

MEASURING CROSS-SECTORIAL LAW ENFORCEMENT CAPACITY OF REGULATORY AGENCIES IN HUNGARY

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Abstract

The paper analyses the effectiveness of law enforcement by regulatory agencies in Hungary. Empirical data were collected from such diverse fields as consumer rights protection, construction, road safety, labor regulation, etc. The data were analyzed using a simplified rational choice model, looking for evidence of whether administrative practices were effective in preventing rational actors from breaking the law. The analysis robustly proves the ineffectiveness of regulatory activity, as the breaking of laws may yield, in a conservative estimate, 10 to 100,000 times more income than the expected monetary value of the fine. In brief, the government of Hungary is generally unable to enforce its own laws. Though the paper makes use of data solely from Hungary, it aims to provide a methodology for measuring regulatory capacity more generally.

Keywords: law enforcement, regulatory agency, agency capacity, Central and Eastern Europe, law and economics.

1. The (social and research) problem

It is a recurring finding of both local and international researchers, as well as various international organizations, that law enforcement or the implementation of legal decisions is insufficient in Hungary, and in post-communist states generally. Since the book 'Implementation' was first published four decades ago (Pressman and Wildavsky, 1984), researchers of the policy process have been/are increasingly aware of the fact that adopted policy decisions may greatly change during the implementation process (Howlett, Ramesh and Perl, 2003, pp. 185-204, especially pp. 188-189). Their systematic failure of implementation is a persistent weakness of public administration, both in Central and Eastern Europe generally (Dunn, Staronova and Puschkarev, 2006) and in Hungary specifically (Hajnal, 2005; Hajnal, 2010).

This paper addresses the implementation of policies relying on regulation as a policy instrument. More specifically, the paper aims at measuring the regulatory or law enforcement capacity that, for the purpose of this paper, is defined as the ability of regulatory agencies to deter potential law-breakers. Regulatory agencies are typically not empowered to make rules themselves in Hungary; they are responsible solely for overseeing compliance with laws enacted by the legislature or other executive actors (i.e., Cabinet decrees). These agencies play a pivotal role in enforcing legal rules in Hungary (Hajnal, 2012). Regulatory agencies can be found in the fields of consumer rights protection, food and drug safety, work safety, control over bank and insurance activities, environmental protection, and special control over various fields of business activities, like mining, gaming, wine production, transportation, and energy services.

The activity of these agencies, such as issuing construction permits, controlling the construction of family homes, or determining whether a particular garden is kept in an acceptable way, extends not only to firms and other legal entities, but individual citizens as well. The state attorney's office and criminal courts are involved only if the penal code is breached. Most offenses, however, are handled by regulatory agencies, which determine and apply sanctions. The law enforcement activity of agencies (including certain departments of municipal offices as well) may involve on-the-spot inspections and other ways of monitoring the potential infringement of laws, as well as applying penalties, almost exclusively in the form of levying fines. In sum, these agencies play a dominant role in implementing regulatory policies.

2. An overview of relevant literature

The interest in taking feeble implementation in the region as a research topic occurred first within the framework of governmental, policy, and administrative capacity (e.g., Nunberg, 1999; Goetz and Wollmann, 2001). Nunberg (1999, pp. 241-242) notes that laws are frequently not implemented, whereas Dimitrova (2010) argues that informal rules could be more relevant than laws in administrative reality. Goetz (2001) draws on the similarities to Latin America, in that regard.

The accession of Central and Eastern European countries (CEEC) to the EU has stimulated further interest in policy and related research. The problem of ineffective

law enforcement, or – in policy terms – the ‘implementation gap’ has been raised in reports prepared by the European Union on Hungary (European Commission, 2003) and on countries of the region generally (European Commission, 2002, especially pp. 55-56). OECD-SIGMA, as early as 1998, highlighted the great difference between adoption and implementation of EU laws in the region. Since accession, the implementation gap has not diminished. Discussing the field of labor laws (working time, equal treatment), governed mostly by regulatory agencies, Falkner and Treib (2008) and Falkner *et al.* (2008) classify the implementation style of new member states as the ‘world of dead letters’. Dimitrova (2010) treats this implementation gap as a dependent variable (i.e., as a fact not needing to be proven) and seeks potential explanations for the phenomenon. Investigations of specific administrative fields have concluded similarly. For instance, an OECD report (2007, p. 2) on environmental protection noted: ‘The implementation gap persists. The basic legal and policy frameworks are often in place and keep improving, even if further important reforms are still needed. The real problem is implementation...’. Batory (2012, p. 67), writing in the field of anti-corruption laws, finds that ‘policy design problems are compounded by a very evident implementation problem’. Meyer-Sahling (2011) provides another good example from the field of civil service policy. In sum, dozens of studies argue that policy implementation in Central and Eastern European (CEE) countries and in Hungary is weak generally, and particularly in terms of executing laws.

