

# GOVERNING OF LABOR SUPPLY IN BULGARIAN FARMS

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## Abstract

This is the second paper from a series of articles on governing of different types of transactions in Bulgarian farming applying the framework of New Institutional and Transaction Cost Economics. It is based on a large scale microeconomic data from 194 typical commercial farms of different sizes and types from all regions of the country. This study concentrates on factors and modes for organization of labor supply in Bulgarian farms.

Structure of kind of labor (permanent, seasonal, irregular, others), and type of labor use (in production, in administration, in management, for protection, others), and labor source (own labor, family labor, hired labor, cooperative members, others) in farms of different types and sizes has been determined. Microeconomic factors responsible for various organizational and contract choices for labor supply (own cultivation, using of family labor, hiring of workers, cooperation etc.) have been specified. Dominant governing modes have been explained by comparative advantages for saving on transacting costs (for finding partners, contracting, monitoring of hired labor, conflict resolutions, renewal of contracts etc). Limits of farm extension (optimization) through effective alternative (to outside labor supply) modes for “internal” service, and inputs, and land supply have been determined.

Transaction costs economizing framework has been used through analysis of: types of wage formation (time based, output based, mixed) for different categories of labor; reasons for hiring labor (extension of business, support of own labor, support of family labor, replace of family labor, others); ways of application of hired labor (in production, in administration, in management, in protection, others); personality of different types of hired labor (relatives; close friends; known before hiring; unknown before first hiring; same persons every time; from universities, agricultural schools etc; others); frequency of experiencing problems leading to suspension of labor contracts; main reasons for conflicts with hired labor (lack of qualification; lack of desire for hard work; lack of entrepreneurial spirit; cheating, stealing etc); kind of contracts with different types of labor (informal, written) and extend of specifications of contract obligations; ways of income formation (fixed monthly wages, daily based, output based, based on final year results, others) of different categories of labor in crop, livestock, services and management.

Relative level of farms transaction costs associated with labor supply (for finding needed labor, negotiation and contracting, for directing and monitoring of hired labor, for contract enforcement and disputing etc.) has been determined. Besides high governing costs associated with labor contracts other factors restricting farm enlargement of Bulgarian farms as present stage are: high enforcement costs of contracts in general, and enormous credit supply and marketing costs. According to estimate of farm managers most important factors for future development of farms relate to improvement of institutional

environment (guaranteed marketing, enforcement of Laws and private contracts, macro-economic stability, legislation framework, access to free markets) and own and family experience in farm management.

**Key words:** type of labor and service contract, organization of labor, governing of labor and service supply, farm organization, transaction costs, transitional farming structure

### **Introduction**

Since 1989 a fundamental transformation in Bulgarian agriculture has been in place - agrarian resources have been privatized and markets liberalized. New farming structures have evolved in the country and a great variety of specific modes for land, labor, inputs etc. supply have emerged (Bachev and Tsuji, 2001b). Despite that unprecedented development there has been no large-scale studies on governing forms for labor supply in Bulgarian farms. Besides, traditional (e.g. “neoclassical”) framework still dominates in analysis of various agrarian organizations. Consequently, character and real mechanisms for management of labor supply in transitional agriculture are little known.

*New Institutional and Transaction Cost Economics* is a powerful methodology for understanding of various modes for organization of economic activities (Williamson; Bachev and Tsuji, 2001a). According to that approach the choice of one or another form for governing of labor supply depends on: *institutional environment* (property rights structure, enforcement system, other formal and informal restrictions); and on *relative level of transaction costs* for practically possible modes for labor supply. Correspondingly, examination of labor supply becomes a part of *larger* analysis of the effective organization of *overall* transactions governed by a particular farm (land supply, and inputs supply, and finance supply, and marketing etc.). For instance, estimate is made on real organizational alternatives such as: “to *make* yourself (integrate) or to *buy* a finished product (from market)”; “to *hire a labor* or to *buy a service*”; “to *organize* (start up, extend) *own farm*, or to *sell-out own labor*, or to *join* (set up) a coalition of recourse owners (group farming, cooperative, firm)” etc.

The analysis is concentrated on *comparative* advantages of different organizational and contract modes to minimize *bounded rationality* of agrarian agents and to *protect* private *investments* from possible *opportunism*. Level of transacting costs and the most effective governing form (classical contract, rational contract, trilateral mode, internal integration, strategic alliance etc.) eventually depend on *critical dimensions* of each transaction (appropriability, asset specificity, uncertainty, and frequency). Agrarian agents will extend farm size through some form of labor supply only if it has *comparative advantages* to other modes for farm enlargement (through land, service, input supply contracts; cooperation etc.). Ultimately the effective size (economic boundaries) of farm will be determined by the *total costs* for governing of labor supply,

*and* land supply, *and* service supply, *and* input supply, *and* finance supply, *and* marketing etc.

Governance of “human factor” is most important for management of all business organizations. It becomes particularly significant in analysis of farm structures since here *behavioral* uncertainty is “combined” with *natural* agrarian uncertainty. This specificity determines to the greatest extent the “smaller size” of farms unlike the high concentration reached in other industries (Hayami and Otsuka). Besides, the type of contract which is used to govern labor supply transactions (“self-employment”, hiring a worker, cooperation; permanent, seasonal etc.) determines both the *character of farm*, and the *limits of farm extension* through labor supply.

**In this paper a first attempt has been made to identify dominant forms and factors for labor supply in Bulgarian farms.** The study is based on 2001 data collected through interviews with managers of 194 “typical” farms of different type and size in all major regions. The survey covers around 0,5% of commercial farms in the country<sup>1</sup>. More than 38% of surveyed farms are unregistered “individual, family, or group farm”, almost 29% are “cooperatives”, and one-third has a status of “firm”. More than 45% of questioned farms self-determined themselves as “middle sized”, a little bit more than 38% as “small”, and 16.5% are “large” farms<sup>2</sup>.

## **MODES FOR LABOR SUPPLY**

### **Mode of employment**

*Permanent employment* is the main form for labor organization in all type of farms – around 80% of unregistered farms, and almost all cooperatives and firms apply that mode of labor supply.

Permanent (labor) contract with a specific farm assumes high frequency of transactions between a farm entrepreneur and a worker throughout the (whole) year. It allows realization of considerable economies on governing of labor supply. Instead of negotiating each particular activity (service supply contract, “daily” hiring etc) the manager and worker sign a permanent labor contract. In that way both sides save costs for permanent (re)negotiations, and farmer economizes on efforts to find “good” workers, for testing labor’s skills and reliability etc. Besides, high recurrence of transacting between same parties and the permanent contact let development of “good” relationships between partners (getting to know each other, efforts to avoid conflicts or to overcome conflicts rapidly etc.) and creates incentives to invest in farm specific human capital (getting knowledge about quality of different land plots, learning technology for specific products on farm, acquaintance with animals etc.). Permanent employment also allows avoiding the risk of

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<sup>1</sup> According to the Ministry of Agriculture and Forestry there are about 42000 “market oriented farms” in Bulgaria (2001 data). Most of them are unregistered farms (99.3%) cultivating 19.7% of total agricultural land. Registered 3125 cooperatives and 2275 agro-firms manage accordingly 61.6% and 18.7% of agricultural land.

<sup>2</sup> For detailed description of surveyed farms see Bachev 2002.

uncertainty in labor market (e.g. shortage of highly qualified labor) which is significant in farming in some (pick) periods and activities.

