



**Tetiana Kondratieva**

PhD in Economics, Associate Professor, Luhansk Taras Shevchenko National University, Ukraine  
2 Oboronna St., Luhansk, 91011, Ukraine, kondrateva-tanya@yandex.ru

## MECHANISM OF SUPPLY FORMATION ON THE INSTITUTIONAL MARKET

### Abstract

**Purpose.** The purpose of the paper is to research mechanism of supply formation on the market of institutions as network goods. **Design/methodology/approach.** We consider the supply of institutions as the amounts of transactions that institutional entrepreneurs are willing and able to guarantee at each of a series of possible prices (transaction costs) during a specific period. The article analyzes the direct dependence of institutional supply and their price. **Findings.** The causes of this relationship are economic interests of institutional entrepreneurs, the institutional possibility concept, increasing costs of additional institutional regulation. Network effects affect supply of institutions in a different way. Critical mass of the institutional network, backward compatibility of institutions, QWERTY-effects are the causes of inverse correlation between institutional supply and the price of institutes. **Practical implications.** Institutional entrepreneurs should create or simulate creation of a critical mass of institute's users for its effective implementation in economic system. New institutional networks should provide new opportunities for economic actors while retaining old, familiar facilities. QWERTY-effect means that the propagation velocity of an institute is more important than its price and quality. **Originality/value.** Changes of institutional supply are the result of both price and network effects. This approach allows us to effectively promote or inhibit the development of specific rules of economic behaviour.

**Keywords:** institute, supply; possibility; network; mass; compatibility; QWERTY-effects.

**JEL Classification:** O17, O20, P21, P30

### Т. В. Кондратьєва

кандидат економічних наук, доцент кафедри економічної теорії та прикладної статистики, Луганський національний університет імені Тараса Шевченка, Україна

### МЕХАНІЗМ ФОРМУВАННЯ ПРОПОЗИЦІЇ НА ІНСТИТУЦІЙНОМУ РИНКУ

**Анотація.** У статті проаналізовано причини прямої залежності інституційної пропозиції від ціни інституту, а саме економічний інтерес інституційних підприємців, концепцію інституційних можливостей, зростання витрат на додаткове інституційне регулювання. Досліджено вплив мережових ефектів (накопичення критичної маси, зворотна сумісність, QWERTY-ефекти) на формування інституційної пропозиції. Розроблено механізм, що пояснює процеси формування пропозиції інститутів економічними суб'єктами.

**Ключові слова:** інститут, пропозиція, можливості, мережа, маса, сумісність, QWERTY-ефекти.

### Т. В. Кондратьєва

кандидат экономических наук, доцент кафедры экономической теории и прикладной статистики, Луганский национальный университет имени Тараса Шевченко, Украина

### МЕХАНИЗМ ФОРМИРОВАНИЯ ПРЕДЛОЖЕНИЯ НА ИНСТИТУЦИОНАЛЬНОМ РЫНКЕ

**Аннотация.** В статье проанализированы причины прямой зависимости институционального предложения от цены института, а именно экономический интерес институциональных предпринимателей, концепция институциональных возможностей, рост затрат на дополнительное институциональное регулирование. Исследовано влияние сетевых эффектов (накопление критической массы, обратная совместимость, QWERTY-эффекты) на формирование институционального предложения. Разработан механизм, объясняющий процессы формирования предложения институтов экономическими субъектами.

**Ключевые слова:** институт, предложение, возможности, сеть, масса, совместимость, QWERTY-эффекты.

**Introduction.** Institutional changes are very important for Ukrainian economy for several reasons. Firstly, many of the institutions of market economy in Ukraine are permanently transitional institutions. Secondly, the transformation of national economic system coincides with the global processes of globalization and informatization of economic relations. In such conditions, the activity of institutional entrepreneurs (state, special interest groups, etc.) often is inefficient.

**Brief Literature Review.** The works of Robert Bates (1988) and Elinor Ostrom (2003) are the pioneering research on the issues of institutional supply [1; 2]. A lot of Ukrainian and Russian economists deal with the problem of institutions' market formation and institutional transformations of the post-Soviet space – e.g. V. Volchik, V. Dementiev, R. Nureev & V. Tambovtsev (2005) [3]. O. Soskin (2013) investigates how the model of state regulation in conditions of the world economy and national economies transition from determined vertical-hierarchical systems to controlled chaos systems [4]. Therefore, there is opportunity and necessity of further study of the problem of institutional supply's formation.