Empirical analysis of implementation and implementation capacity in CEE countries is surprisingly scarce, and what exists is limited in both scope and methodology (Treib, 2008; Sedelmeier, 2011; Angelova, Dannwolf and König, 2012). Most of the studies focus on the implementation of EU regulations within the theoretical framework of pre- and post-accession compliance, where ‘conditionality’ is a key word referring to the ability of EU institutions to force national governments to adopt the *acquis*. Implementation occurs typically as ‘compliance’, which, in this context, refers to the EU–national government relations, and as such has not much to do with effective implementation of policies at the local level (Hartlapp and Falkner, 2009.) As Sedelmeier (2011, p. 26) notes: ‘Studies... focused most on formal rule adoption, i.e. the legal transposition of the *acquis*, but a key issue [would be] ... practical implementation on the ground...’. Indeed, empirical analysis in this field is limited to a few studies, mostly of Gerda Falkner and her colleagues.

Most of the empirical studies focus on specific policy fields, such as environment protection, anti-corruption, and antidiscrimination policies (see Krizsan (2009) and most articles in that journal volume). To that end, there exists a reasonable doubt about the generalizability of findings, as Falkner and Treib (2008, p. 310) explicitly indicate.

Somewhat surprisingly, there are hardly any comprehensive empirical studies on implementation focusing specifically on national policies, irrespective of EU conditionality. The few studies that investigate effective, street-level implementation rely predominantly on expert interviews and the judgments of one or a few experts. Sur-

prisingly, implementation studies that would utilize such self-evident information sources as agency databases and/or statistics can hardly be found. In fact, I could not find any publication that (i) addressed the question of ‘implementation gap’ in several agencies or policy fields (ii) relying on the availability of administrative information (iii) in the CEE context generally or in a country. There are two main reasons why agency data are not used in this regard. First, agency statistics may not be available for research (or for the public) in a particular area. At the time of this research, the agency statistics which we were able to obtain existed only at some agencies and on select issues. (Though, when we wanted to repeat the research in 2012 we found that most of these agency statistics were not available anymore.) Second, the ‘standardizability’ of data is questionable. How could we compare data from the work safety sector to that from highway patrol or construction control? The method suggested, applied and reviewed below makes standardized study of implementation in various policy fields possible. The aim of this paper, thus, is to propose and apply a method to measure the ability of regulatory agencies to effectively enforce laws. The proposed methodology allows for measuring quantitatively the agencies’ potential for effective law enforcement. The method can be applied to diverse administrative fields and in various countries. Furthermore, the method may provide some explanation of the presumed incapacity.

In the next section, a simple model will be presented, that allows the assessment of regulatory agencies’ performance. It is argued that this model fits best to the task, even though it has some limitations, which are also discussed briefly. First, the applied methodology, then the findings of the research will be presented. Two specific cases will be reviewed in greater detail, and then overall findings in several fields will be presented in numeric format. Finally, the paper attempts to answer the two ultimate research questions: (i) can law enforcement capacity, as defined above, be considered effective? and (ii) is the proposed method appropriate to provide a general cross-sectorial measure for question (i)?

3. Methodology

3.1. The model applied

The proposed model emanates from law and economics. Our starting point was the simplest approach to deterrence and/or sanctioning. Becker (1968), in his seminal work, laid down the economic model, which has been further discussed and elaborated by Stigler (1970) and Posner (1985) among others. However, several elements of these models were omitted from ours. In fact, a simplistic rational choice model is offered here based on the presumption that social actors circumvent laws if it is worth it for them and would not do so if the expected penalty is higher than the benefit one expects to gain from breaking the rules. In other words, we compare the expected penalty, typically the monetary value of the fine, and the assessed monetary value of the potential gain from breaking the law. If the gain (G) is larger than the expected fine (E), then we hypothesize that a rational actor will break the law. The expected fine

is calculated according to the Neumann-Morgenstern utility function by multiplying the probability (P) that the fine is successfully levied with typical amount of fine (F).