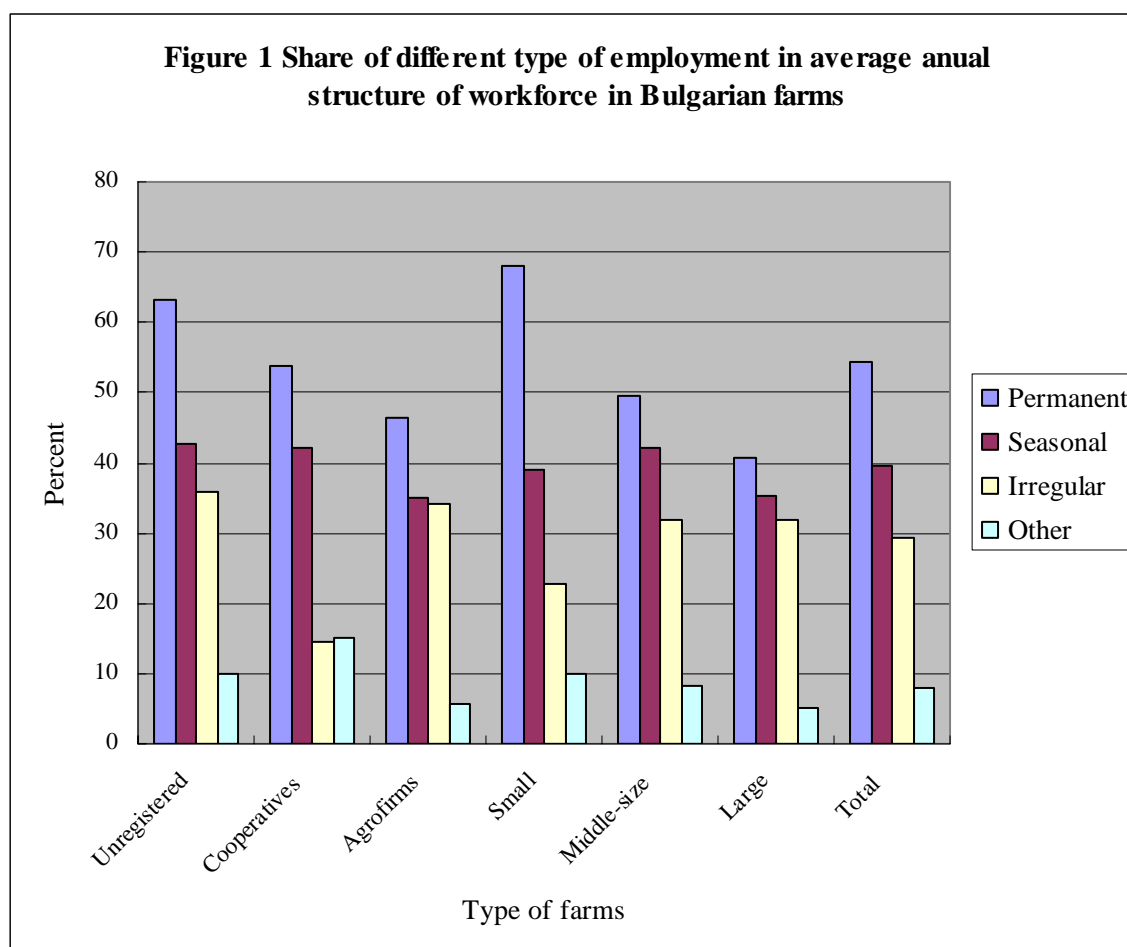
For highly specific to a farm human capital (managerial, technological knowledge, personal contacts etc.) that mode is essential for protecting critical labor supply transactions. For example, acquired (through training, “learning by doing”) knowledge for management of a particular farm is very often highly specific for that farm asset. That is why its supply is usual “integrated” through a contract for permanent employment.

In one-person farms (self-employment) the permanent employment is a result of combination of functions of farm management and effective “own” execution of intrafarm transactions (combination of operations). However, it could be a consequence of low opportunity for alternative employment of labor (high redundancy, low qualification, old age) and other own resources (e.g. farmland). In later case the only possibility for “business” is internal organization of available resources (labor and land). When it is impossible to utilize own labor throughout the year (during all seasons) it either stays unused (seasonal or part-time occupation) or it is applied in other farms and industries. For instance, more than a fifth of surveyed farms have no permanent mode for labor supply. Finally, the ownership on a great part of material (non-human) assets of a particular farm could be used to “secure” own employment in these farms (family farms, cooperatives) without any economic reason for such organization of transactions.

Permanent labor accounts for more than a half in the average annual structure of workforce in Bulgarian farms (Figure 1). This form of employment presents a major share in average annual structure of workforce in applying small, unregistered and cooperative farms. On the other hand, large farms and agro-firms which use permanent contacts rely to the lesser extend on that mode for supplying needed labor.

Almost three-fourth of surveyed farms apply *seasonal supply of labor*. That is caused by the “seasonal” character of (some) activities in farming and necessity for “oversupply” in particular periods of the year (summer, autumn). Needed labor for extension of farms in such periods is secured by temporary (short-term) contract. That mode allows flexibility in labor supply in accordance with the internal necessities of farm enlargement. It saves costs for permanent contract (for finding permanent work for hired labor, for supervising etc.) and for daily renewal of contracts (for labor or service supply) during the active season. At the same time that form protects transactions for specialized labor supply from failures (in pick periods, campaigns etc.).

Bigger farms, cooperatives and firms use to the greater extend that mode for labor organization, while a considerable part of unregistered and smaller farms obtain labor supply through other forms. On average seasonal employment accounts for a good share in workforce of farm applying that form of labor supply (Figure 1).



Around 41% of surveyed farms use also *irregular employment*, as a half of agro-firms and a tree-fourth of large farms apply that form for governing of labor supply. That organization of workforce is related to the necessity for “internal” organization of labor in particular days or short periods (e.g. seedling, harvesting etc.). In certain cases those are critical operations for the farm. Therefore, internal employment under the management control rather than outside service supply contract is preferred. Usually, those are specialized and not rare highly-qualified activities where labor market works well. Finding out and securing needed labor is not expensive, and major material assets for carrying out of critical transactions are generally integrated within the farm (combines, dryers, irrigation facilities).

In some cases there is a need for additional low-qualified labor for various insignificant and non-standardized operations. Since it is uneconomical to negotiate details for each individual service (“activity by activity”) moreover with different agents, irregular employment is used (daily, weekly, for a certain period) and labor is directed according to specific needs.

Finally, in agriculture there are technological operations which require in certain moment of time a big number of low-qualified labor for standardized activities (e.g. manual harvesting,

manual cultivation). Such labor is supplied through contracts for irregular employment which character is little different from standard service supply contracts (“output base” compensation).

More than one-third of average annual workforce in unregistered farms and firms which employ irregular labor is secured through that form of supply (Figure 1). Cooperatives supply insignificant share of workforce through that mode. In many instances, farms preferences to temporary contracts (seasonal, irregular) are associated with opportunities to economize on compulsory social and other payments which would be hardly escaped with permanent labor contacts (due to inspections, auditing, labor-unions pressures etc.).

More than 11% of surveyed farms apply “other” employment as well along with extension of variety of effective modes for supplying of labor (mixed, “double” employment, interlinked etc.). Mostly agro-firms innovates modes for labor supply and use forms which are typical for business organizations. In overall workforce structure of farms applying that form, the share of labor supplied through that mode is still insignificant and varies according to types of farms (Figure 1).

