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AGRARIAN INDIA: PARADOXES OF ECONOMIC GROWTH

Second Half of the 20th – Early 21st Century

General editor
Irina V. DERYUGINA

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Dramatic economic growth in the agricultural sector on the backdrop of the phenomenal achievements of the Indian economy in the early XXI century are considered in the book. The processes of degradation and destruction of a production chain in agriculture are studied under the influence of increasing population pressure on natural resources. The marginalization of the agricultural economic system; the fall in the rate of return of capital; the decline in per capita food production; increased imbalances in the production and distribution of commodity food; dispersion of agricultural markets is studied in the beginning of the XXI century compared with the beginning of the XX century. The Malthus' "Law of population" is estimated to realities of the XXI century.

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CONTENTS

FROM THE GENERAL EDITOR

Professor Victor G. Rastyannikov (1928-2015) was the known Russian scientist and orientalist-economist. He specialized in agrarian economics of India. He was chief research fellow in the Institute of Oriental Studies Russian Academy of Sciences.

Victor G. Rastyannikov graduated from the teaching Moscow Oriental Institute (Indian department) in 1950. He prepared his Ph.D. thesis on the problems of "Agrarian relations in the Punjab (1900-1947)", which was approved in 1954 in the Institute of Oriental Studies. He did his degree D.Sc. (economics) in 1972 from the same institution to which he has devoted his life as a scientist.

Dr. Rastyannikov has to his credit a number of books and many articles, published in Russia (USSR), England, USA, India, Japan and other countries. Among these are the fundamental work "Agrarian Evolution in a Multiform Structure Society. Experience of Independent India (Routledge and Kegan Paul, London, 1981), "Economic Development and Food Problem. A Study of the Eastern Countries" (Agricole Publishing Academy, New Delhi, 1993), "Patterns of Agricultural Growth through the XXth Century: India, Japan, USA, Russia, Uzbekistan, Kazakhstan" (Modely selskohozyaystvennogo rosta v XX veke) (IVRAN, Moscow, 2004), and others.

I present the translation of the book of Victor Rastyannikov "Agrarian India: Paradoxes of Economic Growth. Second Half of the 20th – Early 21st Century" which was first published in Russian in 2010 by the Institute of Oriental Studies (Moscow).

Dramatic economic growth in the agricultural sector on the backdrop of the phenomenal achievements of the Indian economy in the early XXI century are considered in the book. The processes of degradation (direct destruction) of a chain of interconnected links of the agricultural and economic activities are studied under the influence of increasing population pressure on natural resources. The marginalization of the agricultural economic system; the fall in the rate of accumulation in agriculture; the decline in per capita food production; increased imbalances in the production and distribution of commodity food. the loss of the largest regions of the country from food suppliers; dispersion of agricultural markets is studied in the beginning of the XXI century compared with the beginning of the XX century. The fight against the state and threats to food security; the phenomenon of lag in agriculture is also considered. The "law of population" by T. Malthus is estimated to realities of the XXI century. The book describes the circumstances that contribute to the formation of a modernized version of the dualistic structure of the economy in India, and alternative exit strategies ostracizing situation in the agricultural sector by different groups of the Indian establishment.

This book is most relevant today when India is celebrating the 70th anniversary of independence.

The translation was done from the 2010 edition. Chapter 10 and the new version of the Epilogue was written by Irina Deryugina advanced for second edition which gives an overview of the current situation in rural India.

Irina Deryugina

PREFACE:
BRIEFLY ABOUT THE HEART OF THE PROBLEM DISCUSSED

Over the recent decades, India has shown phenomenal rates of economic growth. The nation's Planning Commission did not exaggerate when it announced that 'India has emerged as one of the fastest growing economies among the major emerging nations,' expressing the hope that India would be 'one of the four largest economies by 2050 A. D., along with Brazil, Russia and China.'[1] India's successes in economic growth are a matter of common knowledge. Notably, it is already a power to be reckoned with in the computer world. But nevertheless, India has long established a tremendous (in terms of the numbers of employed population) sphere of economic activity (agrarian) where the vector of growth is turned into a direction *opposite* from the nationwide tendency. And this is perhaps the most impressive paradox of economic growth in India's most recent history.

Contemporary India is passing through an extremely grave crisis despite the dizzying successes in economic growth in recent decades. The canker of this crisis entitled 'the pressure of population on land' was very sorely felt by Indian peasants back in the 1930s[2], by the beginning of the 21st century it had grown into an enormous

[1] The 11th Five Year Plan (FYP) (2007–12). Development Policy. 2007. Ch.1. P. 97.

[2] See, e. g., Mukherjee, Radhakamal. Land Problems of India. London. 1933. Pp. 120, 216, 349 and elsewhere.

carcinoma. This crisis bears a *permanent* character. Its cause does not lie in market conditions, it is not some special phenomenon of a downturn of economic cycle. It is a *crisis of the very fundamentals of agricultural production*, historically the main sphere of economic activity of the peoples of India. The prime cause of this crisis is the overintensive *population growth* incommensurate with the mass of natural resources available.

Since the 1950s, such growth was actively facilitated by the 'demographic explosion' which caused a sharp escalation in annual population increases. Whereas in the first half of the 20th century the average increase of the population in India amounted to 0.85% per annum, in the second half of the century it rose to 2.09%.[3]

At this point, how can we fail to recall Thomas Malthus, a theoretician political economist of the late 18th – early 19th century who expounded a perennial collision in the organically linked pair 'population – means of subsistence,' a collision engendered by the varying rules of motion of each of the portions of that pair. That collision formed the 'technical' foundation of the 'principle of population' formulated by Malthus. (It is true that Malthus did not specifically deal with the problem of natural resources of production. For the researchers of those times that problem was quite irrelevant since 'there are (i. e. at the end of the 18th century – *V. R.*) many parts of the globe, indeed, hitherto uncultivated and almost unoccupied.'[4] Consequently, the Malthus theory directly features only the fruits of realization of these resources – the 'means of subsistence' – albeit viewed speculatively by the author).

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[3] See Petrov, V. V. Naselenie Indii (Population of India). Moscow: Nauka. Glavnaya redaktsiya vostochnoi literatury (GRVL). 1965. P. 50; Agricultural Statistics at a Glance. 2008. Table 2.2. http://dacnet.nic.in.

[4] Malthus, Thomas Robert. An Essay on the Principle of Population. 7th ed. London: Reeves and Turner. 1872. P. 4.

Thus, according to Malthus, ‘it may safely be pronounced… that population, when unchecked, goes on doubling itself every twenty-five years, or increases in a geometrical ratio.’ Conversely, ‘considering the present average state of the earth, the means of subsistence , under circumstances the most favourable to human industry, could not possibly be made to increase faster than in an arithmetical ratio.’[5]

In the absence of precise statistics, Malthus definitely laid the colours too thickly in estimating population growth. In Britain, for instance, in the period of the most explosive agricultural growth in 600 years (1770–1810) the population was increasing at a rate of 1.1% per annum, while the ‘means of subsistence’ (grain production) at 1%. The growth in the period equalled 1.5 times. In the ensuing forty years (1810-1850) the population increased 1.7 times with an annual increment of 1.3% (which is twice lower than the value – 2.81% - which flows from the postulates of the Malthusian ‘principle of population’ presuming that it doubles in a mere quarter of a century). The ‘means of subsistence,’ however, increased only 1.2 times, growing 0.5% per annum during the forty years mentioned above. Later we shall have the possibility of juxtaposing these indices from the 18th –19th centuries with those in evidence in the 21st century.[6]

The main upshot of the varied-quality historical evolution of the two (organically interlinked) portions of the ‘principle of population’ is famine, malnutrition, poverty (conditioned among other

[5] Ibid. Pp. 5, 6.

