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Needs, Modes and Efficiency of Economic Organizations and Public Interventions in Agriculture

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ABSTRACT

There has been a fundamental development in theory and understanding of market, private, collective and public organizations in recent years. This paper incorporates achievements of the interdisciplinary New Institutional and Transaction Costs Economics (combining Economics, Organization, Law, Sociology, Behavioral and Political Sciences) and suggests a framework for assessing the needs and efficiency of economic organizations and public interventions in agriculture.

Our new approach includes: study of farm and other agrarian organizations as a governing rather than production structure; assessment of comparative efficiency of alternative market, contract, internal, and hybrid modes of governance; analysis of level of transaction costs and their institutional (distribution and enforcement of de-facto rights between individuals, groups, organizations), behavioral (agents preferences, ability, bounded rationality, tendency for opportunism, risk aversion, trust), dimensional (frequency, uncertainty, assets specificity, and appropriability of transactions), natural, and technological factors; determination of effective horizontal and vertical boundaries of farms and other agrarian organizations; specification of the economic role of government and the needs for public interventions in agrarian sector; assessment of comparative of alternative forms of public involvement in agrarian sector (partnership, regulation, taxation, assistance, provision, in house organization, fundamental property rights modernization).

The paper provides new powerful tools for understanding the agrarian organizations and their efficiency, and for improvement of public policies, collective actions, farming and business strategies, and academic analyses in that important sector of social life.

Key words: market, private and public modes of governance, efficiency of farms and agrarian organizations, agricultural policies, transaction costs, New Institutional Economics

1. INTRODUCTION

The problem of efficiency of economic organizations in general, and in agriculture in particular, has been among the most topical in academic, political, business and public debates in last several decades [Coase 1937; Eggertsson; Furuboth and Richter; Harvey and Sykuta; Sporleder; Williamson]. That issue has been especially important in transitional countries undertaking fundamental reforms in institutional and organizational structures of agrarian sector in the last 20 years [Csáki, C. and Lerman; Gortona and Davidova; Mathijs and Swinnen].

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The problem of efficiency of agrarian organizations is usually simplified and limited to the “productivity of resources” (“factors of production”) in various types of farms. Moreover, comparisons are made of levels of efficiency across farms of different type, subsectors and countries independent to the specific economic, institutional or natural environment. Besides, question of efficiency is often politicized as unilateral priority given to a particular type of organization - free market, private farming, family farm, cooperative, public etc. In all this analysis, the public intervention is justified and called for to correct rare cases of market deficiencies – “tragedy of commons”, “negative externalities”, income disparities etc.

Broadly applied traditional approach can not give an answer to the fundamental question: *why there exist so many organizations of different type and size in a particular country, subsector etc.* performing with a great variation in efficiency. For instance, in Bulgaria there have been highly sustainable “inefficient” organizations throughout transition now such as unproductive subsistence and semi-market farms, production cooperatives with profitability several times lower than private farms, inefficient contractual arrangements etc. [Bachev 2010a]. Neither the traditional approach is able to assess the effective needs and forms for public intervention or explain numerous “public failures” in the agrarian sector around the world.

The New Institutional and Transaction Costs Economics is a new developing methodology which explains existence and efficiency of economic organizations with their role to maximize transaction benefits and minimize transaction costs [Coase 1937; Furuboth and Richter; Williamson]. Divers market, private, contract, public, and hybrid modes are considered as alternative governance (rather than production) structures – forms for governing relations between different agrarian agents in a specific market, institutional, technological and natural environment.

This paper incorporates achievements of that new developing interdisciplinary concept (combining Economics, Organization, Law, Sociology, Behavioral and Political Sciences) into analysis of agrarian organizations, and suggests a framework for assessing the needs and efficiency of economic organizations and public interventions in agriculture.

The ultimate goal is to assist the understanding of agrarian organizations and their efficiency, and provide new tools for improvement of public policies, collective actions, farming and business strategies, and academic analyses in that important sector of social life.

2. Why there are (so many) organizations in agriculture?

The traditional approach

Broadly applied traditional approach for evaluating efficiency of economic organizations is based on the assessment of *efficiency of production costs* and *productivity of employed resources*. Accordingly, a great number of indicators are used to express the efficiency of an organization through “technical productivity” of factors (land, labor, capital etc.), rate of return (pay-back, profitability) on current and long-term expenditures etc.

In more sophisticated (Neoclassical) models the criteria for assessment of efficiency of an organization is derived from the equilibrium condition of the entire economic system - when marginal benefits are equalized with the marginal costs [Pigou]. In such simplified

world the entire activity of individual agents (producers, consumers etc.) is effectively governed (coordinated, stimulated) by the single *free market* mode. As Eggertsson points out "It is a central characteristic of welfare economics that outcomes derived from the basic neoclassical model are used as a criterion of efficiency. Outcomes that deviate from outcomes in model based on fully defined exclusive rights and costless transactions are called "inefficient" [Eggertsson].

According to the traditional approach, the organizations using resources with different (higher, lower) from the marginal productivity are inefficient. For instance, if a farm has a higher productivity than the social level (employing resources more effectively than other organizations) but it does not further invest resources to explore the effective internal potential - then it is inefficient. Contrary, if a farm is performing with a lower productivity, it means that it integrates more resources than it can effectively manage (which could be effectively used by others), and therefore it is inefficient.

Furthermore, inefficiency of market and private modes is easily detected and effectively corrected through appropriate government interventions. Thus there is no economic rationality for market, private sector and/or public failures.

The traditional approach does not answer the fundamental question: *why there exist so many organizations with different productivity of resources utilization*. If efficiency of a particular organization is low, there will always be a private or social mechanism (competition, public intervention) for reallocation of resources to more effective application - optimization, specialization, extension, or liquidation of that organization. In a foreseeable long run there will exist only "effective" organizations, which govern resources on (or close to) the socially acceptable level of efficiency.

What is more, the traditional approach estimates different organizations without even looking for answering the question: *why there exist so big variety (types) of economic organizations in agriculture* - one-person farms, group farms, cooperatives, firms of different kind, subsistent farms, small and large farms, contractually or fully-integrated forms, public and hybrid modes etc.

The new approach

The New Institutional and Transaction Costs Economics explains existence of diverse economic organizations in agriculture with their role to *govern transactions between individual agents and economize on transaction costs* [Harvey and Sykuta; Sporleder]. Carrying out individuals exchanges (land and labor supply; marketing of output and services etc.) is usually associated with significant (*transaction*) costs. For instance, there are costs for studying and complying with various institutional requirements (laws, standards, informal norms); for finding best prices and partners; for negotiating conditions of exchange; for contract writing and registration; for enforcing negotiated terms through monitoring, controlling, measuring and safeguarding; for disputing, including through a third party (court system, arbitration or another way); for adjusting or termination along with the evolving conditions of exchange etc.

One of the fundamentals of the economic theory (and practices) is that division and specialization of labor, and related exchange and cooperation, open up enormous opportunities for increasing productivity and welfare of individuals and society. It let

producing additional value (better resource management, bigger output, maximum economies of scale and scope) and creates incentives for deepening individuals specialization and exchanges.

However, the specialization and exchange is also associated with *additional (transaction) costs*. The genial insight of Coase that there are “costs of using the price mechanism” [Coase, 1937] reshaped fundamentally the modern economic thinking. The high costs of outside exchange make it more profitable to carry out division and cooperation of labor (a transaction) within an organization (firm, group farm etc.) instead across the market. For instance, a specialized livestock farm organizes internally a crop (forage) production activity (hiring additional labor and farmland) because of the significant costs and risks for market procurement of forage.

Nevertheless, the internal management of transactions is also associated with costs (for directing, stimulating and supervising hired labor; for coordination and controlling activity of partners) which restricts unlimited expansion of the borders of an (internal) organization. Thus *a transaction (activity) will be carried in an organization if the costs are lower than for governing that transaction across market or in another organization*.

Consequently, the distribution of overall (agrarian) activities between different farms, agrarian organizations, and markets will be determined by the *comparative costs for using various governing arrangements as the most efficient one(s) (minimizing internal and external transaction costs) will tend to prevail* [Bachev 2004]. Ultimately, emergence, existence, evolution and the size of any free choice (contractual) economic, professional, political etc. organization could be explained by transaction cost minimizing (rather than technological) reason [Williamson].

The “discovery” of transaction costs significantly changed the way the economic problem (the “effective allocation of resources”) is addressed and solved. As Dahlman underlines it: “Indeed it is obvious that once there is shift from a “frictionless” universe scarce resources have to be used to effect transactions, protect property rights and so on. This means that system’s total resource endowment can no longer be devoted solely to the production of normal commodities” [Dahlman].

Thus, the economic efficiency of agrarian organizations should take into account not only *their capacity to minimize production costs, but also their ability to economize on transaction costs*. While the *production costs* could be defined as cost associated with proper technology (“combination of production factors”) of certain farming, servicing, environmental conservation etc. activity, the *transaction costs* are the costs for governing the economic and other relations between individuals (for coordination of activity, for protection and exchange of various rights etc.). Moreover, both (*current*) costs for using the individual economic organizations and the *long-term* costs for their development (initiation, maintenance, modernization, liquidation) have to be taken into account [Bachev 2004].

If execution of activity and exchange was not associated with transaction costs (“world of *zero* transaction costs”) then the mode of organization would have no economic importance [Coase; Williamson]. Individuals would govern their relationships with the *same (equal) efficiency* though *free market* (adapting to price movements), and *private modes* of different types (contracts, firms), and *collective decision making* (cooperative, association), and in a *nationwide hierarchy* (a single private or state company). Then technological opportunities for economies of scale and scope (the maximum productivity of resources,

“internalization of externalities”) would be easily achieved [Coase 1960]. All information for the effective potential of transactions (optimization of resources, meeting various demands, respecting assigned and transferred rights) would be costlessly available to everybody, and individuals would costlessly define new rights, and protect their (absolute² and contracted) rights, and trade owned resources (and products) in mutual benefit until exhausting the possibilities for increasing productivity (situation known as “Pareto optimum/efficiency”).