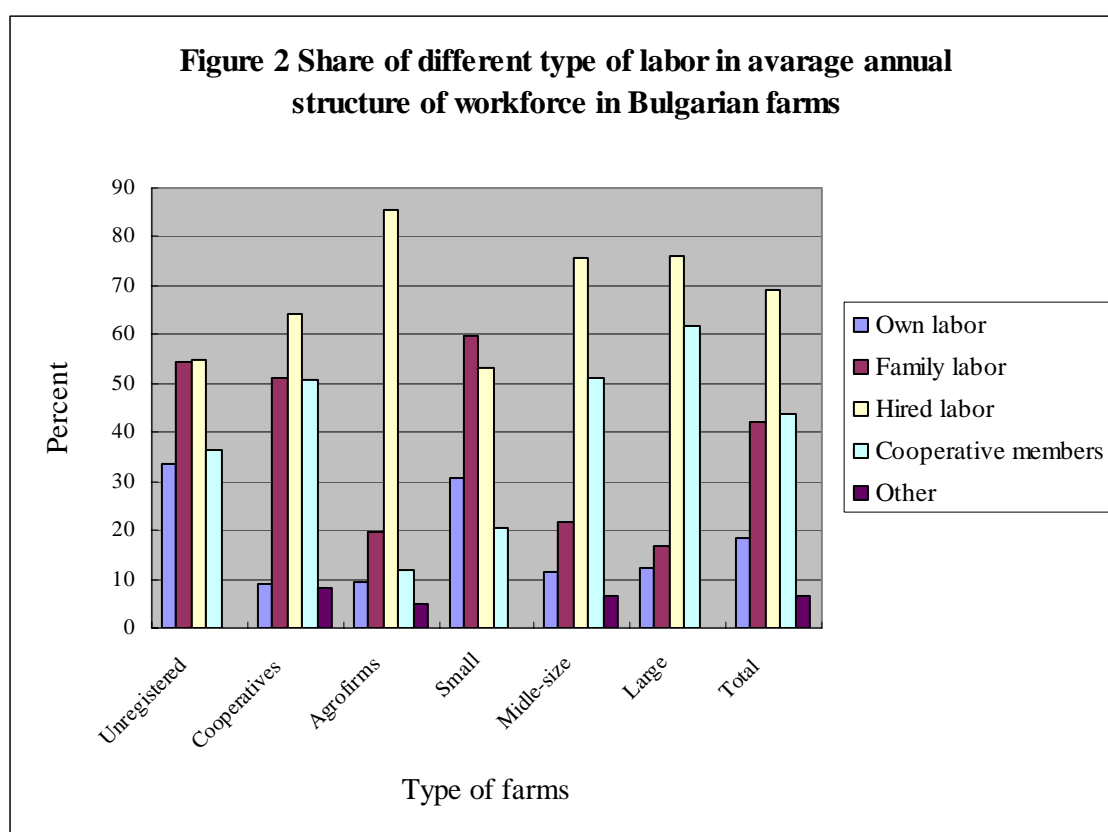
### **Type of labor**

More than 40% of surveyed farms use *own* and *family labor* as share of non-cooperative farms in that type of employment is particularly big. The greatest part of firms and farms rely on own labor (self-employment) while most of unregistered and relatively smaller farms apply family labor. Share of own labor in overall workforce of farm is largest for unregistered and smaller farms (Figure 2). Family labor also accounts for a considerable portion of average workforce in Bulgarian farms. Its part is especially big in employing family labor small, unregistered and cooperative farms.

Farm efficiency to a great extent depends on quality and timely implementation of various “critical” operations (sawing; watering; spreading chemicals and pesticides; protecting, harvesting and marketing of farm output etc.). At the same time, high uncertainty and dependence from climatic factors make it very difficult to verify relationship between individual contribution and final output. Since individual role (in team production) is often impossible to estimate and permanent control of labor (not rare in large geographical areas) is extremely expensive, own labor or low-cost family labor is generally used for farm critical operations. Therefore, utilization of family labor is the major form for governing of labor supply in most of the farms.

Family labor has significant advantages comparing both with outside supply of labor (service supply contract), and internal organization of hired labor (market based employment contract). Family members are unified by common business and family interests. That creates strong incentives for cooperation in decision making, reviling complete information, conflict resolution, and self-controlling opportunistic behavior. That is why the effective limits for farm

extension through labor supply are mostly determined by possibility to carry out critical operations by own or family labor (Bachev and Tsuji 2001a). For instance, the potential for farm enlargement mainly depends on managerial capital of the owner-manager and his (her) personal capacity to control additional internal (hired labor) and external (contacting services, marketing etc.) transactions. In fact, the level of that managerial skill creates an additional rent which could be explored through internal organization of transactions. Otherwise, farmer would sell his (her) standardized labor on market (instead of self-employing in own farm) and will get the normal price for labor. Namely that differentiation of managerial capital explains why in the same farming industries exists so big variation of farm sizes.



Employment of *cooperative members* is a major form for labor supply only for most of cooperatives as 64% of them apply that mode. That is logical since majority of that production organizations exist in order to provide employment for their members. More than a half of overall workforce in these farms is of cooperative members (Figure 2). On the other hand, only 11% of unregistered farms use cooperative labor. However, the share of cooperation in labor supply is quite significant in average annual workforce of these farms. Cooperative labor contains additional incentives for intra-farm realization since it participates (share) in ownership, and in management, and in final distribution of non-human assets. All these advantages of cooperation could be exploited only if it is possible an effective mutual control of activity and there are low-cost

mechanisms to link individual contribution with overall (final) productivity. That mode is especially effective when the number of members of the cooperative (group farms) is not very big and most of them are working-owners in the coalition.

*Hiring (employment) contracts* are broadly used form for labor supply in agriculture. Since possibilities for farm enlargement through own and family labor are usually naturally restricted an additional labor is hired (from market). Big part of surveyed farms organize labor supply through that mode - almost 68% of unregistered and small farms, more than 85% of cooperatives and middle size farms, more than 90% of firms, and all of the large farms. Hired labor accounts for a significant share in workforce of hiring farms (Figure 2).

Internal labor contract is an *alternative form* for farm extension to outside (market) contract *for service supply*. That mode possesses a number of transacting advantages such as: economy of costs for multiple negotiations and for detailed specification of obligations; protecting transactions from possible opportunism in critical moments; opportunity for effective investment in farm specific human capital etc. That mode for farm enlargement is often preferred because of undeveloped (missing or unstable) market for agrarian services, or the high potential for renting on internally organized specific human capital (learning by doing experience, training etc.).

In many instances the outside employment of labor comes to be an *alternative for outside supply of agrarian inputs* as well – for example, buying instead of producing feed for animals, buying machinery and “replacing labor” etc. Reason for selecting that form for transacting is to be sleeked again in lower relative costs. In some cases, that is the “impossibility” to find a reliable supplier, the high risk from strong dependency of farm from outside providers, the necessity for “expensive” credit for market procurement of inputs etc. In other instances, grounds for that is the availability of required non-human assets (land, machinery) for internal organization of transactions or existence of strong interdependence (specificity) of different farm assets which require internal integration.

Finally, outside labor supply is an *alternative for lease-out contract of available (owned, rented etc.) land*<sup>3</sup>. In this case the farm size is *reduced* through (partial or full) transfer of land management to another farm entrepreneur.

### **Kind of labor utilization**

Dominant part of surveyed farms (94%) use labor in *production*. That is “natural” since farms are main production structures in agriculture. In overall structure of workforce above 74% is

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<sup>3</sup> Namely that relationship (between *labor* supply and *land* supply); and incentives, costs minimizing, and risk bearing futures of alternative forms of *land tenure* has been commonly studied by traditional agrarian economy.



employed in production, and that share is higher in unregistered farms, and lower in cooperatives and firms. Besides, small-size farms employ lesser share of their workforce in production in comparison with larger farms.

Portion of farms which employ labor for coordination and controlling of various (internal and external) transactions of the farm is significant: accordingly 71% in *administration* and 63% in *management*. As much as 18% of the total workforce of farms is engaged in these specialized activities. Particularly high is the share of cooperatives and agro-firms, and middle-size and large farms which use their labor in that way. Besides, various types of farms have quite different part of their workforce in those activities. While in firms and large farms the portion of workforce in management is slightly above 4%, for other type of farms it is much higher. Likewise firms and large farms apply relatively lesser share of its workforce in administration. That demonstrates that efficiency of management and administration of transactions in large farms and agro-firms (measured through direct relative costs) is comparatively higher than costs for carrying these activities in unregistered and cooperative farms.

