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Informal and formal meaning of the norm and the institution

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30 July 2017

Online at <https://mpra.ub.uni-muenchen.de/80355/>
MPRA Paper No. 80355, posted 30 Jul 2017 12:01 UTC

Introduction

The process of creation of new formal norms includes resource-intensive development procedures, adoption and implementation of norms (institutions, laws, regulations); in each case it can be compensated only by long and successful (effective) functioning of its own product. Therefore, any such process isn't intended to instantly rejection of created norm. However, one starts to estimate the effectiveness and sustainability of implemented norms, basing mainly on analysis of their functioning. The more unsuccessful project the norm appears, the larger will be the additional costs (which often exceed the cost of initial development), required by its correction, its support or even its replacement; while the return on ineffective norm will obviously be much less than the return on effective one. In this article we'll propose the approach of system evaluation of effectiveness (quality) of formal norms (rules) "from inside", i.e. this approach will be based on analysis of its internal characteristics, but not on the results of its further application.

Analysis of this problem involves a preliminary determining the questions of formation and stabilization of the norms and institutions, their effectiveness, compliance and mutual interaction of formal and informal norms, etc., but primarily it involves determining the notion "norm" itself.

However, the recent increase of institutional economics popularity led to significant growth of number of research in this area; it results to a huge variety of conceptual framework about conceptual notions of norms and institutions. As an example, the definitions of norms specified in the dictionary of Tartu-Moscow semiotic school (1999), in Arno sociological encyclopedia (Arnoud, 1993), the definitions of norm's structure – according to the article of Crawford and Ostrom (1995) are mentioned below.

Analysis shows that with the norm's outlining, the key differences invite a question: whether is relevant to norm to consider the possibility of deviation from it and – sanctions for deviation as well. The notion "institution" is defined by most of

researchers through a notion of norm, but there's no agreement on the following problem: in what relationship these two categories are: whether the institutions act as some special norms (e.g. "norms of the game" – North (1990)), whether they include except norms some other additional mechanisms (coercion, control – North (1990)), whether these notions are synonymous.

Crawford and Ostrom (1995) connecting the notions of norms and institutions distinguish three approaches to answer the question, What is an institution?: the institutions-as-equilibria, the institutions-as-norms and institutions-as-rules. The authors noted that the last two ones both focus on linguistic constraints (spoken, written, or tacitly understood prescriptions or advice) that influence mutually understood actor preferences and optimizing behavior. In this paper we'll follow this point of view, trying to clarify the stating of the notion of norm using the methods of formal logic, theory of sets and Boolean algebra. Our task is, first, to attempt the unifying and clarifying the already known notions by their formal description, which will contribute to separate the principal nuances from the unprincipled ones, and, second, to try to identify the causes of appearing and establishment of certain definitions and to analyze how far they are significant.

1. The informal definition of norm

Currently, defining the notion of norm is quite complicated and ambiguous. At present, the accepted definitions of notions, related to the notion «norm», according to subject, can be divided into several groups.

Norm as a standard:

- ✓ "norms are the standards of behaviour" (Lawson, 2001). "Norms are standards of behaviour defined in terms of rights and obligations" (Krasner, 1983, 2);
- ✓ it's the officially established pattern of behavior and activity in a particular area; "a requirement of definite behavior, obligatory to execute, whose function is to maintain order" in interaction system (Arnoud, 1993, 400-403);

- ✓ “a set standard of development or achievement usually derived from the average or median achievement of a large group”; “a pattern or trait taken to be typical in the behavior of a social group” (Merriam-Webster. Norm, 2017);
- ✓ “formal rule or standard laid down by legal, religious, or social authority against which appropriateness (what is right or wrong) of an individual's behavior is judged” (BusinessDictionary. Norm, 2017);
- ✓ rules “are viewed as obligatory by the broad by majority of people living under them” (Philpott, 2010).

Norm as a behavior: it's the discipline, the order – the certain model of human behavior, which corresponds to the existing norms of law and moral in society, or the requirements of some organization, and also – the set of rules and norms of behavior itself; sometimes – the punishment; collective behavior – there are the actions of body or some people in the group, in the crowd, which may be characterized by deviations from the norms of behavior, by deindividuation, by unpredictability and spontaneity, etc.