**The purpose** of the paper is to research the supply formation mechanism in the market of institutions as network goods.

**Results.** R. Bates (1988) was the first who paid attention to the problem of the formation of an institutional supply. He said: «Institutions are demanded because they enhance the welfare

of rational actors. The problem is: Why are they supplied? ... Even if the payoffs were symmetric and all persons were made better off from the introduction of the institution, there would still be a failure of supply, since the institution would provide a collective good, and rational individuals would seek to secure their benefits for free. The incentives to free-ride would undermine the incentives to organize a solution to the collective dilemma. It is subjected to the very incentive problems it is supposed to resolve» [1, pp. 394-395]. Elinor Ostrom (2003) investigated this issue in more detail, using empirical data. She gave the following example about enterprise created by water producers in California in 1959: «These groundwater pumping businessmen invested heavily supply of institutions. They created new private associations. They paid for costly litigation to allocate water rights. They drafted legislation, had it introduced to the state legislature, and gained sufficient support from other water enterprises to get the legislation passed. They created special districts to tax all the water they withdrew from the basins, as well as the property overlying the area. They spent seemingly endless hours informing themselves about the structures of their basins, the various concerns and intentions of all parties, and future possibilities» (Ostrom, 2003) [2, p. 136].

Definition of the category «supply of institutions» is still open to question for institutional economists. Most frequently supply of institutions is measured by costs of their establish-

ment and operation. In this case one-time costs of the establishment of institutions include:

- costs of related institutions' creation;
- costs of the new behavior rules adoption;
- costs of reaching a compromise solution;
- costs of politicians' and bureaucrats' training (Valevich, 2002) [5].

Fixed costs of functioning of economic behavior's rules are the costs of monitoring formal rules of economic behavior and the costs of informing about new formal institutions (Valevich, 2002) [5].

We use the approach of V. Tambovtsev (2005) to investigate the mechanism of supply's formation on the institutions' market. We consider that the supply of institutions depends on «the scale (or level) of a guarantor's readiness to monitor and enforce a rule at a specified price» [3]. Therefore the supply of institutions is the amounts of transactions that institutional entrepreneurs are willing and able to guarantee at each of a series of possible prices (transaction costs) during a specific period. In this case, transaction costs of using the institution to regulate economic transactions are its price.

The reasons for direct relationship between price and supply of institutions are similar to the logic of a commodity market.

1. An economic interest. Any institutional entrepreneur is guided by the benefits of using existing rules and/or searching and generating a set of new rules of economic behavior. Even the state as an institutional guarantor cannot ignore the economic incentives in most cases. U. Valevich (2002) says that economic agents have to pay a certain price for creation and using institutions. This price at least should cover the costs of institutions' production by public authorities and governance [5]. Other institutional entrepreneurs depend on the price of institutions even more. The transaction costs of using institutions are incomes for the guarantors of economic behavior's rules. Consequently, the greater the income, the greater the volume of transactions that the guarantor is willing and able to provide.

2. The concept of production possibilities and opportunity costs is also applicable to institutions. S. Djankov, E. Glaeser, R. La Porta, F. Lopez-de-Silanes, and A. Shleifer (2003) [6] applied this approach in 2003 for the first time. The researchers considered two alternatives: dictatorship (or order) on the one hand, and chaos, disorder on the other hand. They said: «Disorder refers to the risk to individuals and their property of private expropriation in such forms as banditry, murder, theft, violation of agreements, torts, or monopoly pricing. Disorder is also reflected in the private subversion of public institutions, such as courts, through bribes and threats, which allows private violators to escape penalties. Dictatorship refers to the risk to individuals and their property of expropriation by the state and its agents in such forms as murder, taxation, or violation of property. Dictatorship is also reflected in expropriation through, rather than just by, the state, such as occurs when state regulators help firms to restrict competitive entry. Some phenomena, such as corruption, reflect both disorder and dictatorship. When individuals pay bribes to avoid penalties for harmful conduct, corruption is a reflection of disorder. When officials create harmful rules to collect bribes from individuals seeking to circumvent them, corruption is a cost of dictatorship» [6].