One-fourth of unregistered and small farms utilizes labor for *security*. The segment of other type of farms using specialized workers for protection from internal and outside stealing, and expropriation of property is especially great (71% of cooperatives and 94% of firms). Relative share of labor for security in total workforce of the farms is 9%. Individual, family and group farms apply considerably lower part of their workforce for that activity than cooperatives and firms.

### **Forms for utilization of hired labor**

“*Extension of business*” is the reason for hiring a labor for each fourth of surveyed farms. Share of firms and bigger farms, which use that form for labor supply for enlargement of farm, is significantly bigger than the average – 35% and 45% accordingly. For one-third of agro-firms the rationale for hiring additional labor is “*for assisting own labor*”. For large portion of unregistered farms (35%) the reason for applying that mode is “*for assisting family labor*”. Around 17% of farms hire labor in order to “*substitute family labor*”. Firms and middle-size farms are major employers of labor for extension of farm business, while unregistered and small farms hire labor mainly for assisting and substituting family labor.

More than 43% of farms utilizing outside labor supply use *hired labor* in *production*. More than 23% of farms hire labor for *administration*. Every tenth farm employs hired labor in farm *management* as share of cooperatives using that form of hired labor is higher than in other farms. One-fifth of farms hire labor for *security*, and that portion is minor only for unregistered and small farms (6% and 11% accordingly).

## **EXTEND OF INTERNAL INTEGRATION**

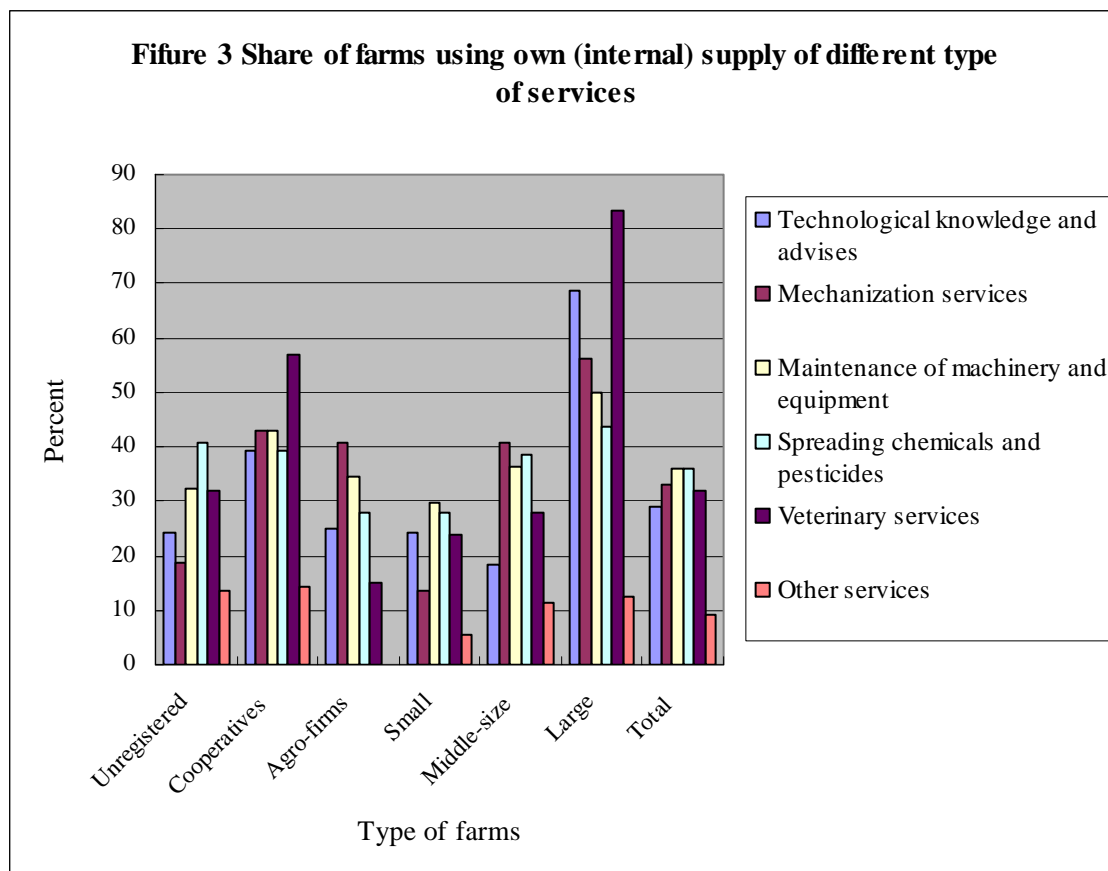
### **Internal “service” supply**

Outside service supply is an *alternative* form of internal organization of labor (*own production of services*). That mode of farm extension is effective for *standardized* and less specific to farm operations (plugging, spreading of chemicals, guarding, etc.). In such cases contracting and controlling (assessment of output) of service supply do not require high costs, and maximum scales and scope economy is realized through specialized *service market* (specialized services). Hiring and internal utilization of labor would involve additional costs: for organization and monitoring of workforce, for “training” of labor, for social payments (insurance, redundancy etc.), for compensation in non-working days (holidays, rainy days, out of season periods etc.). Besides, inter-farm organization would be associated with necessity to supply (through purchase or lease) of specialized machinery and material assets for carrying these services.

Therefore, inner integration of “services” is efficient only when they are strongly *specific to a farm* (e.g. market fails to supply highly specialized technological knowledge to farm), and when it is necessary to *protect unilaterally dependant* transactions (irrigation, plant protection, veterinary care etc.). However, when technological economy of scale and scope from investments in specialized assets is impossible to be explored *within* farm boundaries (for meeting own demand or outside sells of services), then it becomes essential to form a *special (private) organization* for supply (cooperation, group supply etc.). If development or participation in such an organization for supply of specific to a particular farm services is too expensive, then these type of transactions either fail (blocked) or they are not carried out in an effective scale (slow or backward technological development, bad agro-techniques or animals health, etc.).

Share of surveyed farms which use *own supply* (“without outside provider”) of major type of agrarian services is significant (Figure 3). Very often outside (market) supply of farm services is “too expensive” because of undeveloped markets of specialized services, high risk of external supply (outside dependency) of “critical” farm activities, or great internal opportunities to explore economies of size and scales on specialized and (or) specific investments. Since high market uncertainty (insecurity, possibility for opportunism of supplier), and critical character of supply in particular time and quality, service is self-supplied (internal organization) in order to avoid risk of production failure (missed agro-technical activities, low yields and product quality, unharvested yields etc.).

Main reasons for “not using” outside supply of different sort of services in surveyed farms are pointed out as: “possessing necessary qualification” or “having needed worker to carry out that activity” (Table 1). All these proves that a good part of Bulgarian farms integrate supply of critical for farm development and to a great extend farm-specific transactions through training, learning by doing experience, or hiring a specialized labor.



However, a significant part of Bulgarian farms still use no major services *at all*. More than 40% of unregistered farms, two-third of agro-firms, and one-fourth of cooperatives report they do not apply services for supply of “technological knowledge and advice”. More than a third of unregistered farms, one-fifth of agro-firms, and less significant portion of coops do not use “mechanization services”. Half of unregistered farms and majority of small farms do not employ services for “maintenance of machinery and equipment”. Almost a third of unregistered and small crop farms do not use service for “spreading chemicals and pesticides”. “Veterinary services” are not employed by one-third of unregistered farms, and more than one-fifth of firms with livestock operations.