System of norms: code of ethics, code of conduct, honor code (code of ethics) – the formal presentation of the principles of moral behavior in a particular organization or group; etiquette – code of conduct in the community, on official events, in relations with officials and other similar situations; organizational culture – system of values, norms and rules, regulating the interaction between people in this organization.

The synthesis of all above allows making the conclusion that the norm is an example (model, order, rules) of conduct; sometimes is referred to a system, to a set of such examples, regulations and rules. The purpose of norm is to regulate the relations between people, to maintain a certain order. At the same time the mechanism of norms is wrote out insufficiently clear: sometimes it's regarded as sanctions, thereat noting that they aren't an obligatory component of a norm (or of mechanism of norm's implementation), but mostly about mechanism is not mentioned at all.

To formulate the structure of norm, we can use the most detailed and precise definition of this notion, taken from the branch of law (however, it concerns exceptionally the formal norm) – it's the legal standard.

The commonest view on legal norm considers her structure that includes 3 components:

- 1) the hypothesis that defines the spectrum of circumstances and individuals, covered by the norm (by its concretization level the hypothesis can be defined absolutely or relatively);
- 2) the disposition, which establish the rules of conduct (one can point out the dispositions, which give the right, which require and which prohibit certain action);
- 3) sanctions that include coercive measures for rule-breakers (depending on the degree of determinateness, the sanctions can be defined absolutely or relatively, as well as they can be alternate);
- 4) in fact the lawyers don't a view on the structure of legal norm. In particular an authority of science on the law N. Korkunov followed 2-links structure of legal norm and not considered that the sanction is component of norm (Korkunov, 2000, 176-180). He thought she is relatively independent variable (event) regarding structure of legal norm, as separate "means of coercion" (Korkunov, 2000, 187-191).

Though it seems that namely the definition of legal standard served to define the structure of norm: (Crawford and Ostrom, 1985, 584), where there are the following components of norm:

- ✓ attributes that define a body to which extends the norm;
- ✓ action character in the norm (can, should or should not);
- ✓ goal;
- ✓ conditions under which the rule is valid;
- ✓ sanctions (they can be formal: legal, fixed in legal standard, or informal: social, based on ostracism).

In this definition there are some poor places to note:

- ✓ attributes are uniquely positioned as individuals, while the norms can relate, for example, legal entities;
- ✓ conditions of norms are given too general. Indeed, the conditions are the predicates, containing in their variables both the attributes – subjects of norms, and certain objects;
- ✓ the question about including sanctions to the norms is controversy; the same concerns the goal – as one can see above, most definitions of norm doesn't specifically mention the goal and it seems quite logical.

2. The formal definition of norm

Below we propose the formal definition of the notion “norm”, which helps to dispose the specified shortcomings, and also avoid uncertainty and descriptiveness of formulations.

Let us introduce area X , on which the norm enlarges – the domain of norm's definition. Structurally each element $x \in X$ is a set of pairs of component – properties: where $X = \{(u;v)\}$, where u – is the property name, v – its value.

We'll separate the two segments of description (assertion) of norm: static (declarative) – defining the possible allowed states and allowed sets of values X , and dynamic (imperative) – description of change X , description of norm's tools.

Static definition of norm. For norm is typical the postulating a certain state of affairs, conditions of existing of elements X , which are given by a predicate R over X domain of definition $R(X)$ is {false; true} (or {0, 1}).

The predicate $R(X)$ will complete the predicate $\bar{R}(X)$:

$$\bar{R}(X): R(X) \cup \bar{R}(X) = I; R(X) \cap \bar{R}(X) = \emptyset.$$

If $R(X)$ describes a set of allowed, normal positions of values of properties of elements X , then $\bar{R}(X)$ – describes a set of unauthorized, abnormal positions.