However, it is practically impossible to assess the probability of successful fining, since no data are available on this overly broad issue. On the other hand, several pieces of information are available regarding certain segments of regulatory activities. It seems necessary, and at the same time possible, to analytically break down the process into measurable stages. Frequently, data are available on the number of entities to be inspected and the number of actual inspections. For example, data in the field of consumer rights protection and work safety are fully available at regulatory agencies in Hungary. Based on an analysis of the administrative process, on one hand, and the availability of data, on the other, four segments were identified that may be described by four probability values, as follows:

- P_i Probability of inspection taking place (e.g., the inspector attends at the site and checks if the state or activity is appropriate: workers are not illegally employed, consumers are not cheated, the building was built according to the permit, etc.). This probability is calculated as $[number\ of\ entities\ inspected] / [number\ of\ entities\ to\ be\ inspected]$. The first figure is frequently available in formal internal statistics of agencies; the latter can also be obtained from these statistics, or from the Central Statistical Office data (e.g., number of business sites, number of houses).
- P_r Probability that the procedure reveals the infringement of law (opposite of latency; e.g., buildings built without a permit are discovered). This probability is calculated as $[number\ of\ infringements\ detected] / [number\ of\ total\ infringements]$. Due to the nature of latency, data regarding this factor are rarely available, though there are exceptions (e.g., amount of non-taxed gasoline on the market, based on controlling pumps by another agency). Depending on the specificity of the inspection, data from fields P_i and P_r can be assessed only jointly (e.g., discovering buildings built without permit or a forest illegally cut).
- P_f Probability that the infringement of law can be legally proven by the regulatory agency and the fine is levied on first instance. In few cases, this data may be available from agency statistics as $[number\ of\ decisions\ levying\ fines] / [number\ of\ minutes\ detecting\ infringement\ and/or\ legal\ process\ initiated]$. In several cases the laws are so complicated, or the legal guaranties for the clients are formulated in such a way, that proving infringement is almost impossible. For example, if the municipal guard takes a picture of a person on a track shoveling rubble in a park, this may not be enough to prove illegal behavior, as the person might argue that he was collecting the rubble and not discarding it. As another illustration, a forest guard may not stop a truck full of freshly cut logs as the driver is not obliged to declare where the wood is from.
- P_p Probability that the fine is paid by the punished entity. Quite frequently, even if the fine has been levied it is not paid. Business organizations may simply close (i.e., disappear as legal entities) and be opened under another name on the same day; alternatively, they may have never legally existed or their owners might turn

out to be unidentifiable. Persons may have no official income (e.g., work on the black market) and have no property. The value of P_p is calculated as $[fine\ paid] / [total\ amount\ of\ fines\ levied]$, typically on an annual basis. These data may be available from annual agency reports or from the agencies' finance departments.

These four steps must all be successful (conjunctive conditions) to assure successful fining. These probabilities are so-called 'independent probabilities'; thus, we may speak of 'conditional independence' in mathematical terms. One can calculate the probability of successful fining (P) by multiplying these partial probabilities. Formulating these statements into a simple mathematical form, one may state that regulatory agencies can effectively enforce regulations (appropriate regulatory capacity) only if:

$$\begin{aligned} G &< E \\ \text{that is} \\ G &< P * F \\ \text{that is} \\ G &< (P_i * P_r * P_f * P_p) * F \end{aligned}$$

Breaking the ultimate probability into partial probabilities allows us to obtain data on practical frequencies from official data on which at least some of these probabilities can be reliably assessed. This model also allows us to handle an assumed lack of information, as partial probabilities for which information is unavailable are assessed as 1,0. Since the value of probability – as a mathematical measure – can be between zero and one, where 0 means 'impossible' and 1,0 means 'sure', if a partial probability is assessed as 1, it means we presume that regulation functions perfectly in that regard. This leads to a conservative estimation, which evaluates regulatory activity as surely more successful (i.e., 'perfect') than it can be in reality. As it was typically possible to appropriately assess only 1-3 (out of 4) partial probabilities, whereas others, due to the lack of reliable data, were calculated as 1, the effectiveness ratio was largely, though intentionally, overestimated. In some cases, this conservative assessment of E could be hundreds or even thousands of times higher than the maximum likelihood estimated by experts.

3.2. Strengths and weaknesses of the model

From an academic point of view, this model (a) in fact operationalizes the research question by allowing the assessment of probabilities on available data, and (b) also allows us to handle the situation in a systematic manner if such data are not available. From a practical-policy point of view, (c) the model, besides providing summative evaluation data, may also serve with formative evaluation information, i.e., it could assist decision-makers in finding weak points of regulatory activities, in order to increase effectiveness (e.g., the number of on the spot checks should be increased). Finally (d), the model allows us to establish a general picture, drawn from various inspection fields, on the effectiveness of regulatory agencies, and generally the government's ability to enforce laws or its systematic flaws in that regard. (In this paper we do not touch upon practical results (point c) of the research.)