“Lack of outside supplier”, “high price for outside procurement”, “problems with contracting outside service supply”, and “quality problems of outside supply”, all they are pointed out as main reasons for not applying services by surveyed farms. As a result of not carrying of these important for farms transactions serious problems for meeting quality, technological, environmental, and animal welfare standards come to existence.

**Table 1 Reasons for “not using outside supply” of major type of services**

Type of services	Share of farms (percent)						
	Unregi-stered	Coope-ratives	Agro-firms	Small	Middle size	Large	Total
<i>Technological knowledge and advises</i>							
Possess own skill	100	81.8	100	100	100	36.4	100
Process specialized labor	88.9	36.4	75	66.7	100	36.4	64.3
<i>Mechanization services</i>							
Possess own skill	100	66.7	38.5	100	50	55.6	71.9
Process specialized labor	71.4	75	100	60	100	44.4	84.4
<i>Maintenance of machinery&amp; equipment</i>							
Possess own skill	75	58.3	54.5	100	50	37.5	62.9
Process specialized labor	100	100	100	100	100	87.5	100
<i>Spreading chemicals and pesticides</i>							
Possess own skill	30.8	54.5	55.56	55.6	41.2	42.9	45.4
Process specialized labor	46.1	81.8	100	22.2	100	42.9	87.9
<i>Veterinary services</i>							
Possess own skill	100	62.5	100	100	100	40	88.9
Process specialized labor	57.1	100	100	33.3	100	80	100
<i>Other services</i>							
Possess own skill	60	50	0	100	0	100	55.6
Process specialized labor	40	100	0	0	100	100	100

### Internal “inputs” supply

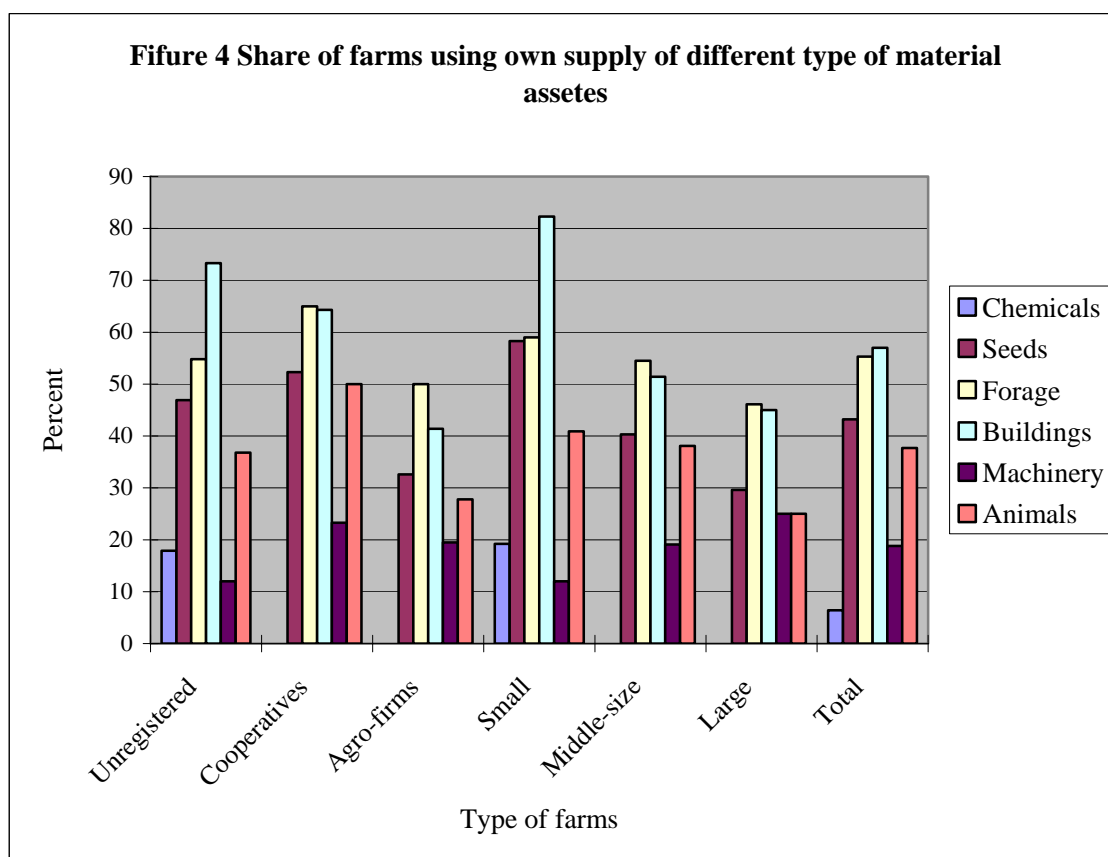
Internal organization of inputs supply is an *alternative* mode to outside procurement (through purchase or leasing<sup>4</sup>) of assets, and (or) outside service supply. Restriction of market supply of material assets is a result of high transaction costs (undeveloped or risk purchase or lease inputs markets, monopoly or another dependency from a supplier etc.). Besides, part of machinery (tractors, combines etc.) and productive animals are either highly *specific to a farm* (strong mutual dependency with other farm assets) or *especially needed in particular “critical” periods* (harvest, milking etc.). For instance, productivity of milking cows strongly depends on knowledge and care for individual animals, long-term investments in animals (feeding, healthcare, breeding etc.), and in some instances even from the relationships of animals with a particular worker (e.g. buffalo breeding). In addition to their specific character, these types of assets have comparatively high

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<sup>4</sup> Unlike land rent leasing conditions for *mobile assets* (machinery, animals) are quite difficult to control from the owner (big information asymmetry, and possibility of opportunistic behaviour from the lesser). That is why leasing markets for such resources hardly develop and *ownership* (farm, group, cooperative) is the *dominant form* for governing of these assets in agriculture.

frequency of use, relatively short period of effective life, and possibility for “full” exploration of technological economies within farm boundaries.

In order to avoid likely risk from using outside form, preferences is given to govern transactions through *own* organization (e.g. inputs supply cooperative or another farm organization) or *entirely integrated* mode (own procurement, making). For instance, instead of extension of its specialized activity a livestock farm integrates supply of forage (entirely crop activity) in order to avoid unilateral dependency from supplier of forage or to use free internal recourses (which otherwise are costly or impossible to trade on market). Also when there is potential for *join (collective) realization of economy* (scale and scope) in inputs supply or when it is economical to *protect* dependant transactions (through better coordination and control, prevent possible opportunism of a supplier) then it is formed or participated in a private farm organization for inputs (service) supply.



Integration through *own production* is most common for forage and seeds supply in surveyed farms (Figure 4). Internal supply is also practiced in a good part of farms for building of facilities and breeding of animals. Own supply (in house making) of machinery has more significant importance for cooperatives and firms with middle and large size, while for chemicals -

that mode of supply is practiced by a portion of unregistered and small farms.

### **Land lease-outs**

*Leasing out of owned (managed) land* is an *alternative* to internal organization of transactions through utilization of available land within the farm, investing additional capital, hiring additional labor etc. Manager prefers to lease the land-out to another farm instead of organizing new operations within own farm (on available land) because of comparative advantages of this governing mode. Internal management of a particular land plot would increase farm income, but it would be associated with augmentation of management costs for additional transactions. For example, it would require supplementary efforts for hiring, directing, and monitoring of labor; extra efforts to find working and investment capital; additional cares for protection and marketing of farm output etc. That is why instead of internal organization, the manager prefers cheaper outside land “supply” (lease out mode), and either *reduces farm size* or *extends farm with land saving* transactions (e.g. intensive crops, livestock operations, processing etc.).