[6] The computations of basic data used for present calculations were performed by Gregory Clark. See Idem. Yields per Acre in English Agriculture, 1250–1860: Evidence from Labor Inputs, in: Economic History Review. Vol. XLIV. 1991. No 3. Pp. 445–447.

things by low wages), and squalor, that is to say, 'acknowledged evils' which fell to the lot of the 'lower classes of society.'[7]

Let us note that the author's theory totally lacks a socioeconomic component of the 'principle of population' while postulating as an exclusive source of 'evils arising' from that principle the 'natural tendency of the human race to increase faster than the possible increase of the means of subsistence.' Even if we abstract ourselves from this approach, it is essential that the very *principle of organic discrepancy* (introduced by Malthus for analytical use) between the – organically, too - interlinked aspects of the 'principle of population' (likewise entitled the 'great law of nature'[8]) in a different era (which nowadays is, for instance, traversed by many countries of the Orient, India and China in particular) may in real life occupy a niche of its own, provoking and deepening the processes of degradation in increasingly expanding segments of societies in countries depressed by the influence of the Malthusian 'law.'

Unlike the resource situation in the late 18th century when Malthus, in assessing the demographic and mundane experience of his native England, was unveiling the 'secrets' of the content and operation of his 'principle of population,' the situation concerning resources used in agriculture in many developing countries, particularly in Oriental ones, notably India, looks much worse now, in the early 21st century.

One can isolate at least two universal distinctions between both resource situations separated by a historical time span of two centuries.

First, as can be judged from materials describing India (and a number of other Oriental countries), the natural resources (activated in the production of the 'means of subsistence') already *introduced into*

[7] Malthus. An Essay on the Principle of Population. Pp. 525, 526.

[8] Ibid.

exploitation are subjected to *intensive degradation*; the latter is conditioned, among other things, by the ever-increasing *intensification* in their use – *without subsequent adequate reimbursement.* (In India, for example, up to two thirds of the cultivated land area suffered from various forms of degradation of soils).

Second, against the backdrop of high population growth in India (just as in many other countries of the East), ever more keenly and sorely felt is the factor of the *scantity* (and at times sheer *lack*) of *natural resources* (as far as the production of the 'means of subsistence' is concerned). In other words, we are faced with a steadily *advancing resource hunger* – an irreversible fragmentation of sections of the system of productive forces whose escalating destructive effectiveness has perhaps not yet been fully evaluated by the country's establishment.

This factor, whose power intensified after the waning of the effect of the Green Revolution – a major technological breakthrough in farming experienced by the Third World, in Asia in particular, in the 1960s to 1980s, which made it possible to substantially (and rapidly - by leaps and bounds – at that) boost production of the 'means of subsistence,' - is a *sign of the coming era,* a factor the consequences of whose destructive impact on economic growth make themselves felt above all in densely populated developing countries, India among them.[9]

[9] Back in the 1960s, before the appearance of the first tangible results of the Green Revolution, opinions gained currency akin to the one expressed in the work by John Crawford, Vice-Chancellor of the Australian National University, The Malthusian Spectre in India: 'If ever Malthus has seemed relevant in any country, it has been India since 1960' (Crawford, John. The Malthusian Spectre in India, in: The Australian Journal of Science. Vol. 30. No 10. 1968. P. 385).

The Planning Commission thus tersely formulated the essence of the crisis suffered by India in the last decade: 'The country with a billion mouths to feed is under constant pressure to wring more out of its agricultural resources, given that on the one hand cultivated land is shrinking and on the other hand returns on agricultural inputs are diminishing.'[10]

I shall try to show how a multilink chain emerged, in which *the destruction of one link (or disruption of normal functioning thereof) leads in consequence to the destruction of the next link connected with the preceding one and conditioned by its functioning, the destroyed link becoming the cause of destruction of the next link in the chain connected with the second one destroyed*, etc. I shall try to trace this phenomenon in at least several sequentially bonded (conditioned) links. In the process, we shall see how, to give one example, economic policy turns out to be linked by strongest bonds with the prime cause of destruction in the entire chain. (This paper explores – understandably - only one chain among a multitude of others.)

We shall also see that this type of destruction process gradually engulfs an *ever-greater economic space* and develops *unevenly* across regions.

To be sure, in the course of historical evolution, at certain periods, in certain segments of the tremendously vast field of economic growth we can observe and evaluate positive (in a social and economic dimension) phenomena in the overall momentum of growth in the agricultural sphere. (To a reader not blinded by economic successes they might possibly resemble something like the

[10] The 11th FYP (2007–12). Report of the Working Group on Crop Husbandry, Agricultural Inputs, Demand and Supply Projection and Agricultural Statistics for the Eleventh Five Year Plan (2007–2012). Govt of India. Planning Commission. New Delhi. 2006. P. 12.

visions of a ‘feast in time of plague.’) Therefore, in mentioning the ongoing extremely acute crisis in India’s national economy, we can speak of that process as precisely a *tendency* ultimately determining the present character of economic growth just as the one likely even in the short run.

It is possible that some sections of the book may appear too voluminously expounded. As far as the author is concerned, he is convinced that it is the saturation of the ‘supporting framework’ of the subject with detailed material that allows to highlight the *anatomy* of the object under study (in this case agricultural growth) in the best way possible, which is what the author aspires to in this paper. It is for the reader to judge what came out of it.

In my analysis of the process of growth I am trying first of all to use statistical material, believing statistical data to be an adequate source for generating an evaluation of the progress and intensity of this process. Certainly, I also draw upon expert judgements of scholars and assessments of various departments and institutions. In the process, given the imminence of choice, preference is yet given to the statistical data that had passed through the workshop of the brain trust of the government of India – the Planning Commission, it is the latter that formed a new *integral*, alarmist perception of the crisis momentum of the agrarian sector of modern India.

Hic Rhodus, hic salta.

CHAPTER 1.
MARGINALIZATION OF THE FARMING SYSTEM IN AGRICULTURE

Essentially, all the era of India's independence has been marked by dramatic processes of deepening disproportion between the basic factors of production in agriculture – the amount of available manpower, on the one hand, and the available natural resources used in production, on the other. But they particularly intensified since the early 1970s, when land resources in India suitable for cultivation were practically almost totally exhausted, which pulled the plug on the growth of the area of cultivated land. The era of development of farming of an extensive type – 'broadwise' – came to an end. The country entered a new era of agricultural growth, which heralded an imperative need for a transition of India's agrarian sector to a model of intensive growth based, among other things, on massive intensification of the use of natural resources.

The resource hunger, meanwhile, also predetermined the *character of the socioeconomic process in the agrarian sphere.* With its vast segments the country's farming economy entered into a destructive phase of involutionary motion – *marginalization of the farming system in agriculture*, with such a form of development embracing in India at once both sides of the spectrum of farms – 'from below' (fragmentation of small farms) and 'from above'

(fragmentation of farms with large area of land by Indian standards).[11] With what intensity does this process proceed?

