

THE SOCIALIST ECONOMIC SYSTEM

OBJECTIVES AND INSTRUMENTS OF CENTRAL PLANNING

- Today, centrally planned economy perceived as old history, something like the “Zeppelin” of economics.

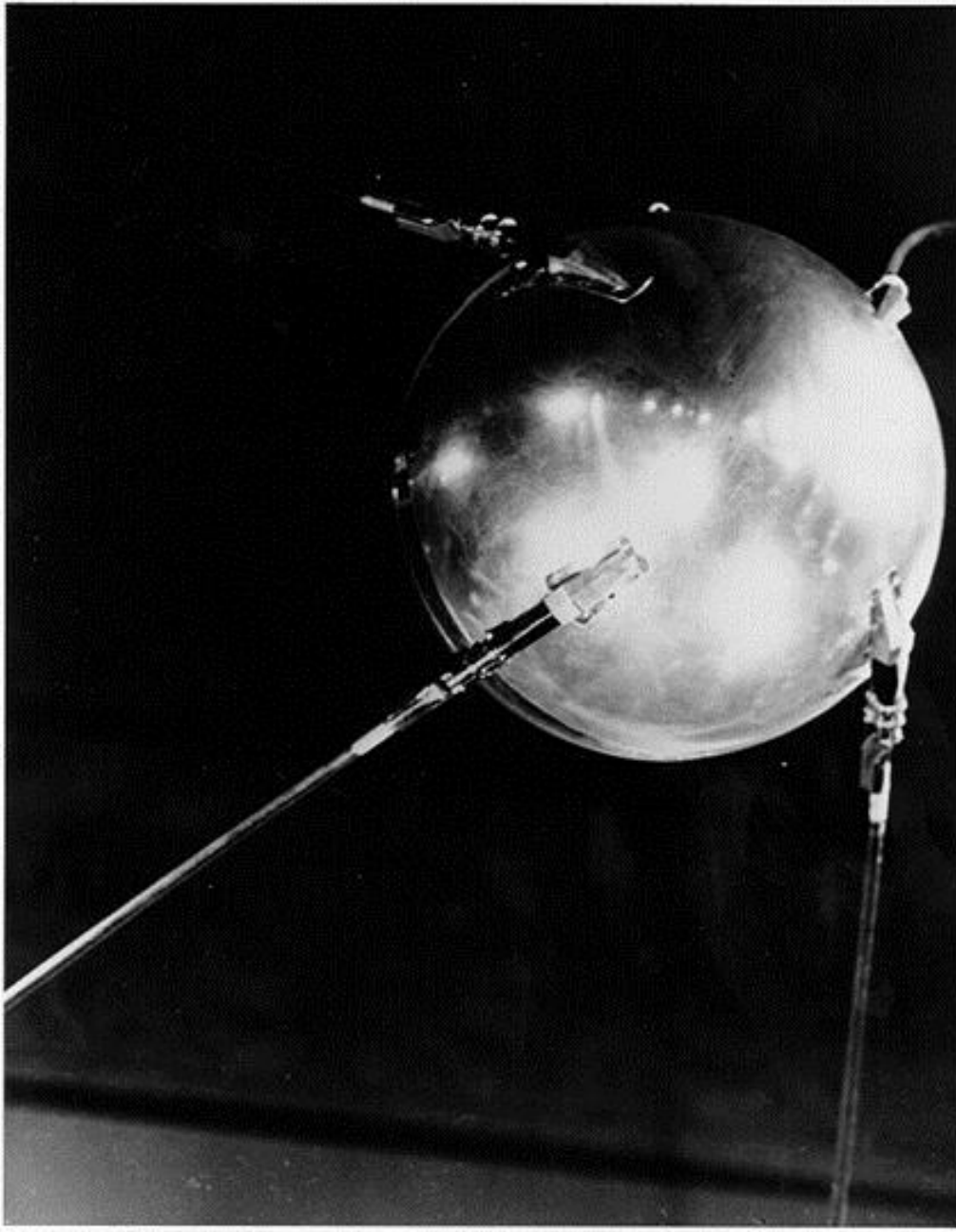


Das neue deutsche Zeppelin-Luftschiff L. Z. 129
Das größte Luftschiff der Welt.
Länge 248 m., Höhe 46,7 m., größter Durchmesser 41,2 m.
Vertriebsmaschinen: 4 Mercedes-Benz Dieselmotore von je 1900 PS, Geschwindigkeit von etwa 130 Meilen.

The Zeppelin was seen as a competitor to airplanes until the crash of the Hindenburg and other accidents.

- Thirty years ago, the Soviet economic system did not appear threatening because of its many inefficiencies but its capacity of military buildup was perceived as strong.
- Fifty years ago, the Soviet economic system appeared as a real threat to capitalism.

The sputnik shock.