An institutional possibility frontier (IPF) is a graph that shows the different rates of disorder and dictatorship that an institutional system could efficiently maintain. Points along the curve describe the trade-off between disorder and dictatorship. Opportunity cost here shows that disorder in a given economic system cannot be reduced without increasing dictatorship (Figure).

The downward sloping 45 degree line in Fig. holds constant the total social costs of dictatorship and disorder. Its point of tangency with the IPF is the efficient institutional choice for a given economic system. All other points on the curve correspond to the higher amount of costs. The location and the

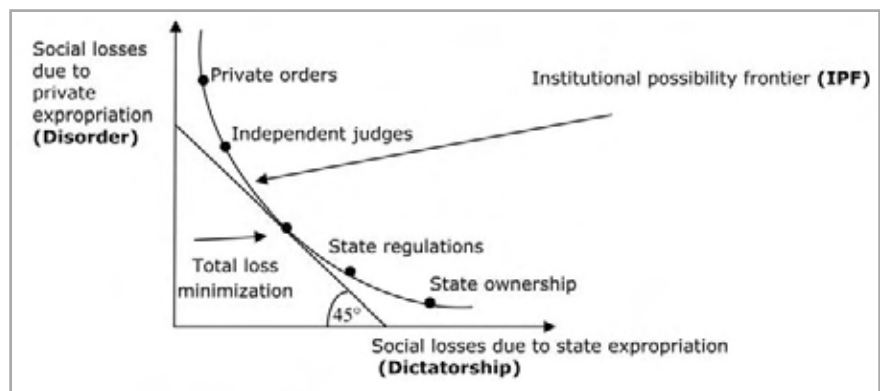


Fig. 1: Educational structure of mayors (in %)  
Source: Own research

shape of the IPF, and hence the efficient choice, are determined by civic capital (Osadchiy, 2009) [7].

Other researchers believe the location and the shape of the IPF are determined by:

- features of government;
- mentality and economic culture;
- dominant religion;

• amount of available «administrative» resources allocated for the organization of reform processes;

• reality of institutional arrangements, the ability to relatively easily implement them (Ignatova, 2008) [8].

O. Soskin (2013) characterizes the current economic systems in «chaos-dictatorship» coordinates in this way: «The system of national economy increasingly inclines to horizontal network chaos, economic atomization that provides self-organizing, self-employment and self-planning» [4, p. 4].

3. Increasing costs of additional institutional regulation. As shown in Figure, marginal increases in dictatorship produce progressively smaller than reductions in disorder. As argued by S. Djankov and other (2003): «...price controls increase dictatorship by encouraging selective and politicized price-setting by government agents. They also increase disorder by stimulating bribery and queues. If the IPF is not convex, the analysis can be modified, but efficient institutions would obviously never lie in the non-convex region» [6]. But the lower the level of disorder, the more the power you need to eliminate it. Quite correctly, researchers believe that «in the absolute there is no way to eliminate all disorder (remain corruption and nepotism), so institutional possibility frontier is convex to the origin always» (Osadchiy, 2009) [7].

However, there is a reason for which the institutional supply curve is significantly different from a classical supply curve. In this case we cannot use standard neoclassical assumptions «if the supply increases, the value of goods decreases». Network effects affect the institutional market due to the nature of institutional transactions. As argued by V. Tambovtsev (2005), there must take place «a double coincidence of wants»: it is not enough for you just to find someone who has the good you want to acquire (or sell) – he must want to make an exchange by the same rules [1]. So, the value of an institute is affected by how many other economic agents use it. The greater the number of users of an institute, the greater is its value to all users. For network goods supply and demand curves are reversed: supply curve is downward sloping (as marginal costs tend to zero at large intervals), and demand curve has a positive slope because of the direct relationship between a marginal utility change and a network size (Strelets, 2003) [9]. However, the non-linear value growth isn't observed immediately, only after the following principles take effect.