Whereas over the first decade and a half of the second half of the 20th century (1954/55 – 1970/71), although the parameters of land use, both national average and regional parameters for both categories of farms (see Table 1) fluctuated (most likely, it seems, due to imperfect methodology of statistical observations), on the whole were marked by certain steadiness, since the 1970s quite a different situation has arisen.

According to data of agricultural censuses, over 30 years, from 1970/71 till 2000/01, the operational land area per one production unit in India was suffering a pronounced reduction every five years – and finally dwindled *two fifths*, from 2.3 to 1.3 hectares, and in accordance with the trend mark for 2011 is to decrease to 1.08 hectares, or more than *twice*, over 40 years (see Table 1).

Given such a trend of change, the average area of land per farm in less than half a decade, by 2016, will curtail to *one hectare*! (see Table 1). Meanwhile, the decreasing farming plot is being ever more actively saturated with manpower, a substantial part of which belongs to the type of relatively 'superfluous population.'

[11] A point about 'the most worrisome feature of Indian agriculture, which is likely to persist for many long years' – the marginalization of agricultural holdings – was far-sightedly made by the late Prof. M. L. Dantwala. See: The Economic Times. New Delhi. 09.09.1997; See also Rao, V. M., Hanumappa, H. G. Marginalization Process in Agriculture, in: Economic and Political Weekly. 1999, 25 December. Pp. A133–A136. Rastyannikov, V. G. Stanovlenie sovremennogo agrarnogo khozyaistva v Indii (The formation of modern farming in India), in: Stroyev, Ye. S. (ed). Zemelnyi vopros (Land question). Moscow: Kolos. 1999. Pp. 450-454.

Table 1

Marginalization of farm economy in India
(second half of the 20th – early 21st century)

Index / year	1954/1955	1960/1961	1970/1971	1976/1977	1980/1981	1985/1986	1990/1991	1995/1996	2000/2001	2005/2006	2010/2011	2016
Concentration of land area, %												
– farms of 2 ha and less	16.8	18.9	20.9	23.5	26.2	29.0	32.4	36.0	39.0	42.2	45.3	48.3
– farms of 10 ha and more	33.3	30.7	30.9	26.2	23.0	20.1	17.3	14.8	13.2	11.1	9.7	8.5
Average operational land area per farm in India, *ha*	2.31	2.69	2.28	2.00	1.84	1.69	1.55	1.41	1.33	1.23	1.15	1.00
Concentration of farms, %:												
– with 2 ha and less	68.7	63.0	69.6	72.7	74.5	76.2	78.2	80.3	81.9	84.4	86.1	88.0
– with 10 ha and more	4.3	4.7	3.9	3.0	2.4	2.0	1.6	1.2	1.0	0.8	0.6	0.5

Compiled and calculated from: The National Sample Survey. 8th Round. First Report on Land Holdings. Rural Sector. Govt of India. Calcutta, 1958. P. 36; The National Sample Survey. 16th Round. Tables with Notes of Agricultural Holdings in Rural India. Calcutta: Indian Statistical Institute. 1963 (Draft). P.20,21; All India Report on Agricultural Census 1970-71. Govt. of India. N.D. 1975. P. 26; All India Report on Agricultural Census 1980-81. Govt. of India. N.D. 1987. P. 17; Agricultural Statistics at a Glance 2001. Govt. of India.

Ministry of Agriculture. N.D. 2001. P. 190; do.do. 2004. P. 186 (quoted from: http://agricoop.nic.in); Sarvekshana. Journal of NSSO. Vol. XX. 1997, No 3. P. 17, 20, 21; Agricultural Statistics at a Glance 2006. Table 16.1; do.do. 2011. Table 15.1 (quoted from: http://agricoop.nic.in); Some Aspects of Operational Land Holdings in India, 2002-03. NSS 59th Round. NSSO. Govt. of India. 2006. P. 16, 18 (quoted from: http://mospi.nic.in).

Note. For 1954/55 and 1960/61 we cite data of the National Sample Survey Organization (NSSO). For the 1970/71–2010/11 period we use data of regular Agricultural Censuses conducted by the Indian Ministry of Agriculture. Subsequent data (2016) were calculated on the basis of an exponential trend of index dynamics of agricultural censuses over 30 years. Its values relate respectively to years/periods: 1970/71, 1981/82, 1991/92, 2002/03.

This happens despite the ongoing intensification of farming attended by the growth in the number of workers employed per unit of cultivated land area. [12]

[12] Thus, as estimated by India's Planning Commission, in 1992–1995 the Indian agricultural sector concentrating about two thirds (63.4%) (March 1992) of the total number of persons employed in the national economy was able in a varying degree to provide jobs for less than half (47.9%) of the nationwide addition to labor force (Draft Mid-Term Appraisal of the Eighth Five Year Plan 1992–1997. New Delhi. 1996. P. 66). As the National Commission on Rural Labor commented upon this kind of disproportion, 'the increase in the capacity of employment in rural regions does not correspond to the increase in the mass of labor force'; in particular, 'the number of agricultural workers has been increasing over the last few decades at a rate higher than the population growth in rural areas' (Report of the National Commission on Rural Labor. Govt. of India. Ministry of Labor. Vol. I. New Delhi. 1991. P. 69).

Thus, over the 1950/51–1970/71 period such area per worker employed in agriculture decreased 16% (from 1.51 ha to 1.27 ha) and over the 1970/71–2000/01 period that area decreased 53% (from 1.27 ha to 0.6 ha)[13], i. e. in the second period the reduction of area per one agricultural worker during the decade proceeded roughly *twice* more intensively than in the first period. (The overall reduction was 2.5 times).

Meanwhile, the cropped area (i. e. area *actually* used in the process of farming production) changes according to quite different algorithm than the area of agricultural land attributed to the category of 'operational land area.' The development of irrigation potential in India in the second half of the 20th century led to a significant expansion of the area of cropped irrigated lands usually twice (and sometimes even thrice) during the year. In 1950/51 the intensity of cropping in India amounted to 111.1% and in 2000/2001 it increased to 133.2% and to 138% in 2008/09.[14] The factor of intensification of the use of natural resources, of course, seemingly gives rise to an increase in land area actually used in the process of production and, as a result, compensates in a varying degree a decrease of farming plots conditioned by the disproportion between the available manpower and the available natural resources used in farming production. How great is that compensation?

Over almost four decades (1970/71–2008/09) the average size of operational land area per farm decreased *by more than a half*, while the expected increment of average land use per farm – owing to

[13] Calculated from: Rastyannikov, V. G., Deryugina, I. V. Selskokhozyaistvennaya dinamika. XX vek (Agricultural dynamics. 20th century). Moscow: IV RAN, 1999. P. 56; The State of Food and Agriculture, 2003-04. FAO. Rome. 2004. P. 169; Agricultural Statistics at a Glance 2004. Govt. of India. Ministry of Agriculture. New Delhi. 2004. P. 163.

[14] Agricultural Statistics at a Glance 2004. P. 162.

increased area of secondary crops on the basis of irrigated lands over 1950/51–2000/01 (i.e. a more lengthy period of time) increased, according to calculations using the 'intensity of cropping' mentioned above, only *one fourth.*[15] In other words, albeit at a somewhat slowed rate, the area of *actual* land use of an average production unit (i. e. inclusive of the area of secondary crops) in India's agrarian sector has continued to decrease steadily.