The potential weaknesses of the model may be classified into three main types: (i) Some, most likely scholars in the law & economics field, may condemn the oversimplified nature of the model. (ii) Others, most likely scholars of public administration and compliance theory, may criticize the rational choice approach as unrealistic and neglecting most of the relevant motivating factors. (iii) Still, others may call attention to the technical deficiencies of collecting and interpreting data. Furthermore, the proposed approach is somewhat unfashionable and indeed simplistic vis-à-vis the neo-institutionalist or discourse analysis methods that are more widely used nowadays. However, the classical economic-rational model, precisely because of its tendency to simplify complex social realities, may provide a method that can be utilized in various administrative (or social) fields and in various countries. Whereas a neo-institutional approach can provide a more accurate description of a specific field, its potential for comparison is highly limited (Dugger, 1979). Thus, for the purpose of this research the rational model seems more suitable. In the following paragraphs these critical points will be briefly overviewed.

(i) This model omits several economic formulas, such as those about the optimal level of enforcing laws, the marginal level of penalty and the 'equilibrium' approach more generally. These elements were irrelevant to this research, as the question refers not to economic efficiency of law enforcement but to the effectiveness (level of goal-attainment) of regulatory activity. Furthermore, we focus on 'typical' cases, in sharp contrast to economics, which includes each and every actor, as their preferences, performances, utilities, and so on provide the basis for those functions that are the foundation of economic theory. The present model is instead targeted toward the typical cases.

Consequently, it may not be true for every actor. For example, even if the enforcement capacity in a particular regulatory scheme is low, there may be some who would be still deterred. Further critics may attack the model as it does not take into consideration the actors' attitudes toward risk (risk-seeking – neutral – risk-averse), though there are well-known methods to handle this issue. Most importantly, one may reasonably argue that it is not the real enforcement capacity but rather the perceived capacity that determines people's behavior. The latter, however, may be influenced or even determined by several other factors, such as the media. Whereas this argument may be true, the author argues that if incapacity is so self-evident, as it is in the case of Hungary, this information may be known by most of the interested parties.

Most of the above considerations – and several others not discussed here – could have been built into the model. However, the more precise it is, the more complex a model becomes. In this early stage of the study, simplicity was crucial.

(ii) The model cannot handle several real-life situations well. Regulations are frequently followed for moral reasons, either because one agrees with the overall purpose of the rule, even against his/her own interest, or because he/she agrees that rules should generally be followed. On the other hand, regulations cannot be followed, if people are not aware of them. Furthermore, customs and strong emotions frequently

mitigate people's rational calculations, and thus make penalties futile. An answer to these critiques could be that the cases that cannot be analyzed by the model in theory cannot be handled by the modern law in reality either. As Max Weber argues, modern, that is formal (as opposed to material), law is designed for rational actors who calculate gains and losses caused by their action in advance (Weber, 1947, pp. 219-221; Weber, 1958, p. 25).

Scholz (1997) demonstrates that the economic model, even in its more complex form than the one used here, is based on four basic assumptions, all of which can be considered as oversimplifications. These assumptions do not correspond well with empirical evidence, as the reality is much more complex. Kagan (1994) lists and structures well over a dozen factors that influence enforcement and compliance. Tyler (1990), in his seminal work, argues that it is not the fear of penalty but such elements as trust, legitimacy and the perception of justice (most of all, procedural justice) that are crucial to obeying the law. These and several other analyses, again, call attention to the oversimplified nature of the rational model. Naturally there is a tradeoff between the feasibility of cross-sectorial research and the sophistication of the research model. At this stage, the former seemed more important.

Regulatory agencies' practice seems to diverge from strict enforcement based on close surveillance and penalty, towards more *cooperative methods* of information-negotiation-persuasion in Anglo-Saxon countries. These methods could be more effective than the classical punishment-approach (Amodu, 2008). The model suggested here is based on the classical, strict law enforcement theory. In fact, all stakeholders, lawmakers, agency managers and inspectors, as well as the general public, expect this kind of approach from agencies. The cooperative approach would probably be negatively regarded in Hungarian society, most likely interpreted as a sign of corruption (Keller and Sik, 2009).

(iii) In some cases, levying fines is not the only penalty an agency may apply. Other options could be closing down the unit (e.g., restaurant, the plant) or demolishing the illegally-built structure, for example. Sometimes even initiating a criminal case is possible. These possibilities are not included in this model. Additional efforts were made to identify these different types of penalties and to assess their deterring impact. We found that other types of penalties play minimal roles: regulatory agencies hardly ever utilize other options, as levying fines is the simplest method for them, and they are seemingly not interested if fines are paid or not. Furthermore, if other penalties (e.g., demolition) are not accomplished voluntarily by the wrongdoers, these decisions are 'enforced' by levying so called procedural fines. In brief, other types of administrative penalties are hardly ever used in administrative practice.