- The challenge of the socialist system to “overtake” capitalism was perceived very seriously in the fifties.

Growth versus choice

- In the forties, central planning and public ownership seemed the future of the world, even to intellectuals who were hostile.
 - Example: Joseph Schumpeter, *Capitalism, Socialism and Democracy*.
 - Planning offices set up nearly everywhere in the world.
 - Large programs of nationalization in UK, France, Germany, all over Europe.

Economic growth (average annual rate in %)

	USA		USSR
1879-1908	3.7	1885-1913	3.3
1929-50	2.5	1928-40	5.4
1950-60	3.3	1950-60	6.0
1970-84	3.0	1970-80	3.7
		1980-84	2.0

Gregory and Stuart (2001)

Backgrounds of central planning:

Intellectually, Marxist economics.

- Market coordination is anarchic.
- Improve market by planning as in large enterprises but at the level of the economy. (Lenin: manage economy like one huge post office)



Reality:

- Great depression in contrast to Soviet industrialization.
- Emergence of large corporations seen as major dynamic factor in the economy. (Chandler, 1962).
- WWII. Success of military planning.

- Development of theory of mathematical planning (Kantorovich, Nobel prize 1975 , Danzig and Wolfe, ...)
- Economics of planning attracted major economists until the late sixties (Arrow, Hurwicz, Malinvaud, Kornai, Weitzman, Koopmans, ...).
- Two major theorems of welfare economics (1) general equilibrium is Pareto optimal, 2) a Pareto optimum can be decentralized by the price system) were interpreted as “equivalence” between market and plan.

The idea of central planning was to replace the “tâtonnement” of the market by planned coordination of supplies and demands at the level of the economy, to “maximize the fulfillment of needs of population” and to grow until abundance is reached.

These ideas had popular appeal until the 1970s at least (renewed appeal with anti-globalization movement?)

Hayek (Nobel prize 1974) saw very early on that information
Was Achilles' heel of central planning
(*"The Use of Knowledge in Society"* (1945)).

Central Planning debate in twentieth century:

- Central planning challenged to be inefficient by Barone (1908) and von Mises (1920) because of absence of price system to evaluate scarcity of goods and capital.
- Rebuttal by Lange (1938): shadow prices can be imputed in absence of market.

Hayek disputed practical (not theoretical) feasibility of central planning. In market economy, huge knowledge on economy is decentralized via the price system (Adam Smith's butcher) but it is too difficult to centralize all the knowledge in the economy via a planning system.

At the time of the collapse of the Soviet system, the computation of an annual plan with 12 million different goods would have taken (with the best then available computers)...

... over 300 billion years.

This leads to a puzzle: how come the Soviet economy was not totally chaotic given the infeasibility of detailed central planning and the absence of markets (except very marginally in the shadow economy)?

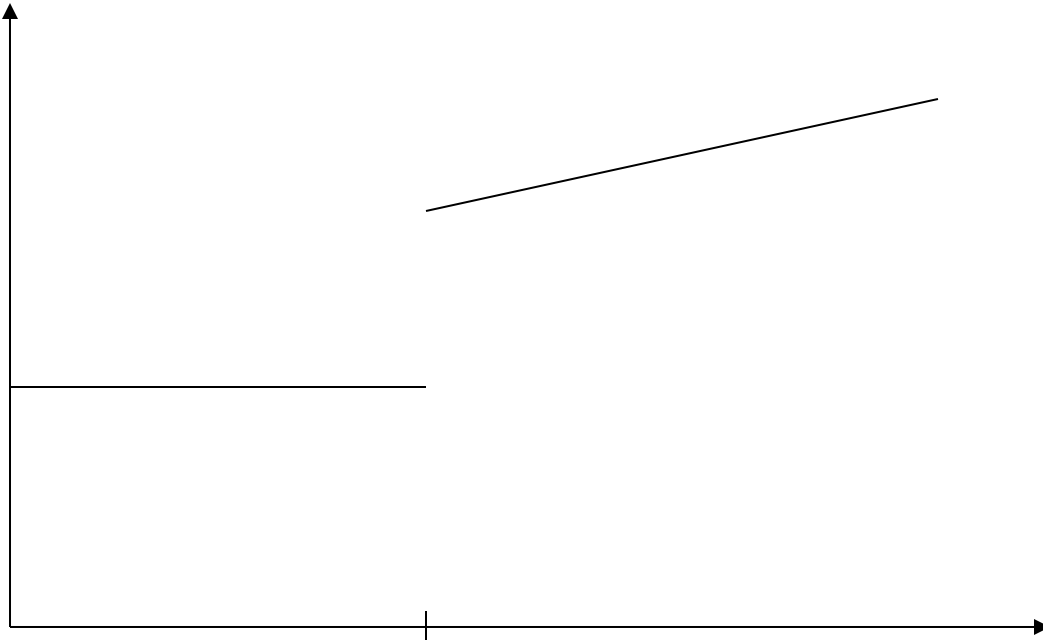
2. MANAGERIAL INCENTIVES

Sometimes, it is thought that inefficiencies of central planning are related to absence of incentives like in many government bureaucracies.