Meanwhile, India is by no means the only country suffering the pernicious impact of marginalization per farm in its agrarian sector. In Egypt, for instance, which, just like India, found itself in the second half of the 20th century under an extremely heavy demographic pressure, the processes of marginalization per farm began to sweep the agrarian sector most intensively starting from the turn from the 1950s to the 1960s. The indices listed below record the momentum of these processes over forty years of the 20th century (area in *ha*, on average per farm, by year)[16]:

1939	1950	1960	1965	1974/75	1977/78	1985
1.69	1.71	1.60	1.18	1.00	0.84	0.66

[15] Calculated from data: Ibid., and also Table 1.

[16] Quoted (and calculated) from Fridman, L. A. Yegipet. 1882 – 1952. Sotsial'no-ekonomicheskaya struktura derevni (Egypt. 1882-1952. The socioeconomic structure of the countryside). Moscow: Nauka. 1973. Pp. 113, 121; Gataullin, M. F. Agrarnaya reforma i klassovaya bor'ba v Yegipte (konets 40-kh – nachalo 80-kh godov) (Agrarian reform and class struggle in Egypt (the late 1940s – early 1980s). Moscow: Nauka. 1985. P. 178; Abramova, I. O. Arabskii gorod na rubezhe tysyacheletii (na primere Egipta) (The Arab city at the turn of the millennia (a case study of Egypt). Moscow: Vostochnaya literatura RAN. 2005. P. 83.

As we see, by the end of the first half of the 20th century the size of average land area per farm was still marked by stability. The second half of it saw radical changes: over the period of mere three and a half decades – 1950-1985 – the average land use of a production unit dwindled in Egypt *2.6 times*, totaling *two thirds* of a hectare.

We observe the same tendencies in China (PRC) where over the 1983 – 2001 period the average plot of a peasant family decreased from 0.64 ha to 0.51 ha, or *one fifth.* But although the farm has become significantly smaller, the number of family members likewise decreased almost *one fourth* (23.6%),[17] attesting perhaps to increased attractiveness of sources of earnings outside the village. Land hunger, however, compelled the farming family to strongly curtail the so-called 'family plot' occupied by living quarters and a strip of land adjacent to the house used for garden crops from 630 sq. m to 205 sq. m, i. e. three times![18] In the Chinese countryside no other sources of mobilization of the extremely valuable resource of economic activity – land - were left to sustain production. Let us also note that when assessed in a farther retrospect, the process of marginalization of peasant farming in China in terms of intensiveness of its occurrence very closely resembles similar processes in India and Egypt. Thus, according to the original data of V. P. Kurbatov, over the period of 1949–1993, four and a half decades, the average land use of a peasant household in the PRC decreased from 0.9 ha to 0.41 ha, or *2.34 times*; of that amount, merely over the last decade and a half of the period in question (1978–1993), encompassing the time of reform, it decreased

[17] China Yearbook 2002: Rural Household Survey. National Bureau of Statistics of China. [no place]: China Statistics Press. P. 26.

[18] Ibid. For the problems of agrarian overpopulation in present-day China, see Boni, L. D. Kitaiskaya derevnya na puti k rynku (The Chinese countryside on the way to the market). Moscow: Institut Dal'nego Vostoka, 2005. Pp. 245–247, 420, 426–430.

one and a half (1.46) times![19] Along with this, the state in the PRC is pursuing stringent birth control policies.

It appears very pertinent here to make one observation concerning the Indian peculiarity of the process of diminution of the farm economy.

The marginalization of the farming system 'Indian style' in its basic characteristics is a phenomenon apparently unique in modern world history. (Let us recall, to make it clearer in what follows, that the contour of the process of marginalization is outlined by data drawn from *regular agricultural censuses* embracing, with certain insignificant exceptions that do not affect the overall picture, the *whole* breadth of India's farming system). The essence of this uniqueness lies in the fact that throughout the entire period of the censuses the average size of the operational land holding typical for a particular group of farms remains *stable* (a barely discernible trend toward a decrease in this index – about 0.15% per annum – is manifested only in the group of large holdings), while the numerical composition of the group is changing very strongly.

Let us look more closely into the following values of the above index contained in the materials of Indian agricultural censuses (see Table 2).

The most striking about this three-decade-long uniformity is the fact that the stability of intergroup relationships among the sizes of average land use by groups of farms, just as that of the very sizes of average land use in each group by year, are observed in the context of an *turbulent break-up of the farming area of the already established production units.* And indeed, over the thirty years under examination (covered by agricultural censuses), given the stagnant pool of

[19] See Kurbatov, V. P. Aktual'nie problem KNR: demografiya, agrosfera, ekologiya (Pressing problems of the PRC: demography, farming system, environment). Moscow: IV RAN. 1996. P. 66.

cultivated land, the number of marginal farms grew more than twice (113.2%) – from 35.7 million to 76.1 million, that of small ones – by more than two thirds (70.1%) – from 13.4 million to 22.8 million, while that of large ones, on the contrary, shrank by more than a half (56%) – from 2.77 million to 1.23 million.

Table 2

India: average size of land area in varied groups of farmers, 1970/71–2000/01, *ha*

Type of farm	1970/71	1976/77	1980/81	1990/91	1995/96	2000/01
Marginal (less than 1 ha)	0.41	0.39	0.39	0.39	0.40	0.40
Small (1 – 2 ha)	1.44	1.42	1.44	1.43	1.42	1.41
Large (10 ha and more)	18.10	17.57	17.41	17.21	17.21	17.18

Compiled from the data of sources listed in the note to Table 1.

The fact is certain that, for instance, the break-up of a ‘large’ farm (with an average area of land use equaling 17-18 ha) has proceeded not only under pressure of the legislative factor (the enactment of the land maximum – the ‘ceiling’ on land holdings) but also as a result, just as in the farms of other, smaller groups, of the ‘ordinary’ (natural) demographic differentiation. The latter (in accordance with the laws established by A. V. Chayanov) pushes the ‘fragments’ of formerly ‘large’ holding (and simultaneously – NB – the large landholder) into the category of farm groups smaller in the

size of land area – 'medium' and 'semi-medium'). This land area under the same demographic pressure in its turn fragments into segments – pettiest plots (marginal farms respectively) 0.4 ha in size (which, incidentally, corresponds with the area of an average subsidiary farm economy in the Russia of the early 21st century). Naturally, the landscape of economic space of the Indian agrarian sector is changing, too. Whereas earlier, in 1970/71, for each 'large' holding (with an average area of 18.1 ha) there were just 13 marginal holdings – parcels, in 2000/01 every specimen of such a peak holding, albeit with a somewhat (5%) reduced land area (to 17.2 ha) became a phenomenon much more rare than before. On the arena of the Indian village it finds itself surrounded by a substantially denser mass of the marginal farms – now 62. And in another decade and a half (starting from the beginning of this century), by the end of the second decade of the 21st century (see Table 1), the group of 'large' farms, given the existing trend of changes per farm, will turn into an economically insignificant farming enclave (save possibly the Punjab region) demonstrating a 'notch upon time' (A. Z. Arabajan) of its imminent – considering the 'unbridled' development of the processes of marginalization – slide into economic oblivion.