Dynamic definition of norm. Generally, X is dynamic, it can change the number and value of certain components of its elements, the number of these elements. These changes can be made with help of a set of tools – operators F :

$\forall f : f \in F : f(X \rightarrow X)$. Generally, for each operator f there are four possible fundamental alternative variants for generation of X :

- ✓ for some values of X , for which $R(X)$, is correctly, the generation of f keeps condition of R : $R(X) \Rightarrow R(f(X))$ – refers to a group of operators $f(X)_{11}$;
- ✓ for other – breaks: $R(X) \Rightarrow \neg R(f(X))$ – a group of operators $f(X)_{10}$;
- ✓ for some values of X , for which is $R(X)$ not fulfilled, f restores R : $\neg R(X) \Rightarrow R(f(X))$ – group $f(X)_{01}$;
- ✓ finally, if the condition $R(X)$ is not fulfilled either before or after the generation f – group $f(X)_{00}$ (Table 1).

Table 1. Variants of influence on predicate $R(X)$ of operators F

$R(X) \backslash R(f(X))$	no	yes
no	$f(X)_{00} : \neg R(X) \Rightarrow \neg R(f(X))$ – do not concern the norm	$f(X)_{01} : \neg R(X) \Rightarrow R(f(X))$ – renewal of norm
yes	$f(X)_{10} : R(X) \Rightarrow \neg R(f(X))$ – norm deviation	$f(X)_{11} : R(X) \Rightarrow R(f(X))$ – maintain of norm

The last variant does not have anything to do with norm – it included to complete definition of the situation. Obviously, that

$$f(X)_{00} \cup f(X)_{01} \cup f(X)_{10} \cup f(X)_{11} = T$$

Regarding the generations the elements of X are divided into two types:

- ✓ those, who have some discretion – are able to modify their (and not only their) value of properties – subjects of norm, and also
- ✓ those, who aren't able to act independently – objects of norm or environment.

Besides the actions of the subjects of norm, the values of parameters of set X can vary by under the influence of external forces – personal (subjects that do not belong to X) or non-personal (forces of nature, natural flow of time, the activities of other forces, whose personalization in this context isn't essential).

Deviation (such changes as $R(X) \Rightarrow \neg R(f(X))$), as any other change, occurs naturally or because of some external influences (externalities), or conscious actions of individual elements of the set X . Actually, to correct this situation the generation $\neg R(X) \Rightarrow R(f(X))$ is provided.

The supraliminal actions, intended to deviate (third factor of norm deviation) shall be called as opportunism or opportunistic behavior. Obviously, to implement the opportunistic behavior there is a specific set of tools $f(X)_{10} : R(X) \Rightarrow \neg R(f(X))$. In the case of opportunistic actions besides the tools of norm's renewal $f(X)_{01} : \neg R(X) \Rightarrow R(f(X))$ (see Table I), the sanctions – a set of operators – are provided $f(X)_s : R(X) \Rightarrow R(f(X))$. They are designed to reduce the individual utility of subjects $x \in X$, who started to practice the opportunism: “norm of behavior is supported by the prohibitions system, imposed ... by traditions, by thoughts of “common sense” and by special contracts, agreements, codes, rules, etc” (DTMSS, 1999). To norm-breakers $x \in X$ the utility reducing can occur through: change of values v of their certain components; exception from their structure the certain components ($u; v$); their exception from X .

Thus, formally, the norm can be defined as a set

$$N = \{X, R(X), f(X)_{11}\} \cup \quad (1)$$

$$\cup \{X, R(X), f(X)_{01}, f(X)_{11}, f(X)_s\}; \quad (2)$$

$$\forall x : x \in X : x = \{(u; v)\}, \quad (3)$$

$$f(X)_{11} : R(X) \Rightarrow R(f(X)), \quad (4)$$

$$f(X)_{10} : R(X) \Rightarrow \neg R(f(X)), \quad (5)$$

$$f(X)_{01} : \neg R(X) \Rightarrow R(f(X)), \quad (6)$$

$$f(X)_s : R(X) \Rightarrow R(f(X)), \quad (7)$$

As one can see, the above definition of formal defining includes the definition of such procedures as deviations from the norm, norm's renewal and sanctions. The conceptual question appears: should they refer to norm? In some areas (primarily in

mathematics, law and sociology) there are the definition of norm as a deviation (from standard), from average; the behavior, deviating from social norms and social values (as reflected, for example, in (DTMSS, 1999)). This approach is argued by the fact, that the norm creates the possibility to neglect it (because, if the behavior wasn't normalized, there would be nothing to break). Thus in the notion of norm is introduced the possibility to away from it (the following principle: "it's possible, but there is no point").