Manager’s transacting costs for lease-out plots are limited to finding a partner, negotiating, and controlling contract terms. Those are mainly costs for management of land property rather than for organization of farming (later costs for land supply are brought by tenant)<sup>5</sup>.

Share of farms leasing out land has increased three times comparing to the period before 1993, and now more than one-fifth of surveyed farms are involved in such transactions. Only few unregistered and small-size farms practice this mode for optimization of resources. Reduction of farmland through lease takes place only after 1996 in 13% of cooperatives. For agro-firms, large and middle size farms, leasing out turns to be the main form for optimization of size of cultivated farmland. Namely, these farms are highly sensitive to market signals and tend to manage their resources according to efficiency rule.

Predominant part of surveyed farms either does not take part in land lease-out transactions or they do it *rare*. Solely share of cooperative farms which are involved in this kind of transactions is higher (45%, including 22% do it *frequently*). Leasing out farms are mainly large-scale farms.

Great portion (around 40%) of the leasing out farms are engaged simultaneously in *opposite land supply deals* (purchase or lease-in land transactions). That means that for a significant fraction of Bulgarian farms land lease-out is a form for *rationalization of land use*

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<sup>5</sup> Apparently, there is some economic (or another) incentive for preferring the form of temporary transfer of cultivation rights in contrast with selling out of “excessive” (for farm) land. That could be plans for farm extension in future, desire to keep up an emergency reserve from owned land, expectation for appreciation of value of land, special (traditional) respect to the land as a special (not merely productive) assets etc.

(consolidation of land plots, efficient rotation of crops etc.) rather than a means for optimization of farms size (minimization of costs for *governing* of land and labor recourses).

## **TRANSACTION COSTS FOR OUTSIDE LABOR SUPPLY**

### **Type of labor contract**

Diverse type of contracts is used for governing relations with different kind of hired labor. *Written contract* is the major form for hiring permanent labor in 62% of unregistered farms, in almost all cooperative and middle-size farms, and in all firms and large-scale farms. However, *unwritten agreement* for employing permanent labor is also practiced in a considerable part of unregistered and smaller farms (38% and 33% accordingly). Written form gives greater transparency and security of employment relations as well as an opportunity to use a third party (e.g. court, local authority etc.) for resolution of possible conflicts between parties. However, formal (written) permanent contract is associated with additional costs for: preparation, juridical consultations, in some cases - notary registration, compulsory payments (for working off-limits, for allowed leave of absence, for social security etc.), and termination (redundancy compensations). That is why it is not preferred mode by a part of farms.

“*Detailed specification*” of obligations of both parties in permanent contracts with hired labor is practiced in main portion of firms and middle-size farms. Majority of rest kind of farms negotiate each side responsibilities only “*in general*”. Most operations in agriculture are less standardized and hardly predicted. Often it is either extremely expensive or practically impossible to specify (plan) obligations of each side in all possible situations, and to put them in a written form. That is why in a good part of farms permanent labor contracts only a general negotiation of obligations dominates.

For hiring seasonal workers written contracting is applied by a majority of firms and large farms as well as by a big part of cooperatives and middle-size farms. Major portion of unregistered and smaller farms favor oral agreements.

For hiring irregular workers all small and unregistered farms, and a majority of other type of farms practice unwritten agreements. Merely greater share of cooperatives use written form as a half of them give preferences for that mode for governing relations with irregular hired labor.

Most farms negotiate obligations with hired seasonal and irregular labor only in general. Besides, 17% of farms do not make *any negotiation of obligations* in contracts with hired irregular labor. Period of duration of temporary contract in farming is relatively short, and the character of obligations of both sides is usually “not specific” (and well understood by either party). Therefore, in such contracts parties frequently economize costs for detailed negotiation and written specification of obligations.

### **Personality of hired labor**

Personality of labor is of particular importance in hiring contracts. For instance, one-fifth of unregistered farms and firms most often hire their *relatives* for permanent work. Number of *close friends* employed in these farms is also significant. Each fourth of all type of farms prefers to sign a long-term labor contract with *person who is known prior to hiring*. Previous information about quality of partner and trust of him (her) minimize considerably costs for finding of labor, for negotiation the terms of labor contract, for controlling and for overcoming conflicts of contract execution. More than 16% of farms hire permanent labor *from universities, agricultural schools etc.* and here expectations for high qualification are of big importance for selecting employed labor.

For hiring of seasonal labor most of farms have a preference to “person who is known prior to hiring” and “renovation of contracts with the same person every time”. Relatives are also among employed seasonal labor in one-fourth of unregistered farms. Good portion of cooperatives hire seasonal workers among close friends. All this proves that personal, rather than market relations are essential for selecting that sort of labor. Only larger share of agro-firms report they chose “unknown before initial hiring” for seasonal work

Similarly, for most farms employed irregular labor is again known before hiring, unknown before initial hiring, and the same person every time. Therefore, for all forms of outside labor supply previous knowledge about skills and reliability of workers are essential for initiation or renovation of labor contracts. In close rural communities “everybody knows everybody” and built reputation (good or bad) is a principal factor for minimizing labor supply costs.

“Unknown persons before hiring” are also used in temporary labor contracts (seasonal, irregular). However, they are usually employed for routine, standardized and low-risk activities. Besides, temporary character of contract diminishes the risk of making mistakes in selection of proper labor (with inappropriate qualification, unwillingness for intense work, criminal behavior etc.). Undesired qualities are easily realized in course of labor utilization, and hired labor is either dismissed or contract is not renewed in the beginning of next season. That contract mode gives employer the opportunity for rapid and low-cost enforcement (ceasing or not renewing labor contract without any payments of compensation etc.), and restricts significantly opportunistic behavior of hired labor.

### **Type of payment**

For permanent employed labor *time-based* payment is used in 44% of farms. Good number of farms applies *output-based* or *mixed type* of payment as well – accordingly 29% and 27% of farms. Share of cooperatives and firms, and middle size and large farms, which utilize time-based payment, is relatively bigger. Unregistered farms employ evenly all forms for labor remuneration.

For seasonal labor majority of farms (58%) favor output-based wage formation. Only most



of large farms give preferences to the mixed form. Linking wage with output increases incentives and minimized costs for labor supervision. In many cases later type of contracts are similar to the service supply contracts.

For irregular workers all type of payments are equally applied, as unregistered and small farms give priority to working hours; cooperatives choose to the same extend all forms; agro-firms and middle-size farms mostly favor output-based compensation; and in a majority of large farms dominates mixed mode.

Greatest part of unregistered and small farms uses time-based payment *in production*. In these farms mainly own and family labor is applied. Time-based salary dominates since there are other mechanisms to (self) restrict opportunism in the farm (family ties, common interests, authority etc.). Largest share of cooperatives, firms, and bigger farms practice output-based wage formation. Namely these farms mostly hire labor and such form for wage organization is one of the mechanisms for (self) controlling opportunism in production. Besides, more than one-fifth of farms, predominantly middle-size and large one, use mixed mode for payment as well. In that way they direct incentives of hired labor toward increasing overall (final) productivity of farm.

In most of the farms workers in *administration* get time-based salaries. Since in that area is less possible to measure individual contribution (moreover to overall farm productivity), working time is generally used for labor assessment. However, a small portion of cooperatives also practice mixed form, and a significant share of firms - output based compensation and mixed form. These modes are introduced in order to increase incentives for administration workers in final productivity of farm.

All types of farms commonly use time-based compensation for employed *in management*. Managerial capital is strongly specific to a particular farm. That is why level of remuneration is usually higher than market rate for general qualified labor. Besides, in many instances employed in the general management are owners of the material assets of respective farm (owners of residual rights and income). All these create effective incentives for non-opportunistic behavior. Part of cooperatives apply also output based compensation, and some cooperatives and firms – mixed type as well. It is typically done when it is possible to determine contribution of individual managers (e.g. division managers). In addition, along with complication of the farm management various business types of manager's compensation (and linking remuneration with overall achievement) are broadly applied. Actually these modes give managers rights on residual products of farm, and enhance stimulus for intensification of efforts, for investing in (farm) specific human capital, for restricting intra-farm opportunism etc.