1. Critical mass point. Positive a network effect become significant after a certain network size has been achieved, so networks needed to achieve critical mass to make them worthwhile. According to Metcalfe's law the value of a network is proportional to the square of the number of connected users of the system. So, the utility of large networks, particularly institutional networks, can scale exponentially with the size of the net-

work (Reed's law). Later John Browning notes, the utility of a network multiplies even faster because modern networks, like institutional networks in real life, provide opportunities for complicated three-way, four-way, or many-way connections. «Therefore, when we tally up the number of possible connections in a network we have to add up not only all the combinations in which members can be paired, but also all the possible groups as well. These additional combos send the total value of the network skyrocketing. The precise arithmetic is not important. It is enough to know that the worth of a network races ahead of its input. This tendency of networks to drastically amplify small inputs leads to the second key axiom of network logic: the law of increasing returns... The simplest version goes like this: The value of a network explodes as its membership increases, and then the value explosion sucks in yet more members, compounding the result» (Kelly, 1998) [10, pp. 24-25]. This principle leads to the conclusion with an applied value. We need to create or simulate the creation of a critical mass of users of an institution for effective implementation of the institute in an economic system.

2. The principle of backward compatibility. The new institutional network should provide new opportunities for economic agents while retaining the old, familiar facilities. Michael Katz & Carl Shapiro (1985) believed that the central feature of the market that determined the scope of the relevant network was whether the products of different firms could be used together. The researchers have proved that «firms with good reputations or large existing networks will tend to be against compatibility, even when welfare is increased by the move to compatibility. In contrast, firms with small networks or weak reputations will tend to favor product compatibility, even in some cases where the social costs of compatibility outweigh the benefits. Viewing firms as a collective decision maker, we find that in our model the firms' joint incentives for product compatibility are lower, than the social incentives» [11].

3. Lock-in effects mean that a particular institution is dominant, not because its inherent transaction cost is low or performance is good. An institution is dominant because of it enjoys the benefits of increasing returns to institutional network scale. Institutional lock-in effects may result in the prevalence of sub-optimal institutions despite the existence of more efficient ones. For the mechanism of institutional supply lock-ins mean that in some cases the propagation velocity of an institute is more important than price and quality, as it does not matter, how good is the institute, the main thing is that as many as possible economic agents use it.

As a result of the considered positive network effects, growth of the number of users compensates decreasing price of the institute. It provides income to the institutional entrepreneur, which is sufficient to increase the supply. Therefore, changes of institutional supply are the result of both price and network effects. In the end, we have compensated institutional supply curve. The slope of the compensated curve depends on the scale of the two effects:

$$\left( \frac{\partial S_i}{\partial ATC_i} \right)_{comp} = \frac{\partial S_i}{\partial ATC_i} - \frac{\partial S_i}{\partial NS_i}, \quad (1)$$

where  $\left( \frac{\partial S_i}{\partial ATC_i} \right)_{comp}$  – compensated changes of institutional supply as the result of both price and network effects;

$\frac{\partial S_i}{\partial ATC_i}$  – change in supply of the institute i as a result of changes in prices of the institute i (aggregate transaction cost);

$\frac{\partial S_i}{\partial NS_i}$  – change in supply of the institute i as a result of network effects (changes in the network size).

**Conclusions.** Thus, supply of institutions is the amounts of transactions that institutional entrepreneurs are willing and able to guarantee at each of a series of possible prices (transaction

costs) during a specific period. Transaction costs of using the institution to regulate economic transactions are its price. Institutions have characteristics of network goods, as the utility that a given economic actor derives from the good depends upon the number of other users who are in the same «institutional network» as is he or she. Changes of institutional supply are the result of both price and network effects.

When institutional entrepreneurs form institutional supply, they must take into account the network effects:

- institutional entrepreneurs should create or simulate the creation of a critical mass of institute's users for it's effective implementation in economic system;
- new institutional networks should provide new opportunities for economic actors while retaining old, familiar facilities;
- in some cases the propagation velocity of an institute is more important than its price and quality.