Wrong! There were incentives but they worked often in the wrong direction and were the source of many of the observed inefficiencies.

The basic plan fulfillment bonus.

bonus



100%

Plan fulfilment

1) “Micawber” effect.

Underfulfillment is negative, that a high premium is placed to discourage managers from underperforming
In case of underfulfillment no bonus is granted.
Capacity concealment by managers is further encouraged.
Crude growth maximization approach.
Complementary to the Ratchet principle.

2) Mild increase for overfulfilment.

The ratchet effect.

Berliner (1952)

Imperfect information on output potential; managers are aware that any information they reveal about their production potential will have an impact on future target plans.

Bargaining between planners and managers on supply needs and output potential.

An output target is calculated on the basis of the achieved output level in the previous time period.

Planning occurs by sector or product.

Always up, never down.

Managers are incentivized to modest levels of plan fulfillment.

Supply uncertainty

Puzzle: despite unbalanced plans, only mild overfulfillment observed. Why not higher over-fulfillment ratio's given unbalanced plans?

Ratchet effect related to:

- asymmetric information (planner does not know real capacities)
- lack of commitment to given incentive schemes.

Planners tried to get managers to reveal capacity to overcome asymmetric information.

Managers had no incentive to reveal information about their real capacities.

Counter-planning (*vstrechnye plany*).

“The New Soviet Incentive Scheme”

Copied on incentive schemes within IBM

Static problem: the manager wants to convince his superiors that y is likely to be small \Rightarrow lower target and an attainable bonus.

Dynamic problem: current output as a basis for future output.
Managers will not overfulfill now, because then the next period target will have to be higher (Ratchet effect)

3 stages of planning:

1. Preliminary (planner)

\bar{y} : tentative target

\bar{B} : tentative bonus

2. Planning (manager)

y' : planned target

B' : planned bonus

$$\Rightarrow B' = \bar{B} + \beta(y' - \bar{y})$$

3. Implementation (manager)

$$B = \begin{cases} B' + \alpha(y - y') & \text{if } y \geq y' \\ B' - \gamma(y' - y) & \text{if } y < y' \end{cases}$$

B' , y' : selected by the manager, not by the planner

Condition of parameters: $0 < \alpha < \beta < \gamma$

What is the optimal self-selected target y' ?

$$E[y'] = \int_{-\infty}^{y'} \bar{B} + \beta(y' - \bar{y}) - \gamma(y' - y) f(y) dy +$$

$$\int_{y'}^{+\infty} \bar{B} + \beta(y' - \bar{y}) + \alpha(y - y') f(y) dy \Rightarrow$$

$$\frac{\partial E[y']}{\partial y'} = \int_{-\infty}^{y'} (\beta - \gamma) f(y) dy + \int_{y'}^{+\infty} (\beta - \alpha) f(y) dy = 0$$

$$\int_{-\infty}^{y'} (\gamma - \beta) f(y) dy = \int_{y'}^{+\infty} (\beta - \alpha) f(y) dy \Rightarrow$$

$$P(y \geq y')(\beta - \alpha) = P(y < y')(\gamma - \beta)$$

$$\text{given } \int_{-\infty}^{+\infty} f(y) dy = 1$$

$$\Rightarrow \frac{P(y \geq y')}{P(y < y')} = \frac{\gamma - \beta}{\beta - \alpha} \Rightarrow \frac{P(y \geq y')}{P(y < y') + P(y \geq y')} =$$

$$\frac{\gamma - \beta}{\beta - \alpha + \gamma - \beta} = \frac{\gamma - \beta}{\gamma - \alpha}$$

$$P(y \geq y') = \frac{\gamma - \beta}{\gamma - \alpha}$$

$$P(y < y') = \frac{\beta - \alpha}{\gamma - \alpha}$$

$P(y \geq y')$: probability of ex-post plan fulfillment

α : incremental bonus coefficient for overfulfillment

β : incremental bonus coefficient for counterplanning

γ : incremental bonus coefficient for underfulfillment

By raising α , lowering β , or raising $\gamma \Rightarrow$

$P(y \geq y') \uparrow \Rightarrow y' \downarrow$

Output is treated like a random variable beyond the manager's control

In reality effort may also influence output \Rightarrow
stabilize output closer to the announced target level

Weitzman Martin L. "The New Soviet Incentives Model",
The Bell Journal of Economics, Vol. 7, No. 1,
(Spring 1976): 251-257.

In practice, counter-planning did not work...

... because of the ratchet effect.

Next period, the planner would select a higher target.

