no assets by punishing failure if there were no participation constraint (coercive recruitment of managers).

$p_G = 1/2$, $p_B = 1/4$, $C = 100$, $R = 240$, $B = 30$, $A < 60$.

Choose w = (wage if success) $\geq -A$ and z = (punishment if fail) ≥ 0 to maximize expected social profit $V = p_G(R - w) + (1-p_G)A - C$ subject to: $p_G w - (1-p_G)(A+z) \geq 0$,   *[participation]*
$p_G w - (1-p_G)(A+z) \geq B + p_B w - (1-p_B)(A+z)$.   *[G-obedience]*

Solution: $z = 60-A$, $w = 60$, and so $V = 0.5A-10$.
$V \geq 0$ is not feasible unless the agent has collateral $A \geq 20$.

Without participation constraint: w=0, z $\geq$ 120 motivates G, yields V=20.

Lessons about achieving full efficiency

There are two **ways to achieve full efficiency** with such moral hazard:

(1) allow some individuals to hold more wealth, (perhaps favoring heroes of the Socialist Revolution, or of the Norman Conquest);

(2) drop the participation constraint, force people to become managers without compensation for punishment risks (perhaps prisoners or enemies of the state).

Either way, **socialism looks rather less appealing** from the perspective of this moral-hazard model.

This model is simple, but it may offer insights into problems of communism, capturing the implicit logic in some of Hayek's intuitive arguments:

> *"To assume that it is possible to create conditions of full competition without making those who are responsible for the decisions pay for their mistakes seems to be pure illusion."* (Hayek,1935)

Moral hazard, adverse selection, and property rights

Socialism differs from capitalism in allowing less property rights.
Moral hazard can explain why efficient institutions give individuals property rights.

Our first model suggests that adverse selection might be less problematic under an ideal form of socialism if there were no moral hazard.
Property rights give people different vested interests, which can make it more difficult to motivate them to share their private information.
Collectivizing property can ameliorate adverse-selection problems, but it can exacerbate moral-hazard problems.

But moral hazard provides a fundamental economic rationale for some property rights that must apply even under socialism.
So adverse-selection problems can also be important under socialism.

In the basic moral-hazard model without punishment (z=0), add a small probability of the manager being a bad type who only has the p_B probability of success.
With small A, such bad types would imitate good types to get moral-hazard rents.

Bankers' capital in a well-regulated financial system

Banks and other financial intermediaries have better information about
potential investments than their depositors.

So adverse-selection problems cause banks to raise funds largely by issuing
debt to less-informed outsiders (Myers Majluf, 1984).

But the capital that belongs to owners who control the bank provides their
primary incentive to avoid irresponsible risks in investing others' funds.

So in a well-regulated financial system, some fraction of invested funds must
be capital belonging to the bankers, to limit moral hazard in investment.

*Modern economic investments need rich bankers or the equivalent
(privileged nomenklatura).*

Moral hazard at the foundations of the state

Leo Hurwicz's last papers focused on questions of how the rules of basic social institutions, like a nation's political constitution, are enforced.
Who guards the guardians? Who enforces the law on the law enforcers?

Institutional rules are enforced by officials, who prosecute others' violations.
Motivating officials to enforce institutional rules is a moral-hazard problem.

Alchian-Demsetz (1972): Agents' incentives in an organization depend on supervisors reliably judging and rewarding performance;
top supervisor's incentive to do so depends on ownership of profits.

Agents in a firm might look to state courts for contract enforcement,
but not in a political faction that acts to take state power itself.
Political leaders are highest guarantors of social incentive systems.

Distribution of moral-hazard rents in high office

Powerful government agents could profit from abusing power, and so they must expect greater long-run rewards from good service. (*back-loaded moral-hazard rents*, Becker-Stigler 1974).
Candidates would be willing to pay for such highly rewarded offices.

Agents' rewards must depend on judgments of their superiors in the network, and so incentives ultimately depend on top leaders.
Promises of back-loaded rewards become a debt owed by the state, which leaders could be tempted to repudiate (by false accusations).

To build a state, a leader must solve this central moral hazard problem of binding himself credibly to reward past service.
Solution: organize top supporters in a court or council where they monitor his distribution of rewards and offices, as they serve him. [My *APSR* '08]
The leader's personal constitution: keep the courtiers' collective trust.

Political institutions are established by leaders with reputations for reliably rewarding good service by supporters in a network of patronage.

To build democracy, democratic leaders are needed

We see leaders' political reputations as social capital of state-building.
Democracy needs many candidates with reputations for using public funds responsibly on public services, not merely to reward loyal supporters.
Voters would not reject a corrupt incumbent unless they could expect better from another candidate.

Federal decentralization creates more opportunities for politicians to begin developing good democratic reputations (lower barriers to entry).
[My *QJPS* '06: small transition costs, uncertain virtue; frustration of democracy is equilibrium in a unitary state but not a federal state.]

Strong foundations for democracy should be both national and local:
Local democracy strengthens national democratic competition:
    Successful local leaders can become candidates for higher offices.
National democracy strengthens local democratic competition:
    National parties can support alternatives to established local bosses.
Twin pillars of democratic state-building: ***multi-party national assembly, autonomously elected local governments.***

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Conclusions

Since Hurwicz 1972, economists have added incentive constraints to
   resource constraints in our definition of the economic problem.
This advance has given us tools for analyzing different economic systems,
   which early-20th-century economists lacked.
The cases for private ownership or collectivism may depend on trade-offs
   between moral-hazard and adverse-selection incentive problems.

The foundations of the state depend on political leaders solving moral hazard
   problems and committing themselves to reliably reward good service.
Institutional rules are enforced by actions of leaders and officials
   who must be motivated by an expectation of rewards and privileges
   as long as they fulfill their institutional responsibilities.

Like the 19th-century socialists, we may dream of great social reforms.
But we should understand that the institutions of any such brave new world
   would be built on narrower factional foundations, organized by political
   leaders whose first imperative is to maintain their reputation for
   rewarding loyal supporters.

References:

"Fundamental theory of institutions: a lecture in honor of Leo Hurwicz," Review of Economic Design 13:59-75 (2009).

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These notes:
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