However, often the high transaction costs make it difficult or block otherwise efficient (mutually beneficial) for all parties activity and exchange. For instance, despite the great pay-off of investments in agrarian research and innovation, the market and private agents do not organize such activity in a sufficient scale because of their high uncertainty and low market and private appropriability [Bachev and Labonne].

Since carrying out agrarian activity is connected with transaction costs, the *rational agent will seek, chose, and develop such modes for organization of his activity and exchanges which maximize his transacting benefits and minimize associated costs.*

The type of economic organization becomes crucial since various forms give *unequal* possibilities for participants to explore technological opportunities (economies of scale and scope, non-separability of activity), coordinate and adapt transactions, stimulate an acceptable behavior of others (counterparts, dependents), protect their rights and investments from unwanted expropriation. Therefore, *in the long-run inefficient forms will be abandoned and only effective modes for organization of agrarian activity and exchange will dominate.*

Transaction costs minimizing helps us understand the reason of emergence and the efficiency of a great variety of agrarian organizations in the modern world – the economic boundaries of farms (“make of buy decision”; the extend of internal division and specialization, and product diversification); divers contractual arrangements and type of coalitions (partnerships, firms, cooperatives); economic needs for cooperation with competitors (in inputs supply, marketing, lobbying etc.) or vertical (downstream, upstream) counterparts; joint ventures; pace and limits of development of agrarian markets etc.

What is more, the efficiency of a particular organization can hardly be assessed without analyzing the efficiency of *complementary* and/or *competing* organization(s). For instance, the “high” efficiency of small-scale farms and the producers (inputs supply, marketing) organizations in most countries can not be properly evaluated without analyzing their high complementarities³. Furthermore, depending on the dominating public organizations (public provision, support measures, tax preferences etc.), the individual market and/or private organizations would have quite dissimilar efficiency for different agrarian agents.

Factors for organizational choice

Different governance forms are *alternative* but not equal modes for organization of transactions - they have *different features* (advantages *and* disadvantages) to coordinate, control, and stimulate (maximize benefits of, minimize costs on) transactions [Williamson].

The *free market* has a big coordination and incentive advantages (“invisible hand of

² determined by dominating *institutional environment* [Furuboth and Richter].

³ e.g. the high efficiency and sustainability of small scale subsistence and semi-market farms, and production cooperatives in transitional Bulgarian agriculture [Bachev 2004].

market”, “power of competition”), and provides “unlimited” opportunities to benefit from specialization and exchange. However, market governance could be associated with a high uncertainty, risk, and costs due to price instability, great possibility for facing an opportunistic behavior, “missing market” situation etc.

The *special contract form* (“private ordering”) permits a better coordination, intensification, and safeguard of activity. However, it may require large costs for specification of contract provisions, adjustments with constant changes in conditions, enforcement and disputing of negotiated terms etc.

The *internal (ownership) organization* allows a greater flexibility and control on activity (direct coordination, adaptation, enforcement, and dispute resolution by a fiat). However, extension of internal mode beyond family and small-partnership boundaries (allowing achieving the minimum technological or agronomic requirements; exploration of technological economies of scale and scope) may command significant costs for development (initiation and design, formal registration, restructuring), and for current management (collective decision making, control on coalition members opportunism, supervision and motivation of hired labor etc.).

Besides the transaction costs, the *choice of economic organization* depends on a number of additional factors (Figure 1):

- *personal characteristics* of individual agents – preferences, ideology, knowledge, capability, training, managerial experience, risk-aversion, reputation, trust, power etc. For instance, farming organization is often restricted to a family partnership. In some cultures, the cooperative is the preferred mode of agrarian organization. If farmer is a good manager he will be able to design and control a bigger organization managing effectively more internal (labor) and outside (market and contract) transactions. A risk-taking farmer will prefer more risky but productive forms - e.g. bank credit for a new profitable venture). When counterparts are family members (or close friends) there is no need for complex organization since relations are easily “governed” by the good will and mutual interests of parties. Benefits for farmers could range from monetary or non-monetary income; profit; indirect revenue; pleasure of self-employment or family enterprise; enjoyment in agricultural activities; desire for involvement in environment, biodiversity, or cultural heritage preservation; increased leisure and free time; to other non-economic benefits⁴.

- *formal and informal institutions (“rules of the game”)*⁵. Often the choice of governing mode is (pre)determined by the *institutional restrictions* as some forms for carrying farming activities, land and labor supply, trade of output etc. could be socially unacceptable or illegal⁶.

⁴ A “desire for preservation of farm for future generation” has been a major reason for the persistence (sustainability) of a great number of part-time farms in Japan [Bachev and Tsuji].

⁵ that is the distribution of rights and obligations between individuals and groups, and the system(s) of enforcement of these rights and rules [North]. The spectrum of rights could embrace material assets, natural resources, intangibles, certain activities, labor safety, clean environment, food security, intra- and inter-generational justice etc. A part of the rights and rules are constituted by the *formal* laws, regulations, standards, court decisions etc. In addition, there are important *informal* rules and rights determined by the tradition, culture, religion, ideology, ethical and moral norms etc. The enforcement of various rights and rules is done by the state (administration, court, police) or other mechanisms such as community pressure, trust, reputation, private modes, self-enforcement etc.

⁶ Nevertheless, when costs associated with the illegitimate governance is not high (possibility for disclosure low, enforcement and punishment insignificant) while benefits are considerable, then the more effective modes

For instance, corporate and cooperative organization of farming is forbidden in many countries; market trade of farmland, natural resources, and some outputs (inputs) is illegitimate, private management of natural ecosystems (parks, reserve zones) is not allowed etc. What is more, the institutional environment considerably affects the level of transaction costs⁷ and thus the choice of one or another economic organization. In conditions of well-working public system of regulations (quality standards, price guarantees) and laws and contract enforcement, a preference is given to spotlight and classical (standard) contracts. On the other hand, when rights on major agrarian resources are not defined or not well defined, and absolute and contracted right effectively enforced, that lead to domination of primitive subsistence farming, informal, personal and over-integrated forms, unsustainable organizations, undeveloped and missing markets etc [Bachev 2004].

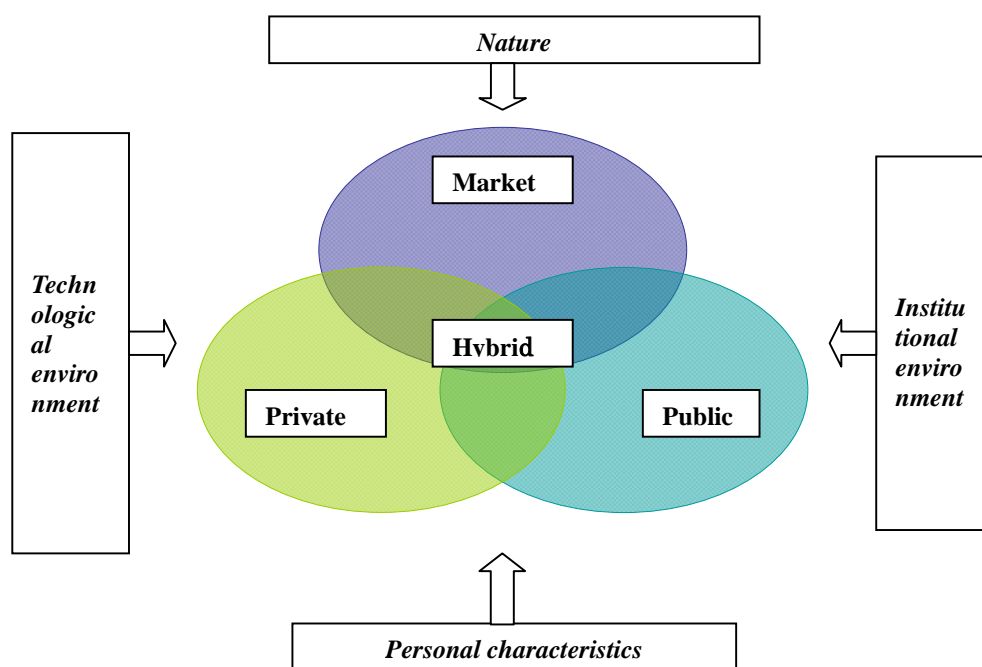


Figure 1. Factors affective organizational choice in agriculture

- *natural and technological factors*. In rare cases there is *only one* practically possible form for governance of agrarian activity. For example, in Japanese dispersed paddy agriculture water supply could not have been conducted by individual farmers (high interdependency, nonseparability of water use) and since earliest period water use organization developed as a public project [Mori]. An effective governance of some

prevail – large gray or black sectors of the economy are common in agriculture around the globe.

⁷ A good example in this respect are current problems of many Bulgarian farms to meet the new EU requirements (“institutionally determined” costs) related to new product quality, food safety, labor, environmental, animal welfare etc. standards [Bachev 2010a].

environmental activities also requires a certain scale and thus collective actions at local, regional, national or transnational scale [Bachev 2010a]. However, beside few examples, in farming is almost impossible to find cases where the form of governance is unilaterally determined by the natural and/or technological parameters⁸.

Nevertheless, technological development affects enormously the structure and level of transaction costs [North]. For instance, mechanization and standardization of farming operations (products) increases manageability and leads to extension of activities under a single management enlarging internal (internal division and specialization of labor) and outside (market and contract procurement, trade, cooperation) transactions⁹. Furthermore, the possibilities that progression of modern production (e.g. precision farming), transportation, measurement, information, communication etc. technologies gives to coordinate and intensify transactions and minimize related costs are immense - easy assessment and traceability; on line information, coordination, monitoring, detecting, advise; direct low costs exchanges (expressing demands, finding best prices and partners, negotiating, trading, disputing) and collective actions (coalitions) of interested agents at national and international scales; rapid detection of problems and interventions by governments and international agencies; full participation of individuals in and control on public decision-making etc.