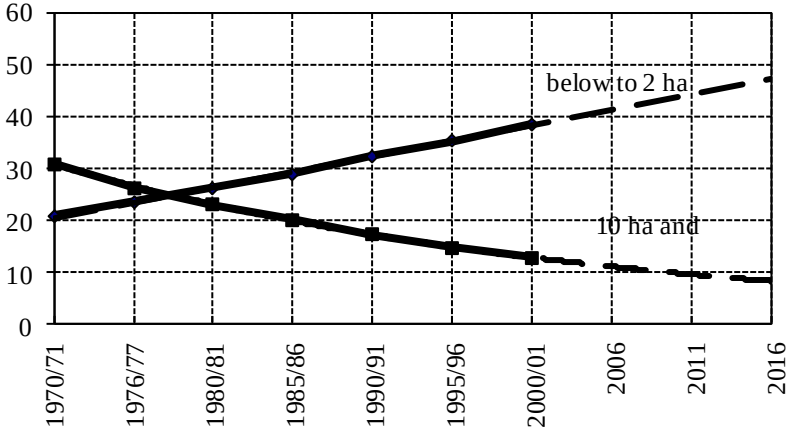
The fragmentation of land per farm at the scale at which it has been taking place in the last three or four decades in India is radically changing the whole pattern of land concentration in rural society. As it follows from the above, the processes of marginalization of cultivated area and respectively production swept both the lower echelon of farms and the upper group thereof; the larger farms (by Indian standards) stimulated by these processes increasingly gives way to small and marginal groups of farms.

As early as the middle of the second decade of the 21st century, if the current tendencies towards marginalization of the land area of production units are not reversed or at least slowed down, the least efficient (as a rule but not always) small and marginal farming

will occupy the *half of the country's entire cultivated area* (in 2000/01 groups of holdings with a land area of up to 2 ha possessed *two fifths* of the whole operational area and it accounted for *four fifths* of the total number of farmers as against 61.7% in 1960/61 and 69.6% in 1970/71 (see Table 1), and will actually become the *dominating economic agent of the farming system.*

Fig. 1

India: changes of land area in group of farms below 2 ha and that of 10 ha and more, 1970/71–2016, %



At the same time, the presumably large farms (with an area of 10 ha and more per farm), whose specific weight in 2000/01 constituted just 1% of the total number of crop farms (as against 4.5% in 1960/61 and 3.9% in 1970/71), farms potentially or already in fact more efficient, will keep less than 1/10 of India's cultivated area as against 3/10 in 1970/71 (these tendencies are very vividly represented in Fig. 1). (It is apt to note here, that, as Planning Commission quotes NSSO in its Report on XIth FYP, 70% of farmers possessed holdings of less than one ha of land in 2003 as against 56 in 1982.)

Of course, from the standpoint of the logic of the socioeconomic process under a developing capitalism, such type of vector of change in the form of concentration of the basic means of production in farming seems an anomaly, but it is quite natural if one is to factor in the mounting force of pressure of labor surplus upon the nation's natural resources; such a vector of change in the system of land use graphically reflects the tendencies of the growing potential of *economic involution* embracing with its pernicious influence ever greater segments of India's agricultural sphere.

Table 3

India, state of West Bengal: marginalization of the system of cultivators' farms, 1950/51–2000/01

Index	1950/51	1970/71	1980/81	1990/91	2000/01	Change, % increase (+) decrease (–)	
						over 50 years	over 30 years
Number of farms, *ths*	2670	4222	5878	6284	6790	(+)154	(+)61
Aggregate operational land area thereof, *ths ha*	5207	5062	5555	5656	5547	(+)6,5	(+)9,6
Land area of average farming unit, *ha*	1.95	1.20	0.95	0.90	0.82	(–)58	(–)32

Calculated and compiled from: West Bengal Today. Govt. of West Bengal. Alipore, 1954. PP. 45, 48, 50; All-India Report on Agricultural Census 1970-71. Govt. of India. Ministry of Agriculture

and Irrigation. N.D. 1975. P. 240; Annual Report 1996-97. Govt. of West Bengal. Land and Land Revenue Reforms Department. Calcutta, 1998. P. 20; Agricultural Statistics at a Glance. 2006. Table 16.2(a), in: http://dacnet.nic.in.

One of such segments demonstrating the notion of 'takeoff' (W. Rostow's term) of marginalization per farm is the densely populated agrarian sector of the state of West Bengal.

Here over half a century (1950/51 – 2000/01) the number of crop farms has grown, according to official data, from 2,670,000 to 6,790,000 units, or 2.5 times, but their aggregate operational land area has increased only 6.5%, or less than 1/15, the annual rate of increment of that area has reached 0.12% (for more detail see Table 3).

Meanwhile, in the period of the last three decades of the 20th century (1970/71 – 2000/01), in the course of which the momentum of land area could be evaluated by standard data of agricultural censuses, the growth of disproportion between the workforce available in the agrarian sector and the amount of land resources looked as follows:

– the number of farms increased (from 1970/71 to 2000/01) 1.6 times (and 2.5 times from 1950/51);

– the land area occupied by these holdings grew less than 1/10 (and only 1/15 times from 1950/51).

In sum, over the second half of the 20th century the average size of the operational land holding in West Bengal shrank 2.4 times – from 1.95 ha to 0.82 ha (relative to the average Indian index – 1.32 ha – it became less almost by two fifths). In the process, over the last thirty years of the 20th century, it decreased roughly by third – from 1.2 ha to 0.82 ha (see Tables 3 and 1). Moreover, already from the early 1950s, i. e. significantly earlier than was established for India as a whole (see Table 1), *the process of marginalization of farming in*

West Bengal became universal across all groups of farmers – from the bottom upwards (this is convincingly attested to by the data of Table 4).

Table 4

India, state of West Bengal: changes in structure of cultivators' farms by size of operational land area, 1950/51–2000/01*

Group of farms	Average size of land area per farm, *ha*	Percentage of farms, %			
		1950/51	1970/71	1990/91	2000/01
Marginal	less than 1 (up to 0.8)[1]	34.5	60.0	73.8	80.4
Small	1 – 2 (0.8–2)[1]	36.2	22.3	17.6	14.9
Semi-medium	2 – 4	20.3	13.2	7.3	4.2
Medium	4 – 10	9.0	4.4	1.28	0.52
Large	10 and more		0.085	0.020	0.015

See note to Table 3.

[1] Within parentheses is the index of a group of farming units adopted in 1951. Note that data referring to a certain year pertain only to cultivators engaged in agricultural activity who had any right of possession (varying in their legal validity, often hierarchically subordinate) to cultivated plots of land. Such legitimate landholders or, to be more exact, those recognized by law as such, were in the overwhelming majority. Some of the peasants – sharecroppers (*bargadars*) having no land rights at all (the so-called 'pure' tenants) were not included into this category of farmers. (According to the population census of 1951, farmers having no land rights at all numbered 12.01% in West Bengal). Furthermore, the index of the

specific weight of the marginal holdings in 1951 must have been greater than that shown by the above data also because part of the marginal farms was found to be 'obscured' in the group of 'small' holdings (which was caused by the discordance of principles in classifying the sum total of farms – for the group of 'small' farms in 1951 included land users with an area of not 1 to 2 ha but 0.8 to 2 ha). In fact, the marginal holdings constituted in that year apparently not less than two fifths of the total number of farms.