In this case (if the norm, and deviation from it relate to norm) it's logically to refer to norm also the sanctions for deviation from it, as reflected in particular in the article of Crawford and Ostrom (1995); in addition, the sanctions are referred to norm by mostly accepted definitions.

However, it seems that this approach is contrary to logic. Obviously, the deviation from the norm (no-norm) can be defined as all that is not the norm. That is, unification of norms and no-norms covers all possible (and impossible) situations, and all this, by definition, should be considered the as the norm. But it's impossible to deviate from such "norm"! And the question appears: what then should be considered as a deviation from the norm? This logical paradox authorizes to separate the notion "deviation from the norm" from the notion "norm". A similar conclusion is correct for the notion "sanctions for deviation". Obviously, when the sanctions are imposed on subjects, who violates certain norm, those subjects become objects of norms, while others become subjects – those, who impose sanctions. Therefore it's logical to assume that sanctions F_S (order of their application, the nature and value), despite the fact that they are operators, such as group of norm maintenance F_{11} , undoubtedly are determined by a certain norm, but not by this one, the violation of which initiates them. The sanctions also concern this norm, but they aren't its part: $f(X)_S \not\subset f(X)_{11}$.

As it's already noted, many authors understand the norm, basing on legal standard's definition, which includes sanctions in structure of the norm. However, in our opinion that is positioned as a norm in jurisprudence more precisely it would be called "space of a norm" – the group of definitions, related to norm. The formal

definition, (1)-(7), presented above, in fact, is also more large: direct definition of the norm is here – (1), (3), (4), and (2), (5)-(7) are related to space of the norm.

The proposed definition of norms in large doesn't contradict the generally accepted definition discussed above, and, thanks to the formal approach, slightly expands and specify them (Table 2):

Table 2. Comparison of norm's Structure for different Definitions

Component of the norm	Crawford & Ostrom's definition	Legal standard's definition	Proposed formal definition
<i>conditions</i>	+	+ hypothesis	+ $R(X)$
<i>objects</i>	– are included into conditions	– are included into conditions	+ is the component of X , but their presence is determined
<i>subjects</i>	+	– are included into conditions	+ is the component of X , but their presence is determined
<i>nature</i>	+	+ disposition	– is a specific case $F(R(X))$
<i>goal</i>	+	–	–
<i>renewal of the norm</i>	–	–	+
<i>sanctions</i>	+ are included into norm's structure	+ are included into norm's structure	+ aren't included into norm's structure

✓ conditions under which the norm acts, are described by predicate $R(X)$ over norm's domain of definition X , which contains both subjects of norm – the attributes and object of norm, which are generally not separated from conditions in widespread definitions;

- ✓ $R(X)$ is a predicate in general form, so it certainly includes the classic types of action nature in the norm –“ can”, “should” or “should not”, but not only those ones;
- ✓ there no special predicates to define the goal of the norm, but as can be seen in the widespread definitions, the idea of goal also meets rarely;
- ✓ the sanctions are put into consideration (the operator F_S), although it underlines that they aren't a part of the norm;
- ✓ except the sanctions, the definition of norm and related notions are completed by operators of deviation and renewal of the norm;
- ✓ the set of operators, that have no relation to the norm, is introduced into consideration; this allows determining the place of concrete norm in a common system of predicates over these objects and subjects.

3. The definition of institution

The term *institution*, *institutional* allow fairly broad interpretation: general meaning institution is establishment, certain adjustment, which can be connected not only by the economic, but also [by] other field of work.