Each activity (transaction) has different *specific dimensions* varying according to the specific *institutional environment* (legislation, efficiency of laws and contract enforcement, diverse informal restrictions), *personal characteristics of agents* (preferences, experience, reputation, tendency for opportunism, risk aversion), *macroeconomic conditions* (stability, foreign trade regime, available public support), *dominant technologies* (mechanization and standardization of operations, application of information technologies), and *natural environment* (recourses endowment, dependency) etc.

There exist *no single* most efficient (universal) form for organization of all agrarian activity in all practically possible economic, institutional and natural settings. According to the critical dimensions of activity and exchange the individual agents will (tend to) use the most appropriate (effective) mode for governance. Hence, in any particular moment the agrarian activities will be carried out (governed) through a great variety of economic organizations: some will be governed by the “*invisible hand of market*”, some will be carried out through a *special contract mode* (“private order”), some will be managed *within hierarchy* (under “visible hand of manager”), some will be *supported by a third party* (Government, NGO`s, international assistance), some would require more *complicated* and *mixed modes* [Bachev 2004].

Consequently, it must be abandoned commonly used (Nirvana) approach for evaluating different forms as “good” or “bad” for their own or in a comparison with some non-feasible (ideal, institutional and transaction costs free, in other countries etc.) model. The evaluation

⁸ *Exploration on technological economy of scale and scope* is usually pointed out as a factor determining type of organization. However, development of technology commonly follows demand and is a changeable parameter as well. Besides, the maximum economy of size and scale can be reached through a market exchange with a specialized activity and/or resources rather than integrating transactions.

⁹ However, that enormous technological potential meets the restrictions of imperfect institutional arrangements which eventually slow-down technological progress, impede individual market and private transactions, allow particular agents to benefits from the status-quos, and lead to unsustainable “development” [Bachev 2010a].

is to be directed to finding out the *comparative advantages* for initiating, establishing, using, management, adaptation, intensification, coordination, stimulation and controlling (in short - for minimization of overall costs) of the alternative (and really possible) modes of governance in the *specific market, institutional, technological and natural environment*.

For instance, in post-communist transitional conditions of not well-defined and assigned private rights on farmland, and the high costs for their protection and exchange, the short-term lease and the internal integration (subsistence and semi-market farming, production cooperation) were the most efficient forms for organization of land supply in Bulgarian agriculture [Bachev and Tsuji].

The evaluation of efficiency of agrarian organizations has to include not only the comparative “productivity” of resources, but analyses of the level and structure of comparative transacting costs. Besides, it should identify the factors of transaction costs in a nationwide (social) scale, which eventually slow down sustainable growth of agriculture, and lead to insufficient and unsustainable use of resources, underinvestment and low productivity in production, wide-spreading of primitive technologies, lack of innovations etc [Bachev 2004].

Public policy implications

The recognition of transaction costs has also a number of important policy implications related to economic needs and efficiency of public intervention in agrarian sector:

First, public (government) role is to establish organizations facilitating and intensifying market and private transactions and minimizing related costs - for identification, protection, and disputing individual absolute and contracted rights (e.g. notary register, court, police etc.); quality, labor, environmental etc. standards; appropriate market infrastructure (wholesale markets, market and price information) etc.

Second, when a high level of costs for market and private transactions (which prevent or entirely block development of effective market and private forms) is observed then public (government) is to intervene to make that socially desirable activity (and exchange) possible or more efficient.

Third, different forms of public intervention (assistance, regulations, funding, provision, partnership) are not with equal efficiency since they have different potential to deal with the specific market and private sector failures and command different (implementation and transaction) costs. Thus, the comparative efficiency of feasible forms of public intervention is to be assessed and the most efficient one selected.

Forth, “market failure” does not automatically imply a public intervention. There are numerous private and collective forms which effectively overcome market deficiency. When there is a situation of market *and* private sector failure there is a need for public intervention. However, public involvement in market and private activity is to be undertaken only if there is a net benefit (saving on transaction costs) compared to total costs of public intervention. Therefore, the choice is always between practically available “imperfect social arrangements”.

Finally, “public failure” is a feasible outcome and when there is a need for public intervention the induced public organization is not always efficient due to misuse of power by certain groups, bad design, mismanagement etc.

3. Steps in analysis of agrarian organizations

The basic unit of analysis

The New Institutional and Transaction Costs Economics turns the individual transaction and the costs associated with it into a *center of the economic analysis* [Williamson].

Following that new approach *first*, we have to determine the major type of transactions in which the agent managing agrarian activity (farm entrepreneurs, farmers) participates (Figure 2).

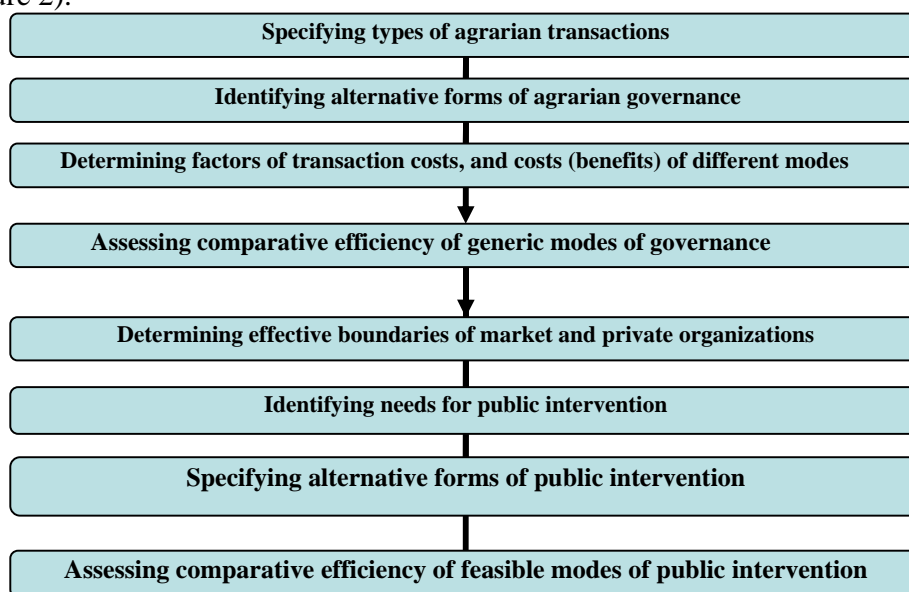


Figure 1. Steps in analysis of economic organization in agriculture

Second, we are to identify the alternative (feasible) forms for governing of agrarian transactions.

Third, we have to specify factors of transaction costs, and the costs (and benefits) associated with the alternative modes of economic organization.

Fifth, we are to assess the comparative efficiency of alternative modes, and define the effective boundaries of market and private organizations.

Six, we have to identify cases of market and private failures, and the needs for public intervention in agrarian sector.

Seven, we have to identify the alternative (and feasible) forms for public intervention in agrarian sector.

Finally, we have to assess the comparative efficiency of alternative modes of public intervention, and select the best one(s).

The main types of transactions of a farm entrepreneur are associated with the supply of

“factors” of production and the marketing of farm output and services. Actually, the *farm manager manages* not (production) technology but *transactions* related to agricultural production. It is not a hypothetical case when an entrepreneur is entirely engaged in managing agrarian transactions rather than farming activity.

The major types of transactions in farming are commonly associated with:

- *labor supply,*
- *supply of land and other natural resources,*
- *service supply,*
- *inputs supply,*
- *knowledge supply,*
- *innovation supply,*
- *finance supply,*
- *insurance supply,*
- *marketing of services and products.*

In addition, the farm entrepreneur takes part in a great variety of *collective actions* for inducing public (Government) intervention in market and private sector in his own interests. [Bachev 2010a].

Usually, every agrarian activity and exchange could be governed through a *great variety* of alternative forms. *One extreme* for the farm manager is to specialize exclusively in governing of market transactions rather than production management. For example, leasing-in farmland and long-term material assets, purchasing all services for cultivation and harvesting of output, buying needed short-term material assets, selling all primary products on market.

Another extreme is a close internal organization such as one-person or group subsistent farm – the farmer(s) employ only own resources (land, labor, technological knowledge) and consume the entire product.

Between these two polls there is a *spectrum* of feasible modes for governing of agrarian activity and exchange: various sort long-term contracts, association, cooperation, interlinked organization, hybrid forms, farms of different type (partnerships, corporations, complex hierarchies) etc.

For instance, cultivation of land by a tractor can be governed in numerous ways: a farmer can buy (unified ownership), rent (rent contract) or lease a tractor (input and credit supply interlinked contract); farmer could buy cultivation service from market (contract service); a number of farmers may buy a tractor (joint ownership) and use it in a group (producers cooperative) or individually; a farmer can join a cooperative providing cultivation services (non for profit organization); a farmer may lease the land out to a tractor owner and share the output (share tenancy contract); a farmer can hire a tractorist to work on farm (employment contract), and may even sell out the cultivation service to market (profit making organization); cultivation service to farms could be subsidized by the Government (trilateral mode), or provided by a municipality or a state company (public organization).

Identification of practically employed or other feasible specific forms for organizations of transactions in different countries, regions, subsectors etc. is object of a special *micro-economic survey*. For instance, major forms for organizations in functional areas of Bulgarian farms are summarized on Figure 3.