Let us complement this conclusion with a time adjustment: the same process was also taking place at an earlier period, notably in the 1930s and the 1940s. However, then it was marked by a number of other features. In the 1930s and the 1940s a great 'contribution' to the processes of marginalization of the farming system of West Bengal was made, besides the demographic factor proper (its influence was as yet less significant than in the second half of the 20th century: the 'demographic explosion' was still lying ahead), the unrestrained rampage of land expropriations let loose upon the farmers in the period of the world economic crisis and the post-crisis depression (the 1930s) and in the wartime and post-war years (the 1940s). And it was precisely the groups of small and marginal peasantry having rights of possession to land in one form or another that fell first victim to the rapacious onslaught of village exploiters.

Thus, as testified by a source published on behalf of the government of West Bengal, a Census Report of West Bengal population carried out in 1951 showed that 'the famine (of 1943 – *V. R.*) and agricultural scarcity' had entailed a 'further impoverishment of immediately higher land groups' swelled the categories of land holders who owned plots of 2 acres (0,8 ha) to 4 acres (1.6 ha) of land, 'who (holders - *V. R.*) have been compelled to sell part of their lands during periods of scarcity.' And 'it also shows a progressive

concentration of large areas of cultivated land in fewer hands.' The Indian Statistical Institute in its survey of the state of rural indebtedness in the state, also initiated by the government of West Bengal, gave its assessment of the results of the evolution of landed property in the state in the 1940s: 'As compared to the data given by the Land Revenue Commission (1940), the percentage of families possessing 2 acres or less (in 1946/47 in West Bengal - *V. R.*) has practically doubled (grown from 34.4% to 64.7% - *V. R.*), there has been also a sharp increase in the percentage of families possessing 2 acres (0,8 ha) to 5 acres (2,0 ha) of land… This incidentally also reveals the growing concentration of land ownership.'[20]

For all the disparity of assessments (cf. the above indices with those listed in Table 4) caused evidently by the different fullness of coverage of the farms under survey and the methodology of calculating the survey's results, they are united in the main point: *the process of expropriation of Bengali farmers* (notably in the form of partial sale of their land by them) *in the historical period under examination was proceeding at very turbulent rates.*

Let us look more closely into the process of the sprawling of marginal farming over the cultivated fields of West Bengal. Over the last three decades of the 20th century (1970/71 – 2000/01), for which adequately comparable data are available (as noted, they were obtained using a *uniform* methodology of agricultural censuses), the number of marginal farms (with a land use of up to 1 ha), conventionally – marginal group I, had grown *more than twice* (by 116%), while the group of small farms (with an operational land area from 1 to 2 ha), conventionally – marginal group II, just 7%. As far as the whole group operational land area is concerned, group I had

[20] West Bengal Today. Govt. of West Bengal. Alipore. 1954. Pp. 47, 48, 49.

increased it *more than twice* (153%), while group II less than a fourth (23%) (see Table 5).

Table 5

India, state of West Bengal: a changing position of marginal and small farms in the structure of operational land area, 1970/71–2000/01*

Group of farms	Average size of land area per farm, *ha*	Number of farms, *ths*		Operational land area in group, *ths ha*		2000/01, *as % of 1970/71*		Average area per farm, *ha*	
		1970/ 1971	2000/ 2001	1970/ 1971	2000/ 2001	farms	land	1970/ 1971	2000/ 2001
Marginal, %	less than 1	2528 *59.9*	5462 *80.4*	1090 *21.5*	2759 *49.7*	*216*	*253*	0.43	0.50
Small, %	1 – 2	942 *22.3*	1009 *14.9*	1302 *25.7*	1607 *29.0*	*107*	*123*	1.38	1.59

* See note to Table 3.

In sum, the marginal 'pole' of the Bengali village, which absorbed within itself *nineteen twentieth* (95.3%) *of the total number of farms, over thirty years came to occupy four fifths of the whole operational area of land in the state* (78.7% as against the average Indian index of 39%; see Table 1). This being so, it is precisely the marginal farming (80% of the total number of farms, almost *half* - 49.7% – of the whole operational area of land in 2000/01 as against 60% and 21.5% respectively in 1970/71) that is the uncontested leader (with an intensifying potential for growth) of this economic involution. Let us note, however: despite the differences in growth rates of each of the groups comprising the aggregate conglomerate of

marginal farming, the average production unit of such a conglomerate has changed – in terms of land area – very little (its average area amounted to 0.69 ha at the start of the period and 0.67 ha at its end). Evidently, in West Bengal we observe the same patterns in the momentum of land use of individual groups of farms with which we were getting acquainted earlier in the case study of long-term changes/stability of average land use in groups of farms in the agrarian sector of India as a whole (see Table 2).

An underside of the 'progress' of marginal farming in West Bengal in a spatial expansion is the crushing defeat of 'large' farming (and 'medium' farming propping it from below).

Its agony, however, had already lasted for a long time: the 1970/71 census revealed upon the whole territory of the state 3,266 farms with a land area of 10 ha and more out of a total of more than 4.2 million farms (with an average size of the land holding 11.95 ha), including 132 farms 20-40 ha in size; there were also 344 really big land users – planters, each of whom had on average 560 ha of land (they accounted for 3.8% of the whole land). In total, 'large' farming units, according to the census, numbered 3,610 in the state in 1970/71. By 2000/01, the group of 'large' farms 'shrank' to 1,000 units, that is, 3.6 times, compared to the reference period. Furthermore, the group of such farms was 'diluted' in the summary register by land users who were the 'giants' of the plantation sector (the latter had on average 219 ha of land each in 2000/01). (The author does not dispose of more detailed data on the composition of this group).

Thus, as testified by agricultural censuses, in the course of thirty years, already by the beginning of the 21st century, *'large' farms proper almost disappeared from the map of the state* (see Table 4), with the group of 'medium' farms (to recall, with a land use from 4 to 10 ha) also finding itself on the verge of extinction (see table 4).

The Moloch of disproportions that developed out of lack of coordination between the momentums of basic constituents of the

system of natural productive forces – population (living labor), on the one hand, and natural resources (land, water), on the other, was with inexorable force fragmenting (*eo ipso* destroying) the economic potential of those farms in the agrarian sector of West Bengal that were marked by any degree of efficiency.

In summary, based on the totality of adduced data, we can draw the following conclusion: by the beginning of the 21st century the entire farming system of West Bengal in fact *completely changed its social countenance* – in favour of the marginal group of farms, or, even more exactly, in favour of *the marginal, economically least efficient (having 0.5 ha of land per farming unit) producer who had already come to occupy half of the total operational area of land of the state and actually turned into the main social figure of the production sphere in the agrarian sector*. The process of marginalization of farming in West Bengal is far from over; it goes on, infusing into the state's economy threats for its reproduction, and for the very existence of huge masses of people. These threats are increasingly growing in their magnitude. Such is the heavy 'burden' of – as yet! – insurmountable disproportions with which the state of West Bengal is entering the second decade of the 21st century.

Let us add another point to this. There was a time at the dawn of the Green Revolution when W. Ladejinsky, the then agrarian advisor to the World Bank, after fact-finding missions across the state of Punjab, wrote that a cultivator having 9 acres (about 3.5 hectares) of land, an 'abundant crop' and a 'tube well of his own' – is the 'more telling symbol of what the Green Revolution stands or could stand for' than a "kulak" having 50 acres of land. This cultivator is not a 'peasant' now, he is a 'farmer'.[21]

[21] Ladejinsky W. The Green Revolution in Punjab. A Field Trip. In: Economic and Political Weekly. Bombay. 1969. Vol. 4. No. 26. P. A-75.