It may also be difficult to monetize gains. For instance, it is not easy and is perhaps even useless to determine the utility of not fastening seat belt or speeding on the highway. Even if it would be possible to measure this, relying on some techniques offered by the cost-benefit analysis, to do so would over-exhaust the potential of the model. In brief, if either the gains of infringing laws (G) or the expected penalty (E) cannot be

expressed relatively easily in monetary terms, the model may be inadequate. However, we argue that in most cases the gain may be assessed relatively easily.

An alternative approach could be measuring indicators of lawful behavior. However, reliable data is rarely available on this phenomenon and even if they are, it may not be an appropriate measure for gauging law enforcement activity. This is a crucial problem of policy analysis and program evaluation (Mohr, 1995). Pollen concentration, for instance, may drop not because landowners were effectively forced to keep their territory in the right condition but because the weather was not good for weed growth. Most importantly, people may follow certain rules for moral reasons, or as a customary behavior, irrespective of any government activity, whereas the ultimate question of this study refers to the ability of regulatory agencies to deter those who otherwise would break the laws. In sum, the proportion of infringement of law itself, even if it would be measurable, would not be a good indicator of the effectiveness of regulatory activities. However, it could be a good indicator of overall compliance.

3.3. Data collection

The research took place from 2005-2007. Data refer to this period. The author planned to repeat the research five years later to obtain comparable data, but most of the agency statistics turned out to be unavailable by that time. We launched inquiry into about 20 regulatory fields, most of which are reviewed in Table 3. Some fields were dropped as no data were available or no appropriate field researcher was found. An attempt was made to apply the model on the most heterogeneous fields of inspection. Still, fields that were too large and complex to handle (most of all the tax authority's activities), as well as agencies that handle only one or a few large companies (like in the energy sector, nuclear site control, and railways) were omitted.

Selection of cases depended on the availability of field experts; thus, it was done largely randomly, though not according to a purely random probability selection method. Field experts (typically civil servants of second-tier regional or central offices of agencies) were contracted to collect the available data for the model from agency statistics and databases. Some additional, relevant data, such as those on personal and technical capacity, as well as qualitative information on organizational and management structures and practices, legal and cultural environment, practical difficulties in carrying out investigations effectively, typical tricks of clients were also collected and compiled in 15-80 page case studies.

Additionally, relevant newspaper articles of the leading Hungarian weekly publication *HVG* were also reviewed. Potential gains from infringing laws (G) were assessed according to common sense based on typical cases, some of which are reviewed below.

4. Findings

In this section, first, the findings of two case studies will be briefly summarized in order to provide the reader with an impression on how the model was applied. Then, an overview of quantitative results for most of the fields will be provided in Table 3.

Data presented in this paper are from the author's book (Gajduschek, 2008) that provides an in-depth analysis of a dozen case studies and more detailed data and explanations on several others, however in Hungarian.

4.1. Undeclared employment

Undeclared employment refers to a person being employed in the gray market; neither personal income tax, nor social security for health and pension insurance are paid by the employer and the employee. The two parties are typically jointly interested in hiding the arrangement from the authorities. About one million people, one-tenth of Hungary's total population, may be employed in this way. Investigating cases of undeclared employment falls mainly to the Hungarian Labor Inspectorate. The Labor Inspectorate follows a so called risk assessment method, which in practice means that inspectors know that undeclared employment is typically in restaurants, pubs and on large construction works, where practically almost everyone is employed illegally. Thus, they visit mostly these sites. Quantitative findings are given in Table 1.

Table 1: Calculation for expected fine (E) for undeclared employment (per person)

	Value	Explanation
P_i	0.0198	25,740 on the spot visits (agency data) / 1,300,000 (number of business units – data from Statistical Office)
P_r	1.0	In several cases, illegal workers just run (or, more likely, walk) away, as inspectors do not have the right to physically stop them, and police assistance is hardly ever utilized. Employers use various tricks to avoid being penalized. As no reliable quantitative data (hereinafter: NA) is available, due to the general design of the study, a conservative assessment is provided (considering this step of activity as perfect).
P_f	0.9395	In some cases, even if one has been caught 'red-handed', there are legal and other tricks that make possible to avoid penalties. According to agency statistics, the ratio is: 11,655 (penalty levied on first instance) / 12,405 (levying penalty initiated) (agency data).
P_p	0.599	Somewhat exceptionally, this agency has reliable data on collecting fines. Out of the 5,008 billion HUF fines levied, they were able to collect 3 billion HUF; that is a good rate compared to previous years and to other agencies. (HUF: Hungarian forints. Calculations provided in this paper in EURO terms are based on 1 € = 270 HUF exchange rate.)
F	440.11 €	The value of the fine levied per person for not declaring employment is calculated from agency statistics, as they provide data on the number of cases and persons involved in cases, as well as on the total fines levied annually.
E	4.90 € *	The expected fine is: $0.0198 * 1.0 * 0.9395 * 0.5990 * €440.11$; that is about 5 Euros.

