



«MODELING OF
CORRUPTION IN
HIERARCHICAL
CONTROL SYSTEMS»

Introduction

Corruption as a social and economic problem has been the subject of scientific research for more than 30 year

The first research work on modeling of corruptions

Rose-Ackerman «The Economic of Corruption», 1975

The main methodological basis is the General economic rule on crime proposed by **Becker (1968)**:

«it is necessary to measure the damage from its negative consequences with the costs of fighting it»

Game-theoretic model of permitting (Cadot, 1987)

Examples of application areas: issuance of driving permits and medical certificates, preparation of conclusions on the quality of products. etc.

Official	Candidate	Good	Bad
Honest		Issuance of permits	Denial of the permit
Corrupted		Possibly illegal demand of a bribe for issue of permission (extortion)	Perhaps the illegal issuance of permits in exchange for a bribe (connivance)

Game-theoretic model of permitting (Cadot, 1987)

- Strategies of an honest official:
 - 1) A good candidate gets permission;
 - 2) A bad candidate does not receive a permit.

- The strategy of a corrupt official:
 - 1) A bad candidate can get permission in exchange for a bribe;
 - 2) Can demand a bribe even from a good candidate, threatening him with refusal to issue a permit.

On the basis of this scientific work (Cadot, 1987) the following conclusions were made:

- increasing the discount rate for an official leads to an increase in corruption
- less risk-prone officials demand a smaller bribe
- the growth of wages to officials reduces corruption
- it Cannot be argued that increased competition leads to lower corruption.

To date, many scientific papers have been published on the modeling of corruption in various fields, for example:

- 1) lending to agriculture with regard to corruption (**Gupta, Chaudhuri, 1996; Chaudhuri, Gupta, 1997; Dastidar, 2011**);
- 2) state intervention in the economy in the presence of corruption (**Acemoglu, Verdier, 2000**);
- 3) the link between corruption and the shadow economy (**Choi, Thum, 2005**);
- 4) corruption at the top level of government aimed at changing the legislation (Wilson, Damania, 2005) and others.

CPI (perception of corruption) in Russia



index 0 means the maximum level of corruption
index 10 no corruption