Functional areas	Alternative modes of organisation		
	Market	Special contract	Special organization
Supply of management	na	Employment contract with guaranteed minimum salary and output-based bonuses	Cooperation Partnership
Supply of land and other natural resources	Purchase Short-term lease	Long-term lease with a fix rent Long-term lease with a share rent Long-term lease with a market rent	Cooperation Partnership
Labor supply	Daily hire Seasonal hire	Permanent labor contract with a fix remuneration Permanent labor contract with result based payment	Partnership Cooperation
Supply of short-term material assets	Purchase with a spotlight contract Standard contract	Long-term procurement contract Supply contract interlinked with a credit supply, service supply, and/or marketing of farm produce	Cooperation
Supply of long-term material assets	Purchase with a spotlight contract Standard contract	Long-term lease contract Contract for purchase interlinked with crediting (leasing) and/or services	Partnership Cooperation
Service supply	Purchase with a spotlight contract Standard contract	Long-term supply contract Supply contract interlinked with other services, products or crediting	Partnership Cooperation
Innovation and know-how supply	Purchase with spotlight contract Standard contract Free consultation in the farm advisory system	Long-term supply contract Supply contract interlinked with supply of material assets and/or crediting	Cooperation
Financing	Bank loan Loan from an individual agent Loan from a private organization	Co-investment Crediting interlinked with supply of material assets and services Contract with a public funding program	Partnership Cooperation
Insurance	Purchase of insurance Purchase of “assurance service”	Insurance contract interlinked with material assets Long-term insurance contract	Cooperation
Marketing of products and services	Retail sale Wholesale trade Standard contract	Long-term contract for marketing Marketing contract interlinked with crediting, supply of material assets and/or services	Partnership Cooperation

Figure 3. Principal forms of organizations for functional areas of Bulgarian farms

“Measurement” of transaction costs

One direction for evaluation of efficiency of agrarian organizations is the *direct comparison of costs for each transaction in different forms*. The organization which requires less costs is more efficient. For instance, a comparison is made whether would be more economical to marketing of output directly or to use a marketing cooperative.

Data for some part of transaction costs can be found in traditional statistics and accountancy (e.g. management costs, marketing costs, insurance etc.). Another part of the transaction costs may be easily specified – e.g. costs for licensing and registration, agro-market information, promotion and marketing of output, general management, hiring lawyers and court suits, guarding property and yields, payment of bribes etc.

However, a significant portion of the transaction costs is either very difficult (too expensive) or impossible to be determined. In that group we can include the costs for finding best partners, negotiation, controlling and enforcement of contractual terms, organizational development, interlinked transacting, unrealized (failed) deals etc.

Besides, it is often extremely complicated to separate transaction costs from the traditional production expenditures¹⁰. For example, while executing farming operations a farmer supervises the hired labor; during transportation of chemicals he negotiates the marketing of output etc.

Approximate estimate for the level of transaction costs could be made by interviewing farm managers. Here it is essential to indicate the level (high, low) of efforts and time devoted for governing different type of transactions: for finding needed labor for hiring, land and material inputs for purchase and lease-in; negotiating terms of exchange; monitoring implementation of contractual obligations; current adaptation of contracts to emerging new conditions; conflicts resolution; memberships in professional organizations; relationships with agrarian bureaucracy etc.

Nevertheless, a component comparison of the transacting costs could not always give idea for the efficiency of organizations. Very often the alternative form decreases one type of costs while increasing another type transacting costs – e.g. internalization of a transaction (replacement of market with integral mode) is associated with the reduction of costs for information supply (overcoming market uncertainty), permanent (re)negotiations along with constantly changing conditions, and safeguarding investments from the outside opportunism. On the other hand, it enlarges costs for the organizational formation, decision making, integral management, supervising and motivation of hired labor etc. In our previous example with the alternatives for marketing of farm output the “internal realization” (personal consumption, production “consumption”, processing) could be chosen as more efficient form to the direct sell or use of an marketing cooperative.

Moreover, a good part of transactions in agriculture is governed not by “pure” but through complex or interlinked modes - e.g. inputs supply in a “package” with know-how, extension or/and service supply; a joint supply of inputs and credit; crediting of production against marketing of output etc. Thus, it is important to take into consideration the *overall* (total) costs for organization of transactions of different types - *all external and internal transaction costs of the farm* [Bachev 2004].

Often it is difficult to select a base for comparison in view that the high transacting costs entirely block development of an alternative organization. For instance, markets for agrarian credit did not emerged in Bulgaria during most of the transition and the internal supply (utilization of own finance, direct outside co-investment) was the only possible form for finance supply of farms [Bachev and Tsuji]. Here the comparative level of transaction costs is impossible to be determined and appreciate the “high” efficiency of the integral mode for financing. In that case funding with “own means” and with “bank credit” are not real alternative at all but completely different governing structures. Thus, broadly applied indicators for estimation of comparative efficiency of investments based on “opportunity costs” (discounting, payback period, internal rate of return) independent from the form of

¹⁰ All these “measurement problems” make it impossible to extend the traditional Neoclassical models simply by adding a new “transacting” activity [Furuboth and Richter].

funding, have no significant economic sense.

Factors of transaction costs

Another direction for evaluation of the efficiency is the *Discrete structural analysis* of alternative economic organizations [Williamson].

Since it is either very difficult or impossible to determine the transaction costs for individual mode, the assessment is made on the *comparative costs* of alternative organizations. Besides, the quantitative approach (the absolute and relative measures, marginalism) is replaced by the *qualitative* (structural) analysis and indirect assessment of transacting costs. Actually, we are interested not in the absolute level of transaction costs in different form, but in organization with the lowest comparative costs for a particular transaction (activity).

Initially we have to identify the *critical factors* of transactions in the specific market, institutional and natural environment. These factors are responsible for the *variation* of transacting costs and are associated with:

- the *behavioral characteristics of agrarian agents* such as bounded rationality, tendency for opportunism, reputation building, risk taking, level of trust, etc.;
- the *economic dimensions of individual transactions* such as frequency, uncertainty, assets specificity, and appropriability.

The transaction costs have two *behavioral* origins: individual's *bounded rationality* and *opportunism* [Williamson].

Agrarian agents do not possess *full information* about the economic system (price ranges, demands, trade opportunities, development trends) since collection and processing of such information would be either very expensive or impossible (for future events, partners intention for cheating). In order to optimize the decision-making they have to spent costs for "increasing imperfect rationality" – e.g. data collection, analysis, forecasting, training etc.

Furthermore, the economic agents are *given to opportunism*. Accordingly, if there is opportunity for some of transacting sides to get non-punishably an extra rent from the exchange he will likely do so. Two major forms of opportunism can be distinguished: *pre-contractual* ("adverse selection") - when some of the partners use the "information asymmetry" to negotiate better contract terms; and *post-contractual* ("moral hazard") - when some counterpart takes an advantage of impossibility for full observation on his activities (by another partner or by a third party) or when he takes "legal advantages" of unpredicted changes in transacting conditions (costs, prices, regulations etc.).

A special third form of opportunism occurs in development of larger organizations [Olson]. Since individual benefits are often not proportional to the individual efforts, everybody tends to expect others to invest the costs for organizational development, and to benefit ("free ride") from the new organization.

It is very costly or impossible to distinguish opportunistic from non-opportunistic behavior (because of the bounded rationality). Therefore, agrarian agents have to protect their transactions from the hazard of opportunism through: *ex ante* efforts to find a reliable counterpart and to design efficient mode for partners credible commitments; and *ex post* investments for overcoming (through monitoring, controlling, stimulating cooperation) of possible opportunism during contract execution stage [Williamson].

In addition, the transaction costs depend on “critical dimensions” of each transaction.

When *recurrence* of transactions between the same partners is high, both (all) sides are interested in sustaining and minimizing costs of their relations (avoiding opportunism, building reputation, setting up incentive and adjustment mechanisms, conflict resolution devices etc.). Here continuation of the relations with a particular partner and designing a special mode for transacting has a high economic value. Parties restrain for opportunism which detection is “punished” by turning to a competitor (losing future business). Besides, costs for development of a special private mode for facilitating bilateral (or multilateral) exchange could be effectively recovered by frequent exchange.

When a transaction is incidental then possibility for opportunism is great since cheating side can not be easily punished (good reputation is not of value). Transaction costs become very high (and may block transacting) when low frequency coincides with high uncertainty and requirement for large relation-specific investments.

When *uncertainty*, which surrounds transactions increases, then costs for carrying out and secure the transactions go up (for overcoming information deficiency, safeguarding against risk etc.). Since bounded rationality is crucial and opportunism can emerge agrarian agents will seek, develop, and use such modes of organization which diminish transaction uncertainty. While certain risks could be diminished or eliminated by a production management or through a special market mode (e.g. purchase of insurance) most transacting risk would require a special private forms – e.g. trade with origins; providing guarantees; using share-rent or output-based compensation; employing economic hostages; participating in a risk-pooling, inputs-supply or marketing cooperative; a complete integration.

There are strong mutual incentives to develop a special form for repeated transacting when high uncertainty is combined with significant relation specific investments. When transacting between same counterparts is rare, and it is not supported by specific assets, and appropriability of rights is high, then faceless (autonomous) market exchange is the most efficient mode. Depending on the levels of uncertainty and the risk aversion agrarian agents will take different entrepreneurial risk and will get normal, low or above the average rate of return from the transactions.

The transaction costs get very high when *specific assets for the relations with a particular partner* are to be deployed¹¹. In this case it is impossible to change a partner of transaction (alternative use of assets) without a big loss in value of the specific capital.

The relation specific (dependent) investments are "locked" in transactions with a particular buyer or seller (the personality of the partner matters), and cannot be recovered through a "faceless" market trade. A costless redeployment (alternative use) of the specific assets is not possible if transactions fail to occur, they are prematurely terminated, or less favorable terms are renegotiated (in contract renewal time and before the end of the life-span of specific capital).