### **Problems with hired labor**

Majority of surveyed farms report they *do not have or rarely have problems* with permanent hired labor *which lead to termination of employment contracts*. That kind of problems encounter about 23% of unregistered and small farms, and one-tenth of cooperatives, and only 9% of firms. None of large-scale farms have serious problems with hired permanent labor which lead to failure of contract relations. Need for a permanent employment contract is a consequence of high frequency of transactions between both parties, and existence of developed specificity (and renting) of human capital to assets of a particular farm (higher remuneration, higher productivity from exploitation, etc.). Here continuation of contract relationships is in interests of both parties, and there are strong unilateral interests for rapid and “peaceful” resolution of appearing disagreements.

“Lack of entrepreneurial spirit” is indicated as a *main reason for conflicts* with hired permanent labor in more than 30% of farms. “Tendency for cheating, stealing etc.” is a main factor for conflicts in majority of cooperatives and agro-firms. “Lack of qualification” of employed permanent labor is a ground for disputes in 27% of firms, and “unwillingness for intensive work” is an important reason only for a greater part (32%) of unregistered farms.

Provisional feature of contracts with seasonal and irregular hired labor is a consequence of inferior (“temporary”) mutual dependency of parties, therefore possibilities for opportunistic behavior are much greater here. That is why the share of farms which have *often* or *always* problems reaches 36% for seasonally hired labor, and a half of all farms for irregularly employed labor. For majority of farms main reasons for conflicts with various kinds of temporary haired workers are “unwillingness for intensive work” and “tendency for cheating, stealing etc.”

## **TYPES OF LABOR CONTRACTS IN DIFFERENT ACTIVITIES**

### **Crop production**

Predominant part of surveyed *crop* farms is with “permanent hired labor with fixed monthly salary”. That is the single mode for employment contract in unregistered farms. Every other farm here hires permanent labor and uses that form for labor remuneration for permanent contracts in crop activities. Half of small farms, around two-third of cooperatives and middle-size farms, almost 72% of firms and three-fourth of large farms, also apply that form of labor contract. All these figures give also insights for the *minimum* share of different type of farms which use permanent labor hiring contract. Out of total number of crop farms employing “permanent contract with fixed monthly wage” approximately 40% are firms, 32% are cooperatives, and 28% are unregistered farms. Besides, more than a half of farms with that contract mode are with middle-size, roughly 26% are small farms, and 21% are big farms. These figures give idea about extend in which that labor contract mode is used in different type of crop farms.

“Based on completed specific work (output based)” wage formation of permanent hired labor is largely used by cooperatives and agro-firms in crop production. Considerable portion of cooperatives also apply “daily wage (rate)”<sup>6</sup>, and one-tenth of them remuneration “based on annual (final) results”. “Daily wage” payment is used in 12% of firms while only 6% of them link permanent labor remuneration with annual results.

Fixed monthly remuneration accounts for entire share of overall compensation (salary plus additional benefits) of permanent hired labor in unregistered crop farms. In cooperatives using that mode of labor remuneration it forms around 73% of total compensation of permanent employed in crop production.

Among cooperatives applying payments “based on annual results”, “output based”, and “daily wage”, the share of these modes in overall remuneration is 70%, 54% and 27% accordingly. In agro-firms using “daily wage” permanently hired workers in crop operations gets entirely their compensation through that mode. Correspondingly in firms practicing “output based” and “final annual results” that forms accounts for 44% and 10% of total remuneration.

Seasonal workers in crop activities are hired by not less than 44% of unregistered crop farms, 64% of crop cooperatives, and 66% of crop farms. For all type of farms “daily wage” and “compensation based on completed specific work” are the most favored forms of labor contract. In unregistered farms and firms the major portion of entire compensation of that kind of labor is formed from “fixed monthly salary”, “daily wage”, and “completed specific work” depending on practicing scheme in different farms. Part of cooperatives use also payment “based on annual (final) results” as that mode accounts for whole compensation of seasonal labor in crop activities.

Irregular labor in crop production is hired by minimum of 31% of unregistered crop farms, 46% of crop cooperatives, and 47% of crop farms. Cooperatives apply only output based compensation, and that forms dominates in majority of other type of farms as well. Main share of entire remuneration of that kind of labor in unregistered farms is based on “fixed monthly salary”, “daily wage”, and “completed specific work”. In agro-firms compensation of that labor is formed either on “daily wage base” or from “completed specific work”.

### **Livestock production**

For permanent work in *livestock* hire not less than 27% of unregistered livestock farms, half of cooperatives with livestock activities, and 35% of livestock farms. Major forms for labor remunerations are: for unregistered farms – “other”, “annual (final) results”, “fixed monthly payment”, and “daily wage”; for cooperatives - “completed specific work”, “annual (final) results”,

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<sup>6</sup> That mode of payment has been widespread in Bulgarian farming. Usually labor daily remuneration is fixed, and depends on required qualification and type of activity.

and “fixed monthly payment”; and for agro-firms “daily rate”, “fixed monthly payment”, and “annual (final) results”. Significant part of overall compensation of permanently hired in unregistered farms and firms is based on “fixed monthly payment”, “daily wage”, and “annual (final) results”, while in some cooperatives “completed specific work” is also a main criterion.

Seasonal labor in livestock is hired by 22% of unregistered livestock farms, between 43-64% of livestock cooperatives, and 25-30% of livestock firms. “Daily wage” is the main form for labor remuneration in all type of farms, and it is a basis for formation of whole compensation in unregistered farms and firms applying that mode. Cooperatives and firms also broadly use “completed specific work”, and correspondingly 90% and 100% of seasonal labor payments in these farms is based on that criteria.

Irregular labor in livestock is hired by between 23-45% of unregistered livestock farms, 29%-50% of livestock cooperatives, and 15% of firms with livestock activity. Unregistered and cooperative farms apply only “daily wage” and “completed specific work”, and agro-firms – exclusively “completed specific work”. Later modes accounts for the largest part or entire (in cooperatives and firms) share of hired labor compensation.

### **Agrarian services**

Among farms which supply *services* permanent labor hire 80% of unregistered farms, not less than 42% of cooperatives, and 5% of firms. Most preferred modes for labor compensation in unregistered farms are “fixed monthly payment” and “annual (final) results”; in cooperatives - “fixed monthly payment” and “completed specific work”; and just “completed specific work” in agro-firms. These wage modes form the whole compensation of hired permanent labor in services in corresponding farms.

Minimum 20% of unregistered service supply farms, 33% of service providing cooperatives, and 60% of service supply firms, hire seasonal labor in services. Unregistered farms apply primarily “fixed monthly salary” and “daily wage”; cooperatives - “daily rate”, “completed specific work”, and “annual (final) results”; and firms - “daily wage”, and “completed specific work”. These forms accounts for the major part of labor payment in unregistered farms and firms, and entire compensation of cooperatives, which practice related method for workers reward.

Irregular labor is hired by one-fifth of firms and between 20-40% of unregistered farms with service supply activity. Unregistered farms mostly apply “fixed monthly salary” and “daily wage”, and former mode makes up a significant share of overall labor compensation in these farms. Agro-firms solely use “daily rate” as a basis for wage formation of irregularly hired workers in services.

## **Management**

Permanent labor in *management* is hired by 35-49% of unregistered farms, 57-71% of cooperatives, and 53-88% of firms. Seasonal hired workers in management use below 5% of unregistered farms, 18% of coops, and under 19% of firms; while irregular labor is hired merely by 9% of firms.