## References

1. Bates, R. H. (1988). Contra Contractarianism: Some Reflections on the New Institutionalism. *Politics and Society*, 16, 387-401.
2. Ostrom, E. (2003). *Governing The Commons: The Evolution of Institutions for Collective Action*. USA, Cambridge: Cambridge University Press.
3. Arhieerev, S. I., Belousenko, M. V., Volchik, V. V. et al. (2005). In R. M. Nureev, & V. V. Dementiev (Eds.). *The post-Soviet institutionalism*. Donetsk: Kashtan (in Russ.).
4. Soskin, O. (2013). Role of state regulation in formation of modern economic model: changing imperative in the conditions of chaos. *Ekonomichnij Chasopis-XXI (Economic Annals-XXI)*, 1-2(1), 3-7 (in Ukr.).
5. Valevich, U. (2002). Institutional equilibrium. *Ekovest*, 2, 276-300 (in Russ.).
6. Djankov, S., Glaeser, E., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2003). The New Comparative Economics. *Journal of Comparative Economics*, 31(4), 595-619.
7. Osadchij, N. M. (2009). *Formation of relationships between the state and big business in foreign countries and in Russia* (Unpublished doctoral dissertation). Lomonosov Moscow State University, Moscow, Russia (in Russ.).
8. Ignatova T. V. (2008). *Institutional bases and methods for measuring the quality of governance*. Retrieved from <http://www.rusrand.ru/konf1/2ignatova.pdf> (in Russ.).
9. Strelets, I. A. (2003). Networked Society and an information resource as a network good. *Vestnik MGU (MSU Herald, Series 6. Economics)*, 5, 3-18 (in Russ.).
10. Kelly, K. (1998). *New Rules for the New Economy. Ten Radical Strategies for a Connected World*. New York: Viking Peguim.
11. Katz, M., & Shapiro, K. (1985, June). Network externalities, competition and compatibility. *American Economic Review*, 75(3), 424-440.

Received 01.10.2013

## References (in language original)

1. Bates R. H. Contra Contractarianism: Some Reflections on the New Institutionalism / R. H. Bates // *Politics and Society*. – 1988. – No. 16. – P. 387-401.
2. Ostrom E. Governing the Commons: The Evolution of Institutions for Collective Action (Political Economy of Institutions and Decisions) / Elinor Ostrom. – USA : Cambridge University Press, 2003. – 280 p.
3. Постсоветский институционализм / [Архиев С. И., Белоусенко М. В., Вольчик В. В. и др.]; под ред. Р. М. Нуреева, В. В. Дементьева. – Донецк : Каштан, 2005. – 480 с.
4. Соскін О. І. Роль державного регулювання у формуванні сучасної економічної моделі: зміна імператива в умовах хаосу / О. І. Соскін // *Економічний часопис-XXI*. – 2013. – № 1-2(1). – С. 3-7.
5. Валевиц Ю. Институциональное равновесие / Ю. Валевиц // *Эковест*. – 2002. – № 2. – С. 276-300.
6. Djankov S. The New Comparative Economics / S. Djankov, E. Glaeser, R. La Porta, F. Lopez-de-Silanes, A. Shleifer // *Journal of Comparative Economics*. – 2003. – Vol. 31. – No. 4. – P. 595-619.
7. Осадчий Н. М. Формирование отношений государства и крупного бизнеса в зарубежных странах и в России : дис. ...канд. экон. наук : спец. 08.00.14 «Мировая экономика» / Н. М. Осадчий. – М., 2009. – 164 с.
8. Игнатова Т. В. Институциональные основания и методы измерения качества государственного управления [Электронный ресурс]. – Режим доступа : <http://www.rusrand.ru/konf1/2ignatova.pdf>
9. Стрелец И. А. Общество сетевых структур и информационный ресурс как сетевое благо / И. А. Стрелец // *Вестник МГУ. Серия 6. Экономика*. – 2003. – № 5. – С. 3-18.
10. Kelly K. New Rules for the New Economy. Ten Radical Strategies for a Connected World / K. Kelly. – New York : Viking Peguim, 1998. – 186 p.
11. Katz M. Network externalities, competition and compatibility / Michael L. Katz, Carl Shapiro // *American Economic Review*. – 1985. – Vol. 75. – No 3. June. – P. 424-440.

Стаття надійшла до редакції 01.10.2013