The expected fine is roughly equivalent to tax and social security payment for one day for someone with an average wage. Taking into consideration the amount of the fine levied (F), even if the authority repeats its activity at a site every three months, it may still be worth following this illegal practice.

4.2. Illegal waste disposal

Illegal waste disposal is almost an everyday practice for some citizens and entrepreneurs. Handling the problem falls under municipal jurisdiction. The findings presented in Table 2 are based on data from a small district of Budapest.

Building rubble should be discarded into special containers. A container costs about 48 €, which is twice as much as the fine levied on successful cases.

Table 2: Calculation for expected fine (E) for illegal waste disposal (per case, cca. 2 m³)

	Value	Explanation
P_i	1.0	P_i and P_p cannot be separated in this type of inspection. They are indicated below.
P_r	0.0058	29 / 5,011 The municipality collected 10,230 m ³ of waste (typically building rubble) from parks and other public territories in 2006. Let's suppose that in each case 2 m ³ waste is discarded. If so, there were 5,011 cases. The municipality initiated 29 legal cases.
P_f	0.1034	The municipality levied fines in three cases. In other cases they could not prove that the accused person disposed the waste.
P_p	1.0	NA. In spite of all efforts it was impossible to get information whether those three fines were paid.
F	€ 24.69	Altogether 74.07 € in fines were levied for the three cases.
E	€ 0.015	$1,0 * 0,0058 * 0,1034 * 1,0 * € 24.69 = 0,0006 * € 24.69$ The expected fine is slightly more than one Eurocent!

4.3. Further cases and the overall picture

The Hungarian weekly publication *HVG* publicizes some more severe cases than those mentioned above. For instance, during the 1990s, a black market of non-taxed gasoline emerged. Gasoline arrived to Hungary as lubricating oil or other substance that was taxed at much lower rates. Thousands of carts of oil were imported in this way. Customs officers were either bribed or various tricks were applied. The maximum fine set by law was about \$130 at the time, and that was raised to \$650 in 1993, whereas each cart yielded about \$6,670 (Euro did not exist at that time. 1 USD was calculated as HUF 75 for that period). Less than 0.1% of these carts were found by customs officers. In most cases, fines were not levied or not paid, as the real owners were unidentifiable, or ceased to exist as companies. In this case, we can make a conservative assessment for the E / G ratio being about 100,000, which means that the gain from infringement of the regulation is at least one hundred thousand times higher than the expected fine. Although these illegal activities were well known, even to the general public, authorities initiated only a few criminal cases for tax evasion but no one has ever been sentenced.

In Table 3 we sum up the findings of the research, reporting the quantitative results of case studies on various fields of inspection. As discussed above, the total P value reflects the probability that the fine is effectively levied and collected ($P_i * P_r * P_f * P_p$) and F is the average value of fines given in Euros. E is the expected value of the fine that reveals how much on average one should expect for an infringement of a regulation in the given field. The G / E column can be considered as the final results of the research. It is based on the comparison of the expected fine against the potential gains that stem from circumventing the laws. This latter value is assessed according to the common sense knowledge, taking into consideration various real-life cases. In certain fields the variance in this regard could be great, but taking into consideration the robust findings for G / E values, it might hardly influence the final conclusion.

We relied on a conservative estimation for the G / E value; that is, we estimated inspection effectiveness as typically much better, and surely never worse, than it may be in reality. The last column of the table (MLE) provides a maximum likelihood estimate of the G / E value. Below we briefly describe the regulatory fields presented in the table.

Table 3: Summary of some quantitative research findings

	P	F (€)	E (€)	G / E	M.L.E.
Specialized regulatory agency jurisdiction					
Consumer rights protection	0.1064	432.6	46.2	<u>10</u>	<u>10</u>
Illegal construction	0.1224			<u>50</u>	<u>100</u>
Undeclared employment	0.0113	440.1	4.9	<u>1,360</u>	<u>2,720</u>
Illegal cutting of forest	0.0030	5915.6	15.4	<u>602</u>	<u>60,200</u>
Municipal jurisdiction					
Inappropriate running of business site	0.0643	75.2	4.8	<u>78</u>	<u>234</u>
Not keeping land free of weeds	0.0490	124.9	6.1	<u>4</u>	<u>80</u>
Illegal waste disposal (small amount)	0.0006	24.7	0.015	<u>3,250</u>	<u>6,500</u>
Illegal advertisement on walls, etc.	0.0037	111.1	0.45	<u>10</u>	<u>1,000</u>
No 'rational' G can be determined					
Speeding (police jurisdiction)	0.0333	133.3	4.4	-	-
Leaving dog manure on street	0.9300	111.1	0.037	-	-
No effective regulatory activity					
Driving over determined time-period			0	∞	∞
Illegally overweight trucks			0	∞	∞
Cases presented by investigative reporting of weekly HVG					
Fraud involving gasoline				<u>100,000</u>	<u>10,000,000</u>
Fraud involving wine				<u>1,000</u>	<u>100,000</u>
Illegal mining activity				<u>23</u>	<u>300</u>

Below are the explanatory notes to the items in the table.