Main mode for compensation of all categories of hired labor in management is “fixed monthly salary” which accounts for substantial (for permanent) or whole (seasonal and irregular) share of hired labor remuneration. For permanent labor linking with “annual (final) results” is also used by a small portion of unregistered farms, cooperatives and firms. However, in later farms a significant share of total remuneration of hired in management is formed through that mode of payment. Some firms practice also “daily rate” and “completed specific work”, and use these methods to form a part of overall compensation of permanent labor in management. In part of unregistered farms and firms a segment of full payments of seasonally hired labor is based also on “daily rate”.

## **Transaction cost economizing**

Analysis of dominant forms of labor compensation for different categories of hired workers proves that they depend on character of activity. When individual contribution of hired labor is difficult to measure then time-based (monthly or daily) compensation is used (e.g. employed in management). In these cases additional mechanisms for controlling reliability of work are also needed (direct monitoring and control, employment of division and department managers). For permanent workers, forms for connecting labor compensation with final (annual, overall) productivity are also applied. Later mode increases incentives for amelioration of overall efficiency of organization (through mutual control and self-control) and turns hired labor in partial co-owner of final output (accordingly bearer of portion of entrepreneurial risk)..

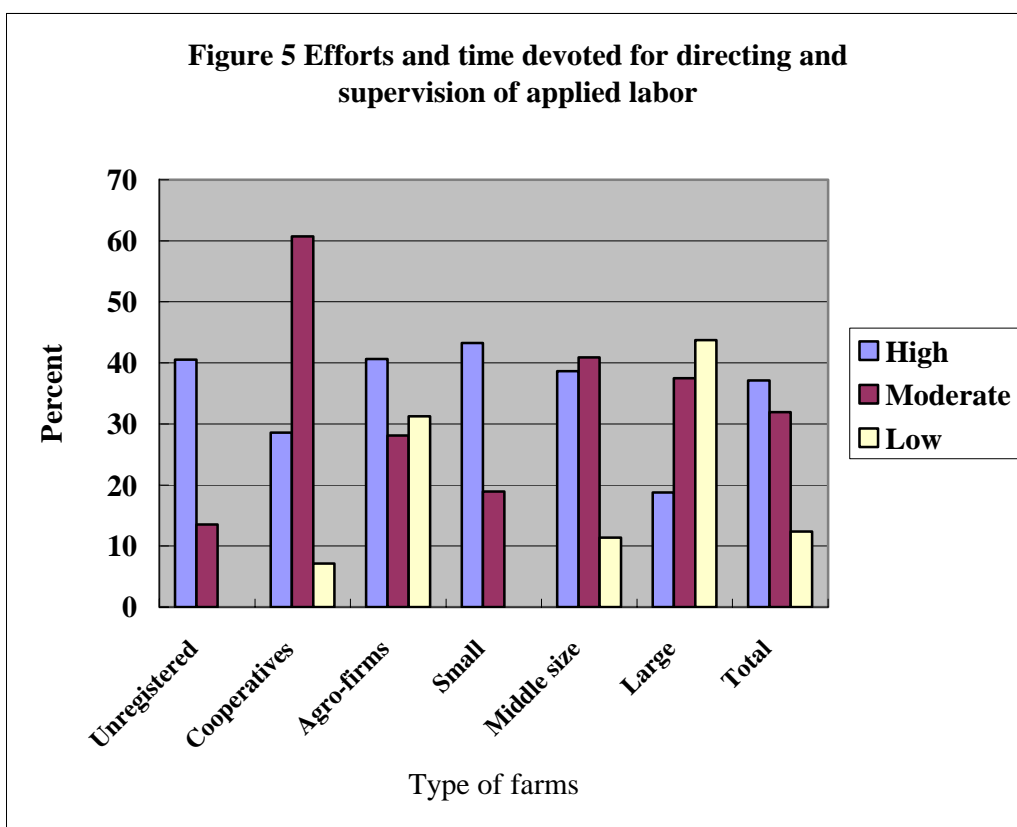
When labor productivity is relatively easy to measure (standardized and routine activities) and it predominately depends on invested individual efforts (lack of outside risk for failure) then output based compensation of labor is commonly applied (livestock, services). Hiring of labor under such mode for payment contents strong incentives for increasing efficiency and self-control, and in fact it is closer to a service supply contract.

## **LIMITS OF FARM ENLARGMENT**

There are two groups of factors which restrict increasing farms size – institutional restrains (e.g. to buy or lease-in land up to a certain limit or by certain agents; production and marketing quotas etc.), and overall costs for governing of farm transactions. Therefore, if breaking formal institutional restrictions is associated with high transaction costs (good enforcement and high

penalty for offenders), and governance of transactions under a single management is very expensive (high level of internal and outside costs of transacting), farm size stays beyond technologically optimal level. Major factor limiting farm extension which is generally identified in other countries is enormous costs for enforcement (monitoring, measuring, controlling) of non-family labor contracts<sup>7</sup>.

According to the estimate of managers of surveyed farms concerning their *efforts and time devoted in production activity*, most of them put higher priority to “organizational activity”, “current planning of activity”, and “direct involvement in production activities” while other functions (such as “controlling purchased services”, “directing and supervision of applied labor”, “controlling quality of purchasing and leasing material assets”, “introduction of new technologies”, and “strategic planning”) are relatively less costly. Despite that “*efforts and time for directing and supervising applied labor*” are reported “high” or “moderate” by two-third of managers of Bulgarian farms (Figure 5).



As far as efforts and time devoted for *non-production activities* are concerned the highest level is reported for “credit supply”, and “marketing”, and “contract enforcement”. Share of farms

<sup>7</sup> That is why owner-operated farm is the most common form of farming organization around the world (Hayami and Otsuka, 1993, pp.11).

with great costs for “finding inputs suppliers”, “contracting”, and “information supply” is moderate, while for “finding land suppliers”, “relationships with administration”, “registration regimes”, “*finding new workers*”, and “dealing with professional organizations” is only 15-22%.

Therefore, besides high governing costs associated with labor contracts (for finding a partner, for negotiation contract terms, for direction and monitoring of labor, for contract disputing and enforcement, etc.), other factors restricting farm enlargement of Bulgarian farms as present stage are: high enforcement costs of contracts in general, and enormous credit supply and marketing costs.

Almost two-third of surveyed commercial farms indicates their “*intention to enlarge farm size in future*”, including 91% of firms, 81% of large and 66% of middle-size farms, 59% of unregistered and small farms, and 46% of cooperatives. According to their own estimates for majority of farms “*main factors for development of their farms*” relate to improvement of institutional environment – “guaranteed marketing”, “enforcement of Laws and private contracts”, “macro-economic stability”, “legislation framework”, “access to free markets”. Accumulated specific capital in form of “own and family experience” receives also a high priority.

### **Conclusions**

There have emerged a big variety of modes for labor supply in Bulgarian farms after introduction of “rights” to sell and buy labor in 1990. This paper has tried to prove that problems associated with labor supply are governed by, and can be only understood with transaction costs economizing “logic”.

Most of institutional restrictions concerning labor (e.g. restrictions on sell and use rights, on legally allowed contract forms etc.) are consequence of “specificity” of that agrarian recourse. However, the most important is the general institutional environment for agrarian development which include a great variety of mechanisms (formal, economic, social, psychological etc.) for governing of relationships in that area. That general institutional framework (“rules of the game” and system of their enforcement) puts limits for development and existence of different (legal, informal, illegal) modes for effective governance of labor supply in farming. All these structures could (and should) be studied in the framework of comparative institutional analysis and in connection with organization of other transactions of agrarian agents (land supply, inputs supply, service supply, finance supply, marketing etc.).

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