Therefore, dependant investment (assets) have to be safeguarded by a special form such as a long-term or tied-up contract, interlinks, hostage taking, joint investment, quasi or complete (ownership) integration. Often, the later is quite expensive, the investment in

¹¹ Specificity is not a technological but *transacting* characteristic of assets. In one situation a particular capital (investment) could be highly *universal* (an easy deployment to another internal usage or outside trade) while in others - highly *specific* (a big dependency from the relations with a certain counterpart (buyer, seller, coalition partner)).

specific capital are not made, and the activity either can not take place or occurs without (or loss of) comparative advantages in respect to productivity

If a *symmetrical* assets dependency (regime of a bilateral trade) exists there are strong incentives in both parties to elaborate a special private mode of governance. However, when *unilateral* dependency exists then the dependent side (facing mini or total monopoly) has to protect investments against possible opportunism (behavioral uncertainty or certainty) either through integrating transactions (unified organization, joint ownership, cooperative); or safeguarding them with interlinked contract, exchange of economic hostages, development of collective organization to outstand asymmetrical dependency (for price negotiation, lobbying for Government regulations) etc.

Serious transacting problems arise when the condition of assets specificity is combined with a high uncertainty and a low frequency of transactions. In this case the elaboration of a special governing structure for private transacting is not justified (set up costs can not be recovered by occasional transaction). The specific investments are not made and the transactions (and activity supported by them) fail to occur. Therefore, a third party involvement (local authority, Government agency, NGO, hybrid organization) in individual transacting (through assistance, arbitration, regulation) is crucial for smooth organization of such transaction.

The activity and transacting is particularly difficult when *appropriability* of rights on products, services or resources is low. "Natural" low appropriability has most of the agrarian intellectual products - agro-market information, agro-meteorological forecasts, new varieties and technologies, software etc. Besides, all products and activities with significant (positive or negative) externalities are to be included in this group [Bachev and Labonne].

If appropriability is low the possibility for unwanted (unequal) market or private exchange is great, and the costs for protection (safeguard, detection of cheating, disputing) of private rights and investments extremely high. Because of the bounded rationality, the costs for protection, detection, verification, and a third-party (e.g. court) punishment of unwanted exchange (non paying consumers-opportunists) extremely high.

For transactions with low appropriability the costs and benefits are independent for individual participants. Therefore, agents would either over produce (negative externalities) or under organize such activity (positive externalities) unless they are governed by an efficient private or hybrid mode - cooperation, strategic alliances, long-term contract, trade secrets, or public order.

Principally, when the appropriability associated with a transaction is low, there is no pure market mode to protect and carry out that activity effectively. Nevertheless, the respecting others rights (unwanted exchange avoided) or "granting" additional rights to others (needed transactions carried) could be governed by a "good will" or charity actions. For instance, a great number of voluntary environmental initiatives have emerged driven by the competition, farmers' preferences for eco-production, or responds to public pressure for a sound eco-management [Bachev 2010a]. In any case, voluntary initiatives could hardly satisfy the entire social demand especially if they require significant costs.

If appropriability is low and transactions are strongly specific (for a particular customer), the only way to carry them out is to integrate transactions (in house production, trade secrets) or elaborate the effective form for securing a credible commitment (joint investments, interlinks). Some private modes could be employed if a high frequency (a

pay-back on investment is possible) and a mutual assets dependency (thus incentive to cooperate) exists¹². In these instances, unwritten accords, interlinking, bilateral or collective agreements, close-membership cooperatives, codes of professional behavior, alliances, internal organization etc. are used.

Serious transaction difficulties occur (and may block transacting) when they are associated with low appropriability but require significant specific or universal investments, and are characterized with low frequency and high uncertainty¹³. The incidental character of transactions between same agents makes the designing and maintenance costs for a special (private, collective) large-members organization for dealing with low appropriability very high (“free-riding” problem). Thus, there is a strong need for a “third-party” public (Government, local authority, international assistance) intervention in order to make such activity possible or more effective – public organization, public contracts, mandatory fees, introduction of new property right etc.

Principle modes for effective organization

Next step is to evaluate the effective potential of alternative economic organizations: to minimize bounded rationality of agrarian agents and uncertainty surrounding transactions; for appropriation and protection of absolute and contracted rights (and associated private benefits and investment) from possible opportunism; to recover long-term costs for organizational development through a high frequency of transactions; to explore economy of size and scale on specific capital etc.

Individual organizations have different comparative advantages *and* disadvantages to maximize benefits and minimize costs of transactions with specific critical dimensions.

In general, the *internal organization* has advantage for governing transaction with high uncertainty and specificity (dependency) of assets, since it diminishes the bounded rationality and protects investments from outside opportunism.

Contrary, transactions with high certainty (bounded rationality is not important) and universal character of assets (opportunism can not be realized since transaction can be executed with another partner without additional costs) can be carried across *free market* without encountering costs for development of a special private mode.

Private organization is effective only for transactions with high recurrence between partners, since occasional (single) transactions do not let recovering (“payback” on) investment for development of a special governance mode (mechanisms for coordination, stimulation, dispute resolution; formal registration etc.).

Finally, *markets* and *private forms* are appropriate for transactions with high appropriability, since they would recover invested resources through exchange. For transaction with a low appropriability the private rights cannot be protected or they are enforced with extremely high costs. Thus, such transactions could be effectively governed

¹² For instance, inter-dependency between a dairy farm and a milk processor in a remote region (capacity and site dependency); or a bee-keeper and a neighboring orchard farm (symmetric dependency between needs of flower and needs for pollination).

¹³ That is when a pay-back on investment requires “mass” consumption and “collective appropriation” of benefits (and risk taking).

either by hybrid (mixed public-private, quasi-public) or the entirely public forms for organization.

Since transactions have different critical dimensions and the governance forms have different comparative advantages the operationalisation of the concept is done by: “aligning transactions (which differ in their attributes) with governance structures (which differ in their costs and competence) in discriminating (mainly transaction cost economizing) way” [Williamson].

According to the combination of the specific characteristics of each activity and transaction, there will be different the most effective form of economic organization for that particular activity (Figure 4).

Figure 4: Principle modes for governing of agrarian transactions¹⁴

Generic modes	Critical dimensions of transactions								
	Appropriability								
	High							Low	
	Assets Specificity								
	Low				High				
	Uncertainty								
	Low		High		Low		High		
	Frequency								
	High	Low	High	Low	High	Low	High	Low	
Free market	Y	Y							
Special contract			Y			Y			
Internal organization					Y		Y		
Third-party involvement				⚙				⚙	
Public intervention									⚙

Y - the most effective mode; ⚙ - a necessity for a third party involvement

Agrarian transactions with a good appropriability, high certainty, and universal character of investments (the partner can be changed anytime without significant additional costs) could be effectively carried across free market through *spotlight* or *classical contracts*. Here the organization of transactions with a special form or within the farm (firm) would only bring extra costs without producing any transacting benefits.

Recurrent transactions with low assets specificity, and a high uncertainty and appropriability, could be effectively governed through a *special contract*. The *relational* (“neoclassical”) *contract* is applied when detailed terms of transacting are not known at outset (a high uncertainty), and a framework (mutual expectations) rather than a specification

¹⁴ Differences in personal characteristics of agents are *disregarded*. Only *extreme levels* (high-low) of the critical factors are considered. In the real agrarian economy there is a big *variation* of critical dimensions, and thus of the effective governing forms (including mixed, hybrid, interlinked etc. governance).

of obligations is practiced. Partners (self)restrict from opportunism and are motivated to settle emerging difficulties and continue relations (situation of a frequent bilateral trade). Besides, no significant risk is involved since investments could be easily (costlessly) redeployed to another use or users (no assets dependency exist).

A special contract forms is also efficient for rare transactions with a low uncertainty, high specificity and appropriability. Dependent investment could be successfully safeguarded through contract provisions since it is easy to define and enforce relevant obligations of partners in all possible contingencies (no uncertainty surrounds transactions)¹⁵. Here the occasional character of transactions does not justify internalization within the farm (firm).

Transactions with a high frequency, uncertainty, assets specificity (dependency), and appropriability, have to be organized within the farm/firm (internal ownership mode). For instance, managerial and technological knowledge is quite specific to a farm, and its supply has to be always governed through a permanent labor contract and coupled with the ownership rights [Bachev 2004]. Capital investments in land are to be made on owned (or long-leased-in) rather than a seasonally rented land (high site and product specificity). All “critical” to the farm material assets will be internally organized - production of forage for animals; important machineries; water supply for the irrigated farming etc. While universal capital could be effectively financed by a market form (e.g. a bank credit), the highly specific investments can be only made through an internal funding (own funds, equity sell, joint venture).

If the specific and specialized capital cannot be effectively organized within the farm (economy of scale and scope explored, funding made)¹⁶, then an effective governing form outside farm-gates is to be used - group farming, joint ownership, interlinks, cooperative, lobbying for a public intervention.

When a strong assets (capacity, technology, time of delivery, site, branding) *inter-dependency* with an upstream or downstream partner exists, then it is not difficult to govern transactions through a contract mode (strong mutual interests for cooperation and restriction of opportunism). For instance, effective supply (procurement) contracts between farmers and processors are widely used in dairy, meat, vine, organic industries (symmetrical dependency).

However, very often farmers face *unilateral dependency* and need an effective (ownership) organization to protect their interests. Transacting costs for initiation and maintaining of such “collective organization” is usually great (a big number of coalition, different interests of members, opportunism of “free-riding” type) and it is either unsustainable or does not evolve at all. That creates serious problems for the efficiency (and sustainability) of individual farms - missing markets, monopoly or quasi-monopoly situation, impossibility to “induce” a public intervention etc.

Serious transacting problems arise when condition of assets specificity is combined with a high uncertainty, low frequency, and good appropriability. Here the elaboration of a special governing structure for private transacting is not justified, specific investments are not made, and activity (or restriction of activity) fails to occur at an effective scale (“market

¹⁵ Practically it is difficult (costly) or impossible to write a complete contract for complex transaction [Williamson].