Let's some defines the category of “institution”:

- ✓ “the institutions – that is to say the habits of thought – under the guidance of which men live are in this way received from an earlier time” (Veblen, 1899, 191);
- ✓ “rules of the game” or “humanly devised constraints” with enforcement (North, 1990, 3);
- ✓ the view of norms as the rules of the game is enough typical for the new institutional economic theory; an alternative view on the concept of institutions as “rules of the game” is the concept of institutions as equilibria (stable behavioral strategies in games) (Hurwicz, 1996);
- ✓ “institutions are rules, enforcement characteristics of rules, and norms of behavior that structure repeated human interaction” (North, 1989);
- ✓ institutions is interpreted as social rules (Chavance, 2008, 58);

- ✓ formal and informal institutions as equivalent to formal and informal rules (Chavance, 2008, 58);
- ✓ “institutions are the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)” (North, 1991);
- ✓ “the economics of organizations [...] generally consider institutions as the environment or framework of organizational activity”¹ (Chavance, 2001, 85);

The analysis of listed definitions shows their general similarity: “institution”, “establishing”, “setting”, “set of rules”, “constraining frames” in this context well can be considered synonymous. It is not surprising, that sometimes categories *norm* and *institution* are considered identical each other (see e.g. the define of Mearsheimer (1995): “Institutions are a set of rules that stipulate the ways in which states should cooperate and compete with each other”).

Comparison of North’s characteristics of the institutional constrains (North, 1990, 12) and the definition “behavioral norm” (DTMSS, 1999) also shows a [fundamental] similarity of the categories *norm* and *institution*. However need to use different terms for one concept is in doubt. Usually we talk about institution if it is referred to the set, system of rules, and the term *norm* be applied to separate (local) element. As it can argue, that the categories *norm* and *institution* have the same nature, but they different degree of systemacity.

On this basis let’s define the category *institution* in its relation to the category *norm*:

the institution is the system, i.e. the set of norms, interrelated by purpose, object, subject of use or by another way.

$$(I = \{N\}).$$

¹ “L’économie des organisations [...] considère en général les institutions comme l’environnement ou le cadre de l’activité organisationnelle” (fr.)

Therefore the institution is collection of norms, and the norm is the base, “atomic” element of institution. Let’s consider indivisibles rules (“black box”) as norms, complex (eventually divisible) ones – as institutions. The same formation could be considered as “black box” and norm, as well as considered as an institution consisted of other (smaller) norms.

Conclusions

The formalization of notion “norm”, proposed in this paper, made by mathematical apparatus of theory of sets and Boolean algebra, allowed precise definition of this notion. Its comparison with the widespread ones proves their similarity, while a formal approach helps to avoid logical contradictions, common to certain well-known definitions. Naturally the norm description is extended by defining the norm space – a group of notions related to the norm. It’s proved that these notions, despite the opinion of some researchers, shouldn’t be considered as components of the norm.

The methods of estimation the endogenous performance of formal norm (rule), basing on an analysis of its internal characteristics, but not on the results of its application and determines the quality of the norm at three ways: norm as itself; accordance of the new norm to current ones; easiness of its compliance and easiness of its control, are proposed.

Those methods allow identifying the potential problem points of the norm that can cause difficulties in its future use.

The obtained results can have the following variants of application and development.

Using the proposed methods of estimation of formal norm in areas, where ones are extensively developed (e.g. legislation), could increase the quality of developed norms, thus reducing costs for their future support. For the already existing norms these methods allow to determine their weaknesses, to elaborate guidelines for their replacement or correction and at least to be ready for fast response to the norms “failure”, or its rejection by agents, and their attempts to avoid it. Similarly, tools of

formalization of norms may be useful in examination of institutional dynamics – namely, the process of institutional change.

In applied institutional researching sometimes the problem of evaluation both quality and efficiency of norms and institutions (e.g. quality of elaboration the legislative framework) arise; item the study of transformation processes causes raises the question about naturalizing of imported institutions in the national institutional environment and how far easy they can be imported etc. Proposed definitions of norms and institutions could be useful for this research.

The development of a methodology for evaluating the formal norm should be directed, first of all towards the development of quantitative assessments of the effectiveness (quality) of the norm, the mutual compliance of different norms etc.

Similarly tools of formalization of norms and institutions could be useful for research of institutional dynamics – the process of institutional change.

The qualitative analysis of these issues is impossible without a clear definition of basic categories – that is the issue of this article.

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