The process of marginalization, in crushing in its path many such 'medium' (as also larger) farms (see Tables 4, 5), weakens ever greater contingent of economic agents of the Green Revolution potentially forming it, its widest social basis. In such states as West Bengal (while those with development problems similar to West Bengali ones keep multiplying), the social environment susceptible of feeding the possible (?) fresh wave of the Green Revolution is shrinking more and more (see Tables 4, 5) – effectively with every new fragmentation of a more or less efficient farming unit and the emergence as a result of its loss of farm fragments swelling the group of marginal holdings.

All the above indicates that a maze of specific deformations (contradictions) has emerged and developed in India's farming system, which might conditionally be called the '*land-demographic complex*'. Its formation is a dynamic process embracing an ever-greater economic space of the farming system, in which *the natural population increase turns out to be excessively high in relation to the natural resources available in the farming system itself, to the sources of productive employment both inside and outside it.* It is precisely the excessive demographic pressure that causes the progressive marginalization of farming *in all groups of farmers*. The latter especially affects the sector of small and marginal farming[22] where the disproportions engendered by an excessively rapid (for the farming of

[22] India's Planning Commission gives evidence of the following: 'The distress in agriculture is now seen to be not confined only to the small and marginal farmers but is affecting across the size classes in agrarian economy' (The 11th FYP (2007–12). Report of the Working Group on Crop Husbandry. 2006. Pp. 4, 5). See also: Rastyannikov, V. G. Stanovlenie sovremennogo agrarnogo khozyaistva v Indii (The formation of modern agrarian farming in India), in: Stroyev, Ye. S. (ed). Zemelnyi vopros (Land question). Moscow: Kolos. 1999. Pp. 450-459, 467.

this group/groups) natural population increase, are enhanced (at times very significantly) under the influence of baneful social processes - land expropriations of immediate producers.

As follows from the above analysis, the 'land-demographic complex' is a particular manifestation of the deep disproportion that has emerged and is mounting in the structure of productive forces of the Indian farming system; by its functional role in India the 'land-demographic complex' is a 'built-in depressor' (D. Thorner),[23] a phenomenon of systemic character deeply deforming the mechanisms of economic growth in the agrarian sector.

The *investment process* in the farming system has become the first major victim of the 'land-demographic complex'.

[23] Thorner, D. The Agrarian Prospects in India. Delhi: Delhi University Press. 1956. P. 12.

CHAPTER 2.
CAPITAL FORMATION IN AGRICULTURE.
THE HISTORICAL VECTOR OF THE PROCESS

India's Central Statistical Organization (CSO) adduces the following data on changes in agriculture in the overall national capital formation, 1951-52 as a percentage of 2005-06 (see Table 6).

As follows from these data, since the middle of the 20th century in the Indian agrarian sector one can identify at least two major periods sharply diverging in rates of reduction of the share of agricultural investments. In the first period embracing three decades (1951/52–1980/81), the reduction of their specific weight proceeded at a rate of (-) 2.5% per annum (see Table 6).

Table 6

India: changes in capital formation in agriculture in the overall national capital formation, 1951-52 as percentage of 2005-06

Years	Share	Years	Share
1951/52–1955/56	20.5	1981/82–1985/86	11.9
1956/57–1960/61	14.1	1986/87–1990/91	9.8
1961/62–1965/66	13.1	1991/92–1995/96	7.9
1966/67–1970/71	14.9	1996/97–2000/01	7.3
1971/72–1975/76	14.0	2001/02–2005/06	5.0
1976/77–1980/81	16.8	2001/02–2002/03 2003/04–2005/06[1]	5.8 4.4

Compiled from: Central Statistical Organization (CSO), New Delhi. Quoted from: Agricultural Statistics at a Glance 2001. C. 15; do.do. 2004. C. 32; do.do. 2006. Table 3.6(B); do.do. 2008. Table

3.6(B), in: www.dacnet.nic.in. Into calculations of the specific weight of capital formation attributed to the statistical group denoted as 'agriculture' the CSO also incorporates the values of similar indices of 'allied sectors,' to which 'forestry and fisheries' belong; by the beginning and in the early 21st century, the latter concentrated roughly 9% of the overall capital formation of all three 'sectors.'

[1] Original data for these years were computed by the CSO on the basis of prices of 1999-2000; in order to preserve a commensurate sequence of the entire series, the prices for the years in question with reference to the group of data under examination were recalculated by us in terms of the price base of 1993-94. That base was used by the CSO to calculate all other values of the index for the historical periods examined.

During the second period, from the early 1980s, the process of such reduction accelerated many times over (almost by a factor of nine!), with the flaccid slowdown escalating into a real meltdown: for two decades and a half (1980/81–2005/06) the share of investment into agriculture was decreasing *annually by (-) 22.2%* to constitute just 5% of the sum total of national investment in the middle of the first decade of the 21st century (see Table 6; Fig. 2).

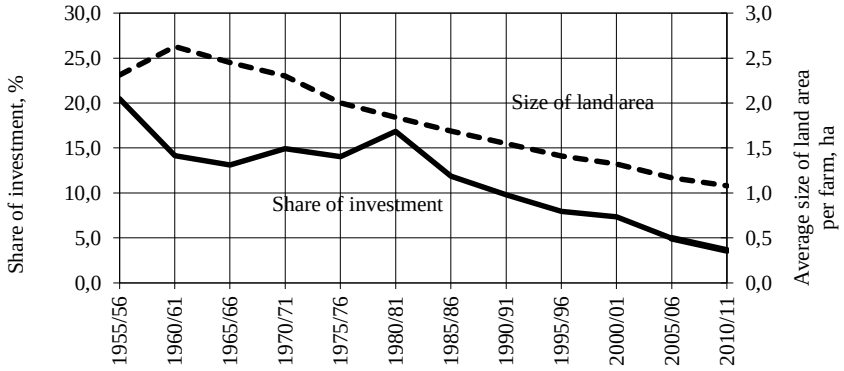
Let us recall: the years of the second period coincide with that of a leaping transition of India's farming system to a *systemic* course of the process of farm marginalization (see Table 1). The latter was receiving ever fresher impulses as the process of expansion of cultivated agricultural holdings kept declining right until it finally came to a close.

From the early 1970s the area of cultivated land (arable land in particular) in India stabilized within 140 *million hectares*, the irrigated land area 40 *million hectares*. It was then that the nation's farming system passed a historic Rubicon in its expansion – the

country's land potential available for agricultural development was completely exhausted.