Consumer rights protection covers a wide range of areas. Some of them were individually assessed. The data in this table provides an overall picture of this field. Illegal construction work occurs if construction is carried out without an ex-ante permit. Houses of a certain style or size are prohibited generally or in some areas of a settlement. Buildings constructed without a permit may be demolished, though this has hardly ever happened. (In 2005, according to the agency statistics, the agency found that its decisions were not followed in 3,506 cases. However, in only 123 cases they initiated the demolition of illegally built building, and, as the field expert assessed, the overwhelming majority of these decisions were not carried out in practice.) There are various tricks to avoid paying fines as well.

Undeclared employment was reviewed in detail above.

The illegal cutting of forests refers to the felling of trees without the permit from the relevant authority. Forestry regulations are rarely enforced. It is almost impossible to catch someone in the act, as there are not enough forest guards, and establishing proof is difficult. Even if a fine is levied, it is rarely paid, as those who actually cut the wood are typically without official income and property, and those who order the job are almost never caught.

The inappropriate running of a business site consists of a wide range of issues that are combined into one item here. Municipalities inspect the business sites (e.g., shops, restaurants, factories), if they diverge from permitted activities (e.g., the car repairman collects and stores such dangerous car parts as batteries). Municipalities frequently seem to be especially incapable of enforcing regulations, partly because they do not have qualified personnel for this activity, and partly because they are reluctant to penalize citizens, who

would later be voting for council members. This is the case in all regulatory activities of municipalities.

Laws in Hungary require landowners to keep their land (yard or agricultural territory) in order. Most importantly, landowners are obliged to assure that no weed whose seeds may infect other pieces of land grows in large quantity. Particularly weeds whose pollen is allergenic must be kept under control. However, this field of inspection also belongs to municipalities with the above-mentioned shortcomings. (The pollen concentration has not been decreasing for more than a decade, despite several governmental 'campaigns' against ragweed.)

Illegal waste disposal was reviewed in detail above.

Illegally posted advertisements cover the buildings and tram and bus stations, of major Hungarian cities. Only individuals caught in the act of posting can be penalized, however; never those for whom they work. The fine is low and rarely levied; if it is levied, it is rarely paid.

Speeding has been a widely discussed issue as it resulted in death of hundreds of people over the years. Persons who were speeding must first have been measured with a specific, officially-calibrated instrument and then caught on the road. The technical and personnel capacity of the police were not enough to carry out this adequately and ways existed to avoid receiving a penalty. The rules were changed only in 2008, after almost two decades. As fining has become more successful the number of lethal accidents has declined enormously.

On-the-spot fines are supposed to be levied on those who do not pick up after their dogs. Still, the streets are full of dog waste, as police and local government guards are seemingly unable or unwilling to enforce this rule.

Truck drivers are obliged to take a rest after a certain amount of driving time in order to avoid accidents caused by exhaustion. However, authorities lack the personnel for on-the-spot control. Furthermore, the Cabinet decree regulating procedural details was not issued for several years, thus jeopardizing effective inspection.

Illegally overweight trucks (e.g., a truck calibrated to carry 5 tons is packed with 6.5 tons of material) cause severe harm to roads whose reconstruction then costs taxpayers millions of Euros annually. There is no personnel capacity and, even more so, no technology available to identify and prove this misconduct, however. For a long time, there was only one mobile scale in the whole country.

The last three items in the table are based on investigative reports from the weekly publication HVG. Fraud with gasoline was discussed in detail above. Fraud with wine refers to cases when wine is made in illegal ways, most typically from chemical substances. The customs authority, police, food administration and agricultural inspectorate all have authority in this field; still, all seem to fail to enforce regulations, as in the nineties it was assessed by experts that more than half of the wine sold in Hungary was fake. Meanwhile, hardly anyone was penalized for counterfeiting wine.

Illegal mining is typically related to road construction, when the company mines the necessary material (most of all gravel) at the nearest possible place without the necessary permit, leaving large craters behind. Though the beneficiary of this illegal activity is clearly identifiable, due to the stringent burden of proof requirements practically no one has ever been penalized.