¹⁶ Integration of transactions would either increase management costs (needs to buy from or sell to a competitor) or it would be loss-making comparing to outside production costs (price) competition.

failure" and "contract failure"). Similar difficulties are also encountered for rare transacting associated with a high uncertainty and appropriability.

In all these cases, a third part (private agent, NGO, public authority) involvement in transactions is necessary (through assistance, arbitration, regulation) in order to make them more efficient or possible at all. A particular trilateral mode is invented such as the *neoclassical contract* which arranges the “third party participation”¹⁷ and manages transactions with high uncertainty and asset specificity, and low frequency. Emergence and unprecedented development of organic farming, and systems of trade with origins and “fair-trade” are all good examples in that respect. There is an increasing consumer’s demand (a price premium) for organic, original, and fair-trade products in many countries. Nevertheless their supply could not be met unless effective *trilateral governance* (including an independent certification and control) has been put in place.

When appropriability associated with a transaction (activity) is low, there is no pure market mode to protect and carry out activity effectively. Transactions with such characteristics could only be governed by a “good will” or charity actions of individual agents, NGOs etc.

Some private modes could be employed if a high frequency (a pay-back on investment is possible) and a mutual assets dependency (thus an incentive to cooperate) exists. In all these instances, unwritten accords, interlinking, bilateral or collective agreements, close-membership cooperatives, codes of professional behavior, alliances, internal organization etc. are used. However, emerging of special (private) large-members organizations for dealing with low appropriability (and satisfying the entire “social” demand) would be very slow and expensive, and they unlikely be sustainable in a long run (“free riding” problem). Therefore, there is a strong need for a *third-party public* (Government, local authority, international assistance etc.) *intervention* in order to make such activity possible or more effective [Bachev 2004].

For example, supply of environmental goods by farmers could hardly be governed through private contracts with individual consumers because of low appropriability, high uncertainty, and rare character of transacting (high costs for negotiating, contracting, charging all potential consumers, disputing). At the same time, the supply of additional environmental protection service is very costly (in terms of production and organization costs) and would unlikely be carried out on a voluntary basis. Besides, the financial compensation (price-premium) of farmers by willing consumers through a pure market mode is also ineffective due to the high information asymmetry, massive enforcement costs etc. A third-party mode with a direct public involvement would make that transaction effective: on behalf of the consumers the State agency negotiates with individual farmers a *public contract* for “environment conservation and improvement service”, coordinates activities of various agents (including a direct production management), provides public payments for compensation of farmers, and controls implementation of negotiated terms.

4. Economic boundaries of farm and agrarian organizations

The Discrete structural analysis defines principle effective boundaries of diverse

¹⁷ in verification wine grades, certification of special (eco, fair-trade, origins etc.) products etc.

agrarian organizations - farms, contracts, markets etc. In addition to the (combinations of) critical dimensions, any analysis of efficiency of individual forms is to take into account the specific characteristics of participating agents and the economic, institutional, natural etc. environment where activity takes place. More particularly, the profound analysis of the efficiency has to:

First, identify the range of feasible organizational forms for each generic mode for the specific context of a particular country, region, subsectors, agents etc.

Principally, the variety of “*internal organization*” in agriculture includes: one-person farm/firm, family farm/firm, group farm/firm (partnership), cooperative, corporation, public farm/firm, joint venture etc.

The corresponding forms of “*free market*” are: spot exchange on local/regional markets; classical contract, wholesale trade, direct sell on international markets etc.

The “*special contract form*” could be: short-term contract, long-term contract, relational contract, interlinked organization, multilateral agreement etc.

Second, determine the *effective horizontal and vertical boundaries* of individual forms on the basis of their potential to: overcome bounded rationality and transaction uncertainty, protect transactions and investments from hazard of opportunism, explore economy of scale and size on specialized and specific capital, and minimize on total (production *and* transaction) costs.

Commonly, *one-person farm/firm* has zero internal transaction costs (one agent), but a limited possibility for investment in specialized and specific human and material capital.

The “internal” opportunities for increasing productivity (through investments, exploring economy of scale and size) increases along with the extension of the *members of a coalition* (group farm, partnership). *The internal (ownership) organization* allows a greater flexibility and control on activity - direct coordination, adaptation, enforcement, and dispute resolution by a fiat. However, extension of internal mode beyond family and small-partnership boundaries (allowing achieving the minimum technological or agronomic requirements; exploration of technological economies of scale and scope) may command significant costs for development (initiation and design, formal registration, restructuring), and for current management (collective decision making, control on coalition members opportunism, supervision and motivation of hired labor etc.).

The separation of ownership from the management (cooperative, corporation, public farm/firm) gives enormous opportunities for growth in productivity and transacting efficiency – internal division and specialization of labor; exploration of economies of scale and scope; introduction of innovation; diversification; risk sharing; investing in product promotion, brand names, relations with customers, counterparts and authorities. However, it could be connected with huge transaction costs for decreasing information asymmetry between management and shareholders, decision-making, controlling opportunism, and adaptation.

The cooperative and non-for profit form also suffers from low capability for internal long-term investment due to non-for-profit goals and non-tradable character of shares (so called “horizon problem”).

The special contract combines the potential for a greater “control” on transactions with possibility to explore the advantages of further specialization of activity. Nevertheless, it could be connected with large costs for preparing and enforcement of contracts for complex

occasional transactions with high unilateral dependency.

The boundaries of *agrarian markets* extend along with the development of specialization and standardization of agrarian recourses, technologies, and products, and institutional conditions for protecting private (absolute and contract) rights. However, market governance could be associated with high uncertainty, risk, and costs due to the price instability, the great possibility for facing opportunistic behavior, (semi) monopoly or “missing market” situation etc.

The *trade-offs* between the *gain in the productivity/benefits* and the *gain in transacting costs* of each mode would be quite different in a specific institutional, economic and natural environment for agents with unlike characteristics and activity (transactions) with specific combination of critical dimensions. Therefore, individual organizations will have quite different efficiency and effective boundaries. A part of the agrarian transactions will be effectively governed through a free market exchange; another part will be effectively organized through a special contract mode(s); a part of transactions will be entirely integrated (firm) while another portion protected though a special private organization(s) outside of farm gates (cooperation, association).

At this stage of the analysis it becomes clear the inadequacy of traditional indicators for productivity of production costs and resources for assessing the efficiency of different agrarian organizations. The opposite is to be expected: it has to be a significant variation in the rate of profitability on investments in an agro-firm (a profit making organization) from the "pay-back" of expenditures and resources in a cooperative (a member oriented organization), a public farm (a non-for profit organization) or in a subsistence farm (giving opportunity for productive use of otherwise "non-tradable" resources such as family labor, land etc.). Indeed the later has been proven by the multiple estimates of the “efficiency” of different farms during transition now in all countries from Central and East Europe [Bachev, 2004; Csáki, C. and Lerman; Gortona and Davidova; Mathijs and Swinnen]

Traditional statistical, farming system, accountancy etc. data are little suitable to test and apply suggested new approach. It is necessary to (get) use a great amount of *micro-economic data* (for different type of transactions governed by divers organizations, and costs and benefits associated with the alternative governance modes) as well as data about *specific (economic, institutional, natural etc.) environment* in which different organizations evolve. The goal of such analysis is not only to test the adequacy of this new approach, but also to identify transaction difficulties, and suggest directions for improvement of public policy and business strategies.

An attempt for comprehensive assessment of the efficiency of divers economic organizations in transitional Bulgarian agriculture is made by us in a separate study [Bachev 2010b].

5. Effective forms for public intervention

Steps in improving efficiency of public organizations

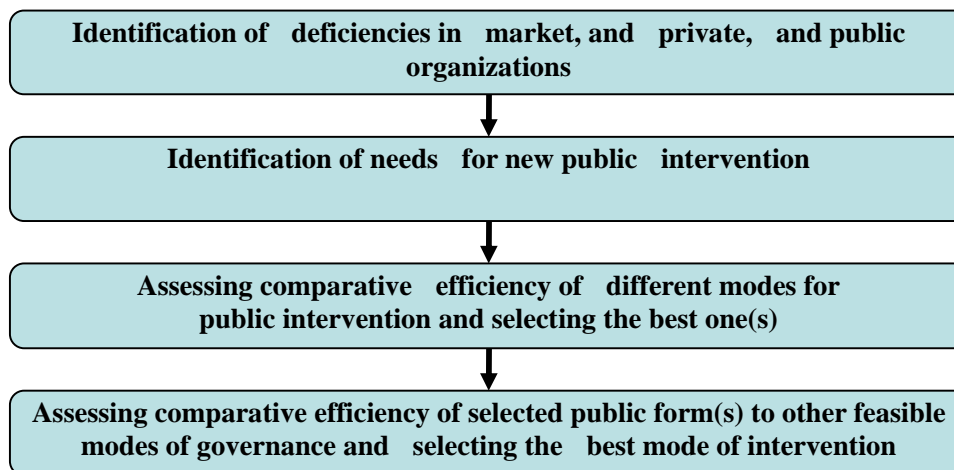
The Discrete structural analysis let us specify the existing and emerging deficiencies in the organization of market and private transactions, and define the *needs for public intervention in agrarian sector* (the “economic role of government”).

In modern agriculture there are always some public modes put in place along with the diverse market and private organizations. Therefore, (ideally) it could be a case of the most effective (*perfect*) economic governance of the sector. However, usually there are a number of social, economic, environmental etc. challenges (problems, conflicts, failures, risks) associated with the agrarian development. That is why, there is a constant need for improvement of public organization.

The *comparative* analysis is to extend to the public modes and include (Figure 5):

First, assessment on the *correspondence* of the public involvement to the real needs of development – e.g. *identified needs for a third-party intervention* from Figure 4. The analysis is to embrace the efficiency of the entire system of governance, and identify deficiencies (failures, risks) in market, *and* private *and* public organizations [Bachev 2010a].