General problem of commitment to incentive schemes.

Trade-off between benefit of current reward and future cost of information revelation.

Why did it work in IBM?

Competition for managers in market economy vs. monopsony in socialist economy.

The soft budget constraint

Kornai(1980)

A contractor receives a budget of 100 to construct a new building. The building is half-finished and will yield 0 return if unfinished. The contractor asks for an additional 50 to finish. The finished building will have a return of 120.

What does the investor do?

The initial 100 are *sunk cost*. If terminated, *ex post* return of 0. If bailed out, *ex post* return of 70.

=> *Ex post* optimal to bail out even if the operation turns out to be loss-making.

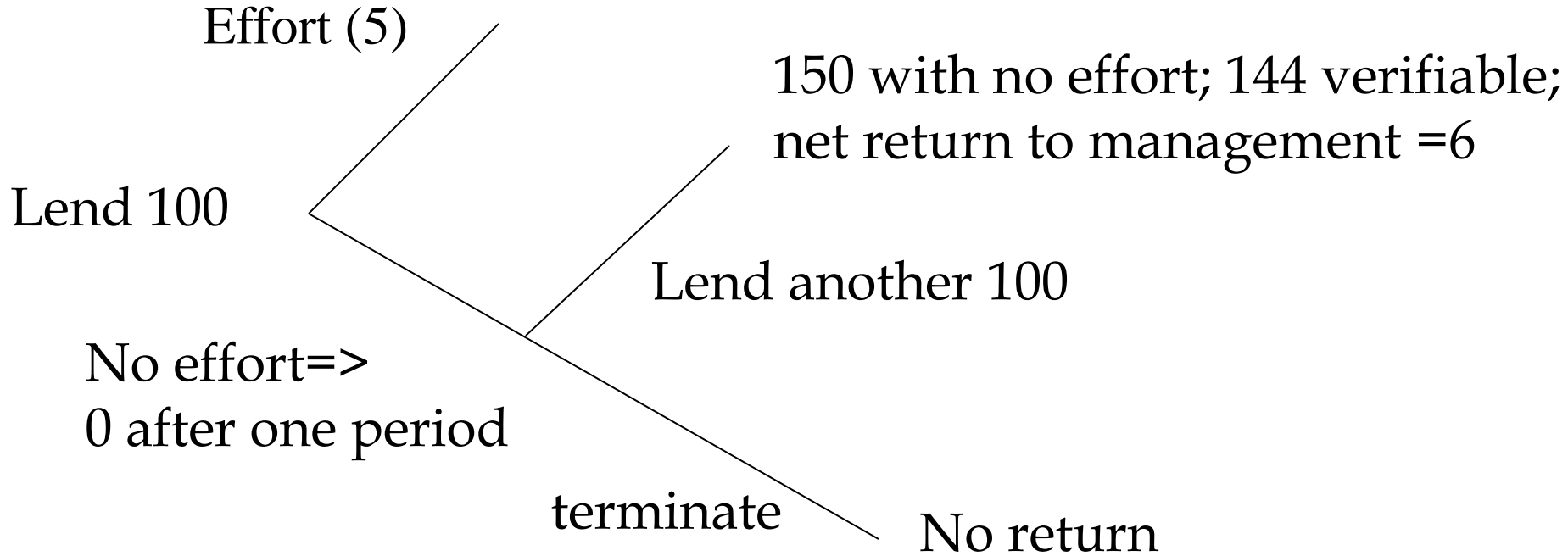
A city council decides to build a bridge.
The bridge is half-finished. The contractor asks
for an additional 50 to finish the bridge.
What does the city council do?

Likely to be ex post optimal from the political point of view
(cover up).

In both cases, a credible commitment (lack of) to terminate
may have positive (negative) incentive effects.

An example

110 return if effort (5); 104 verifiable;
net return to management = $110 - 104 - 5 = 1$



$R_g = 104$: verifiable gross monetary return

$B_g = 1$: net private benefit

$R_L \geq 0$

$B_L < 0$

$R_p = 144$

$B_p = 6$

\Rightarrow the government ends up refinancing projects ex-post, even though the project is inefficient and the government would never have financed those projects ex-ante.

\Rightarrow dynamic commitment problem

Consequence of general system:

SHORTAGE (excess demand)!

Output not adequate to demand:

Bad quality. Higher quantity at cost of quality.

Concerns innovation.

Exception: military and space programs.

State was direct consumer.

Forced Substitution: “The lack of availability of a good on the consumer goods market forces consumers either to purchase another good or to save current income in the hopes of buying the good in the future.”

“Uncertainty over the future availability of consumer goods also leads households to purchase currently available goods, hoarding them for future consumption”.

Coexistence of slack and shortage: “If the good, or a substitute, cannot be found then there will not only be a shortage of the initial good but a surplus of the complementary goods”.