5. Conclusions

The goal of the paper was to address questions regarding the law enforcement capacity of various Hungarian regulatory agencies. Furthermore, the paper aimed to test an instrument that may quantitatively answer this question and could be utilized in other contexts.

5.1. Appropriateness and relevance of the method

The paper introduced a model and its application that, in the author's view, is appropriate to measure enforcement capacity. The model allows for assessing quantitatively the law enforcement capacity of regulatory agencies based on statistical data of these agencies and on other available statistics.

Furthermore, the method also allows the researcher to draw a general picture of regulatory capacity in a given country by utilizing the available data in the same, standardized way. As far as the author knows, this is the only research in the CEE region that provides a cross-sectorial analysis on regulatory capacity based on quantitative data obtained from the statistical agency. The author believes that this model offers an appropriate method to provide an overall regulatory capacity assessment in other countries as well. It would be especially useful to compare some countries from the CEE region to countries where the compliance ratio is relatively high.

5.2. Interpreting the findings

The starting point of the model is that regulatory agencies can effectively frighten away rational perpetrators and are able to enforce regulation only if the expected fine (E) for breaking the regulations is higher than the gain (G) that it yields, which in a simple mathematical inequality can be presented as: $G / E < 1$. As it can be clearly seen from the last two columns of Table 3, this condition is not fulfilled in any of the fields. On the contrary, depending on the case, G is ten to one million times higher than E. By using the applied model, it has been quantitatively proven that regulatory agencies systematically fail to enforce regulations. In fact, agency activity in its present form rather stimulates delinquency by rational actors.

5.3. Further considerations: laws, regulatory capacity and social morals in CEE

In the past two decades, both the theory (Tyler, 1990, 2006; Tyler and Darley, 1999; Scholz, 1997; Kagan, 1994) and the practice (Scholz, 1991; May and Burby, 1998; Amodu, 2008) tend to refuse the classical enforcement strategy based on a rational choice model and its associated deterrence strategy. However, Kagan, Gunningham and Thornton (2011), in their recently published book, warn about the limits of the impact of moral factors in a competitive market environment (pp. 49-52). They also emphasize the importance of classical enforcement, which 'is important, first of all, in communicating regulatory norms and threatening credible levels of monitoring and legal sanctions for noncompliance; second, for its reminder effect ('check your speedometer!'); and third, for its reassurance effect ('you are not a fool to comply; we are really looking for and finding the bad apples')' (p. 52).

Hungarian regulatory agencies are unable to send these messages out to the society. Incapable regulatory agencies meet a seriously anomic society (Giczi and Sik, 2009) with extremely low levels of trust (Mishler and Rose, 1997) and cooperation among civil society (see also Lengyel and Vicsek, 2005, and several papers in Kornai and Rose-Ackerman, 2004.) The perception that regulatory agencies systematically fail to enforce laws spreads over time in the society, exacerbating noncompliance and inducing a vicious circle where high level of noncompliance meets regulatory incapacity that exacerbates noncompliance, and so on. In the end, those following rules may be considered as 'losers', and breaking norms may become a norm itself (Gajduschek, 2008, pp. 209-211; Sajó, 2008).

It seems practically impossible for agencies to prove that an individual has discarded rubble in a park, or has cut square miles of forest illegally, or has driven his car 70 miles/hour in a city. Similarly, in order to have an illegally built house demolished, the inspector needs to follow the roughly four thousand words long 'checklist guide', some requirements of which are practically impossible; thus, hardly any illegally built buildings have been demolished as agency statistics demonstrate.

Regulatory agencies created in the transition from an authoritarian system lacked the requisite experience, personnel, and technical and financial resources to function appropriately in a Rule of Law environment. Extreme legal guarantees, created in 1990 as an overreaction to the legal practices of the past authoritarian regime may exacerbate the incapability of these agencies.

Speeding may be a good positive example. For a long time, one could easily evade sanction with simple legal trickery based on some extreme legal guarantees to the perpetrators that made detection and sanctioning practically impossible. Once this legal anomaly was abolished in 2008, the prevalence of speeding and lethal accidents dramatically decreased. While the number of lethal accidents basically remained constant between 2001 (1,239) and 2007 (1,232), it dropped to 996 in 2008. Then, as human and technical capacity for monitoring increased, it dropped further to 739 in 2010 (Central Statistical Office, 2014). This seems to indicate that the classical law enforcement method with appropriate regulatory capacity can be effective, and it may indeed change social behavior while potentially increasing trust in government authorities and forming a habit to drive with appropriate speed.

A strict deterrence strategy by regulatory agencies, in certain situations may be useful. This strategy may increase citizens' trust, the image of procedural fairness, and it may form missing customs or probably even morals in the society. It may also be a way to stop the vicious circle described above. This may be the case in Hungary and potentially in other CEE countries.

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