Figure 5: Steps in analysis and improvement of public organizations



Second, a variety of *alternative* modes for public intervention able to *correct* the existing (or emerging) market, private and public failures have to be *identified*, and their *comparative efficiency assessed*, and the *most efficient one(s) selected*.

Third, assessment is to be made on the *comparative efficiency* of the selected public form to other practically possible (*feasible*) modes of governance such as partnership with private sector, fundamental property rights modernization, international cooperation etc. Accordingly, a new public intervention is to be initiated *only* if there is overall *net benefit* - when the *effects are greater than additional* (individual and social) *costs* for the third-party public involvement.

Principally, public intervention is necessary for transactions with small appropriability, and transactions with high assets specificity and uncertainty and low frequency (Figure 4). Here there is no pure market or private mode for effective organization (“market failure”, “contract failure”, “private sector failure”) and a third part involvement (state, local authority, NGO, international assistance etc.) is necessary to make such transactions more efficient or possible at all.

Depending on the *uncertainty, frequency*, and necessity for the *specific investment of*

public involvement, there will be different the most effective forms (Figure 6). Generally, the interventions with a low uncertainty and assets specificity would require a *smaller* public organization (more regulatory modes; improvement of the general laws and contract enforcement etc.).

Figure 6: Effective modes for public intervention in agrarian sector

<i>Level of Uncertainty, Frequency, and Assets specificity</i>				
<i>Low</i>	←-----→			<i>High</i>
New property rights and enforcements	New regulations	New taxes	New assistance and support	New public provision

When uncertainty and assets specificity of the transactions increases a *special contract mode* would be necessary – e.g. employment of public contracts for provision of private services, public funding (subsidies) of private activities, temporary labor contract for carrying out special public programs, leasing out public assets for private management etc.

And when transactions are characterized with a high assets specificity, uncertainty and frequency then an *internal mode* and a *bigger public organization* would be necessary – e.g. permanent public employment contracts, in-house integration of crucial assets in a specialized state agency or public company etc.

It is essential to assess the *comparative* efficiency of *practically* (technically, economically, socially) *possible* and *alternative* forms of governance. Thus, the *additional benefits* (problems to be solved, risks to be overcome, new goals to be achieved), and the *costs*, and the *modes* for a new public intervention must be *socially admissible* (acceptable).

If different forms permit achieving the *same goals* and tackling the *same problems*, the analysis is to focus on the selection of the mode *minimizing the total* (implementing and transacting) *costs*. Assessment is to comprise *all costs* – the direct (tax payer, assistance agency etc.) expenses, *and* the transacting costs of bureaucracy (for coordination, stimulation, mismanagement), *and* the costs for individuals’ participation and usage of public modes (expenses for information, paper works, payments of fees, bribes), *and* the costs for community control over and for reorganization of the bureaucracy (modernization and liquidation of public modes), *and* the (opportunity) costs of public inaction.

Moreover, a form having the same (or less) costs as the alternatives is to be chosen if it provides *more benefits* or it is (socially, politically, technically) more *preferable* than other arrangements. If one of the possible forms provides *more benefits at the expense of more costs*, then the selection is to be made depending on whether the *additional costs* for that public intervention are *socially acceptable* (and feasible) or not. Similarly, if there is a *single* (only one) mode available for governing a particular intervention (achieving a certain social goal) it would be introduced only if associated implementing *and* transacting costs are *socially admissible* (and feasible).

Public intervention in agrarian eco-activity

Market and private sector fail to organize effectively most of the *environmental*

transactions (activity) in agriculture [Bachev 2010a]. Eco-activity and exchanges are usually associated with low appropriability, high asset specificity and uncertainty, and low frequency which necessitate a public intervention.

There are a great *variety* of possible ways for public interventions in agrarian eco-activity (Figure 7).

Figure 7: Effective modes for public intervention in agrarian environmental transactions*

New property rights	Regulations	Taxes	Assistance and support	Public provision
Rights for clean, beautiful environment, biodiversity; Private rights on natural, biological, and environmental resources; Private rights for (non) profit management of natural resources; Tradable quotas (permits) for polluting; Private rights on intellectual agrarian property, origins, (protecting) ecosystem services; Rights to issue eco-bonds and shares; Private liability for polluting	Regulations for organic farming; Quotas for emissions, and use of products and resources; Regulations for introduction of foreign species, and use of GM crops; Bans for certain activity, and use of some inputs and technologies; Norms for nutrition and pest management; Regulations for water protection against pollution by nitrates; Regulations for biodiversity and landscape management; Regulations for trading of protection of ecosystem services; Licensing for water or agro-system use; Quality and food safety standards; Standards for good farming practices; Mandatory (environmental) training; Certifications and licensing; Compulsory environmental labeling; Designating environmental vulnerable and reserve zone; Set aside measures; Inspections, fines and, ceasing activities	Tax rebates, exception, and breaks; Environmental taxation on emissions or products (pesticides, fertilizers); Levies on manure surplus; Tax or levies schemes on farming or export for funding innovations and extension; Waste tax	Recommendation and information; Demonstration; Direct payments and grants for environmental actions of farms, farmers and community organizations, businesses; Preferential credit programs; Public environmental contracts; Government purchases (water and other limited resources); Financial and price support for organic and eco-production, and special origins; Funding of environment and management training programs; Assistance in farm and eco-associations Collecting fees for paying eco-system service providers	Research and development; Extension and advise; Agro-market and know-how information; Agro-meteorological forecasts; Sanitary and veterinary control, vaccination, prevention measures; Specialized public agency (company) for important ecosystems; Pertaining “precaution principle” Eco-monitoring ; Eco-foresight; Risk assessment

* *The environmental transactions are associated with respecting the environmental rights and improving the environmental performance of individual agents.*

Initially, the *existing* and *emerging problems* (difficulties, costs, risks, failures) in the organization of market and private transactions have to be specified. The appropriate public involvement would be to create an environment for: decreasing the uncertainty surrounding market and private transactions, and increasing the intensity of exchange, and protecting private rights and investments, and making private investments less dependent etc.

For instance, the State establishes and enforces quality, safety and eco-standards for

farm inputs and produces, certifies producers and users of natural resources, regulates employment relations, transfers water management rights to farms associations, sets up minimum farm-gate prices etc. All that facilitates and intensifies (market and private) transactions and increases efficiency of economic organizations.

Next, practically possible modes for *increasing appropriability* of transactions have to be considered. The low appropriability is often caused by unspecified or badly specified private rights [Bachev 2004]. In some cases, the most effective government intervention would be to introduce and enforce *new private property rights* – e.g. rights on natural, biological, and environmental resources; rights on issuing eco-bonds and shares; marketing and stock trading of ecosystem services protection; tradable quotas for polluting; private rights on intellectual agrarian property and origins etc.

That would be efficient when the privatization of resources or the introduction (and enforcement) of new rights is not associated with significant costs (uncertainty, recurrence, and level of specific investment are low). That public intervention effectively transfers the organization of transactions into the market and private governance, liberalizes market competition and induces private incentives (and investments) in certain activities.

For instance, tradable permits (quotas) are used to control the overall use of certain resources or level of a particular type of pollution. They give flexibility allowing farmers to trade permits and meet their own requirements according to their adjustment costs and specific conditions of production. That form is efficient when a particular target must be met, and the progressive reduction is dictated through permits while trading allows the compliance to be achieved at least costs (through a private governance). The later let also a *market for environmental quality* to develop¹⁸.

In other instances, it would be efficient to put in place *regulations* for trade and utilization of resources and products – e.g. standards for labor (safety, social security), product quality, environmental performance, animal welfare; norms for using natural resources, introduction of foreign species and GM crops, and (water, soil, air, comfort) contamination; a ban on application of certain chemicals or technologies; regulations for trading ecosystem service protection; foreign trade regimes; mandatory eco-training and licensing of farm operators etc.

The large body of environmental regulations in developed countries aim changing the farmers behavior and restricting the negative impact on environment. It makes producers responsible for the environmental effects (externalities) of their products or the management of products uses (e.g. waste). This mode is effective when a general improvement of the performance is desired but it is not possible to dictate what changes (in activities, technologies) is appropriate for a wide range of operators and environmental conditions (high uncertainty and information asymmetry).

When the level of hazard is high, the outcome is certain and the control is easy, and no flexibility exists (for timing or the nature of socially required result), then the *bans* or strict limits are the best solution. However, the regulations impose uniform standards for all regardless of the costs for compliance (adjustment) and give no incentives to over-perform beyond a certain level.

¹⁸ Permits can be taken out of market in order to raise the environmental quality above the “planned” (by the Government) level.

In other instances, using the incentives and restrictions of the *tax system* would be the most effective form for intervention. Different sorts of tax preferences (exception, breaks, credits) are widely used to create favorable conditions for the development of certain (sub)sectors and regions, forms of agrarian organization, segment of population, or specific types of activities.

The *environmental taxation* on emissions or products (inputs or outputs of production) is also applied to reduce the use of harmful substances. The later impose the same conditions for all farmers using a particular input and give *signals* to take into account the “*environmental costs*” inflicted on the rest of society.

Taxing is effective when there is a close link between the activity and the environmental impact, and when there is no immediate need to control the pollution or to meet the targets for reduction. However, an appropriate level of the charge is required to stimulate a desirable change in farmers behavior. Furthermore, some emissions vary according to the conditions of application and attempting to reflect this in tax may result in complexity and high administrating costs.

In some cases, a *public assistance and support* to private organizations is the best mode for intervention. Large agrarian and rural support and development programs have been widely used in all industrialized countries. They let a “proportional” development of agriculture and improvement of farmers welfare (“income parity”).

The public *financial* support for the environmental actions is the most commonly used instrument for the improving environment performance of farmers. It is easy to find a justification for the *public payments* as a compensation for the provision of an “environmental service” by farmers. However, the share of farms covered by various agri-environmental support schemes is not significant. That is a result of the voluntary (self-selection) character of this mode which does not attract farmers with the highest environment enhancement costs (most intensive and damaging environment producers). In some cases, the low-rate of farmers’ compliance with the environmental contracts is a serious problem. The later cannot be solved by augmented administrative control (enormous enforcement costs) or introducing bigger penalty (politically and juridical intolerable measure).

A disadvantage of “the payment system” is that once introduced it is practically difficult (“politically unacceptable”) to be stopped when goals are achieved or there are funding difficulties. Moreover, an withdraw of the subsidies may lead to further environmental harm since it would induce the adverse actions such as intensification and return to the conventional farming.

The main critics of the subsidies are associated with their “distortion effect”, the negative impact on “entry-exit decisions” from polluting industry, the unfair advantages to certain sectors in the country or industries in other countries, not considering the total costs (transportation and environmental costs, and “displacement effect” in other countries). It is estimated that the agri-environmental payments are efficient in maintaining the current level of environmental capital but less successful in enhancing the environmental quality.

Often providing *public information, recommendations, training and education* to farmers, other agrarian and rural agents, and consumers are the most efficient form.

In some cases, a *pure public organization* (in-house production, public provision) will be the most effective as in the case of as in case of important agro-ecosystems and national

parks; agrarian research, education and extension; agro-meteorological forecasts; border sanitary and veterinary control etc.

Usually, the specific modes are effective if they are applied *alone with other modes* of public intervention. The necessity of *combined* intervention (a *governance mix*) is caused by: the complementarities (joint effect) of the individual forms; the restricted potential of some less expensive forms to achieve a certain (but not the entire) level of the socially preferred outcome; the possibility to get an extra benefits (e.g. “cross-compliance” requirement for participation in public support programs); the particularity of the problems to be tackled; the specific critical dimensions of the governed activity; the uncertainty (little knowledge, experience) associated with the likely impact of the new forms; the practical capability of Government to organize (administrative potential to control, implement) and fund (direct budget resources and/or international assistance) different modes; and not least important the dominating (right, left) policy doctrine [Bachev 2010a].

Besides, the *level* of an effective public intervention (governance) depends on the kind of the problem and the scale of intervention. There are public involvements which are to be executed at *local* (ecosystem, community, regional) level, while others require *nationwide* governance. And finally, there are activities, which are to be initiated and coordinated at *international* (regional, European, worldwide) level due to the strong necessity for *trans-border actions* (needs for a cooperation in natural resources and environment management, for exploration of economies of scale/scale, for prevention of ecosystem disturbances, for governing of spill-overs) or consistent (national, local) *government failures*. Very frequently the effective governance of many problems (risks) requires *multilevel* governance with a system of combined actions at various levels involving diverse range of actors and geographical scales.

The public (regulatory, inspecting, provision etc.) modes must have built *special mechanisms* for increasing the *competency* (decrease bounded rationality and powerlessness) of the bureaucrats, beneficiaries, interests groups and public at large as well as restricting the possible *opportunism* (opportunity for cheating, interlinking, abuse of power, corruption) of the public officers and other stakeholders. That could be made by training, introducing new assessment and communication technologies, increasing transparency (e.g. independent assessment and audit), and involving experts, beneficiaries, and interests groups in the management of public modes at all levels. Furthermore, applying “*market like*” mechanisms (competition, auctions) in the public projects design, selection and implementation would significantly increase the incentives and decrease the overall costs.

Principally, a *pure* public organization should be used as a *last resort* when all other modes do not work effectively [Williamson]. The “in-house” public organization has higher (direct and indirect) costs for setting up, running, controlling, reorganization, and liquidation. What is more, unlike the market and private forms there is *not an automatic mechanism* (such as competition) for sorting out the less effective modes¹⁹. Here a *public “decision making”* is required which is associated with high costs and time, and it is often influenced by the strong private interests (the power of lobbying groups, policy makers and their associates, employed bureaucrats) rather than the efficiency. What is more, widespread “*inefficiency by design*” of public modes is practiced to secure (rent-taking) positions of

¹⁹ It is not rare to see highly inefficient but still “sustainable“ public organizations around the world.

certain interest groups, stakeholders, bureaucrats etc. [Williamson].

Along with the development of general *institutional environment* (“The Rule of Law”, transparency) and the measurement, communication etc. *technologies*, the efficiency of pro-market modes (regulation, information, recommendation) and contract forms would get bigger advantages over the internal less flexible public arrangements.

Usually *hybrid modes* (public-private partnership) are much more efficient than the pure public forms given the coordination, incentives, and control advantages. In majority of cases, the involvement of farmers, farmers organizations and other beneficiaries increases efficiency - decreases asymmetry of information, restricts opportunisms, increases incentives for private costs-sharing, reduces management costs etc. [Bachev 2004]

For instance, a hybrid mode would be appropriate for carrying out the supply of non-food services by farmers such as the preservation and improvement of environment, biodiversity, landscape, historical and cultural heritages. That is determined by the farmers information superiority, the strong interlinks of that activity with the traditional food production (economy of scope), the high assets specificity to the farm (farmers competence, high site-specificity of investments to the farm and land), and the spatial interdependency (needs for cooperation of farmers at a regional or wider scale), and not less important – the farm’s origin of negative externalities. Furthermore, the enforcement of most labor, animal welfare, biodiversity etc. standards is often very difficult or impossible at all. In all these cases, stimulating and supporting (assisting, training, funding) the private voluntary actions are much more effective than the mandatory public modes in terms of incentive, coordination, enforcement, and disputing costs.

Anyway, if there is a strong need for a third-party *public* involvement but an *effective* (government, local authority, international assistance etc.) intervention is not introduced in a due time, the agrarian “development” would be substantially deformed [Bachev 2004]. Thus the *public (Government) failure is also possible* and often prevails.

In Bulgaria, there have been a great number of *bad* examples for public under- and over-interventions in agrarian sector during post-communist transition now [Bachev 2010a; Bachev and Tsuji]. Consequently, a primitive and uncompetitive small-scale farming; predominance of over-integrated and personalized exchanges; ineffective and corrupted agrarian bureaucracy; blocking out all class of agrarian transactions (innovation and extension supply, long-term credit supply, supply of infrastructure and environmental goods); and development of a large informal (gray) sector, all they have come out as a result.

Our comparative analysis let us *improve the design* of the new forms of public intervention according to the *specific* market, institutional and natural *environment* of a particular country, region, sub-sector²⁰, and in terms of *perfection of the coordination, adaptation, information, stimulation, restriction of opportunism, controlling* (in short – minimization of transaction costs) of participating *actors* (decision-makers, implementers, beneficiaries, other stakeholders).

What is more, it also unable us to *predict* likely cases of *new* public (local, national, international) *failures* due to impossibility to mobilize sufficient political support and necessary resources and/or ineffective implementation of otherwise “good” policies in the

²⁰ The effective institutions can not be “imported“ but must be designed for the specific conditions of different countries, regions, sectors etc. [North].

specific economic and institutional environment of a particular country, region, sub-sector etc. Since the public failure is a feasible option its timely *detection* permits foreseeing the persistence or rising of certain problems in agrarian development, and *informing* (local, international) community about associated risks.

CONCLUSION

In unreal economy "without institutions and transaction costs" the theory of agrarian organization is very simple - there are no agrarian organizations (farms, firms, cooperatives, contractual arrangements etc.). Here there is a single mechanism for governing (organizing, coordinating, stimulating) the entire economic activities - the free market. "Situation of efficiency" is easily achieved since agrarian agents (individuals, households, firms) automatically and costlessly adapt their behavior according to movements of market prices and changes in production technologies.

In the real agrarian economy with diverse agents, institutions and transaction costs there is also place for other effective (non market) modes for organization - partnerships, , contracts, public and hybrid forms etc. "The old" problem of efficiency finds a "new" dimension through incorporation into analysis of the costs of transacting (in addition to the production costs). Moreover, accent is put on assessment of comparative efficiency of all (rather than only a part) of the alternative modes for economic organization in agriculture – "free market" as one extreme and "subsistent farm" or/and complete (public or private) hierarchy" as another poll(s). It also becomes absurd the traditional "black box" approach in analysis of the governing structures and productivity as an indicator for efficiency of different agrarian organizations.

Our new framework helps us better understand the factors for organizational choice and efficiency, and the needs for public intervention in agrarian sector. The analysis of transaction costs identifies an immense range of "market failures" associated with unspecified or badly specified property rights; inefficient system for enforcement of absolute and contracted rights; high uncertainty and dependency of activity, low appropriability of rights etc.

The economic agents deal with market deficiency developing different non-market forms for effective governance such as contracts, internal modes, collective actions etc.) Nonetheless, private sector also "fails" to safeguard individual rights and carry out certain activities at effective scale. That is particularly true for human and eco-rights, technological and infrastructural development, management of non-renewable resources, environmental conservation activity etc. Thus there is a strong need for a third-party public involvement in market and private transactions though institutional modernization, assistance, regulation, hybrid or in-house public organization.

However, diverse forms of public interventions are with unequal efficiency and the most efficient one is to be selected taking into account the overall transaction costs and contribution to sustainable development. Nevertheless, "public failure" is also possible, and inappropriate involvements, under or over-regulations, mismanagement, corruption etc. are widespread around the world.

Agrarian sustainability is significantly compromised when market and private sector fails, and no effective public intervention takes place - imperfect institutional structure is not

reformed, delayed or bad government interventions prevail, fruitless international assistance dominate, and needed global governance is not established.

Suggested new concept of efficiency is inseparable part of the new understanding of agrarian organizations. However, the transaction costs economizing is not only a modern academic concept but a real practice in the world we are living in. Here arguments such as “transaction costs are difficult to measure” and therefore “they will be ignored in assessment of efficiency” are not acceptable - not only in research works, but in the farm management and agrarian policies design.

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