Fig. 2

India: changes in agricultural investment in the overall national investment (middle of the 20th– early 21st century)



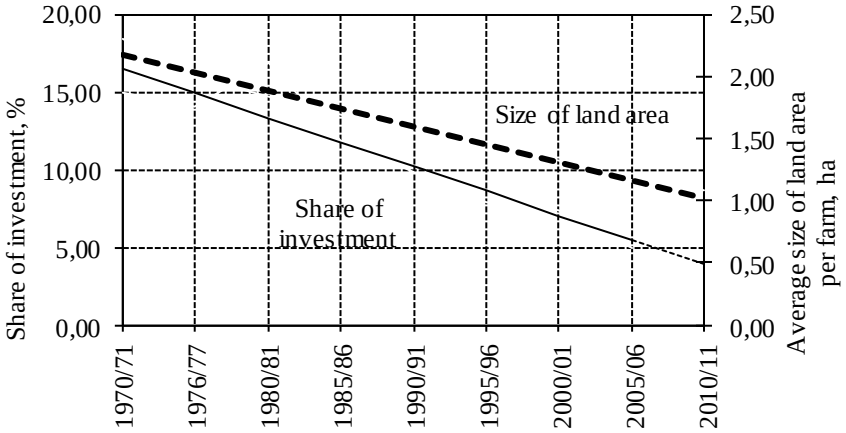
It should be noted, however, that during the first two decades of the period under review the visible increment of cultivated area did take place after all, amounting to 0.1% per annum, but it was completely, like all the invisible (unregistered) increment, absorbed by the accelerated urbanization which directly impinged on a portion of cultivated agricultural lands.[24]

[24] 'During the period 1995-96 to 2004-05, the constraints of land availability for agriculture due to competing pressure of non-agriculture sector and rapid urbanization were witnessed in declining trend of acreage for most of crops. The net sown area of 140 million hectares and gross cropped area of 190 million hectares has virtually stagnated. Besides, the sharp decline in the growth of productivity… indicated the absence of technological breakthrough reaching at farmers' end' (The 11th FYP (2007–12). Report of the Working Group on Crop Husbandry. 2006. Pp. iii, 16).

Such a coincidence is by no means any sort of 'mishap' in the history of the twentieth century. On the contrary, in India it rests on highly robust (economic) foundations. This is how, for instance, may be characterized the relationship between changes in the specific weight of gross capital formation in agriculture in the overall national capital formation, on the one hand, and changes in the average size of cultivated land area, on the other (see Table 6; Fig. 3): for 1970/71–2005/06, the coefficient of correlation R=0.89 (N=8) with a significance based on the F-test (Fisher ratio test) above 95%.

Fig. 3

India: trend of agricultural investment in the overall national investment, %



Moreover, in the case under examination the adjusted coefficient of determination R^2=0.76, which means that the specific weight of investment (capital formation) into agriculture depends 76% on the size of operational land area and 24% on other factors. And one thing more: the elasticity of change of specific weight of investment into agriculture in the case in hand amounts to 9.85. This means that

with a reduction of average cultivated area per farm by 1% the specific weight of investment falls 9.85%!

Here a conclusion warrants itself: the wider the scope embraced by the process of marginalization of farm area in the agrarian sector and the more solid the positions being gained by the marginal farm (especially its pettiest unit), the weaker the aggregate economic potential of the subjects of capital formation and the greater the decline of the very capacities for its positive growth.

Table 7

India: changes in agricultural capital formation, 1951-52 – 2006-07 (*prices 1993/94*)

Year	Capital formation, *Rs/worker*[1]	Public investment, % of total of capital formation	Year	Capital formation, *Rs/worker*[1]	Public investment, % of total of capital formation
1951/52	610	n.d.	2000/01	1556	22.4 (17.9[2])
1960/61	528	45.6	2004/05	1594	19.3[2]
1970/71	1098	37.5	2005/06	1806	22.1[2]
1980/81	1538	51.3	2006/07	1902	26.3[2]
1990/91	1483	30.4			

Compiled and calculated from: Agricultural Statistics at a Glance 2004. Table 3.6(B). Pp. 31–32; do.do. 2008. Table 3.6(B).

[1] The notion of 'worker' refers to all members of the working population forming part of the group of 'cultivators' identified by the censuses, i. e. persons engaged in farming 'on own account.'

[2] Cited in 1999-2000 prices.

India's agriculture is marked by an exorbitantly high concentration of the bulk of the nationwide labor force. Nevertheless,

for many years the agrarian sector has been persistently shrinking, a process involving an astounding mass of labor force. Agriculture accounted for 52.1% of the country's employed in 2004/05 as against 65.4% in 1983.[25] Thus it has been *pushed out of the all-India process of capital formation*. Against this backdrop, the very logic and economic sense of this process which has been in evidence in India's farming system over the period of the last half century (see Table 7) give cause for deep reflection.

Indeed, what is so remarkable about the process of capital formation in agriculture over this historically very lengthy (by the standards of events of the 20th century) period? Admittedly, India's agrarian sphere is tremendous in its saturation with workforce (225 million workers in 2004/05 according to the high assessment version of India's Planning Commission).[26] As shown by the data of the above-cited table, this sphere might economically progress, i. e. ensure workers employed therein with an incrementing investment resource (albeit in microscopic values – about 50 rupees, or roughly 3 US dollars per annum, by the purchasing power parity of the early 21st century and 1.1 US dollars at the exchange rate). This, however, could be done only with massive government support (see, e. g., the data for the 1960s-1970s). An attempt to shift the burden of that 'mission' to the private small owner (peasant) caused an almost complete atrophy of positive momentum in capital formation per worker (see Table 7). Such was the case in the 1980s-1990s to the first half of the first decade of the 2000s, when the public investment shrank from the *half* to *one third* of their overall value. As a matter of fact, capital formation in Indian agriculture during *two and a half decades* (1980/81–2004/05)

[25] The 11th FYP (2007–12). Report of the Steering Committee on Labor and Employment constituted for the Eleventh Five Year Plan (2007–2012). Govt. of India. Planning Commission. New Delhi. 2008. P. 13.

[26] Ibid. Pp. 12, 13.

was a resource – in the macroeconomic dimension – barely compensating the *depreciation* of 'fixed capital' in the most vulnerable branch of the national economy. Nothing more. And only when at the turn of the second quinquennium of the first decade of the 21st century the state reasserted its proactive donor position in the investment process (see data for 2005/06–2006/07), capital formation seemed to make headway again (though again with baby steps – as yet? – increasing by 100 rupees per worker a year). A conclusion from the aforesaid is obvious: India's rural domain, coming under the hammer of 'demographic rigidity' (an assessment of India's Planning Commission), is less and less able to *bring about a reproduction of the main branch of its economy as a distinct, organic part of the nation's economy as a whole – and do it without outside help.*

Moreover, the unrestrained expansion of marginal production, in destroying the farms that are economically efficient in any degree, increasingly *narrows the limits of possibilities for positive economic growth.* The voice of the Planning Commission rings like a heartfelt cry: 'This disturbing trend is impinging on agrarian economy in multiple dimensions… [it affects] farm household income and their propensity to invest, is also exerting pressure on already stressed delivery mechanism for input distribution, extension, credit and marketing facilitation due to increasing number of stakeholders striving for their livelihood security.'[27] These people, 'marginal farmers,' are not 'investors,' they are 'net' consumers (or increasingly become such), the bulk of whom under various disguises is evolving into enforced dependents of society; joined together by the desire, expressed explicitly or manifested unknowingly – to gain assistance in the form of resource injections on the part of the state, they are

[27] The 11th FYP (2007–12). Report of the Working Group on Crop Husbandry. P. 10.

compelled in a portion of their multiple numbers to cross into the 'realm of poverty' (see Section 5).

The marginalization of farming is 'weighing down' *labor productivity*, keeping it at lower levels of technological progress. So it does in relation to the *saving of labor*, this factor of economic growth whose significance is skyrocketing in modern history. Moreover, as a universal process afflicting all the 'floors' of agrarian economy – from top to bottom, it makes a great 'contribution' to the destruction of established *proportions* of India's *food complex* (production, distribution, consumption), catalyzing the disunion and deepening the discordance among its various aspects.

CHAPTER 3.
FARM LABOR PRODUCTIVITY AND COMMODITY FOOD PRODUCTION: MACROECONOMIC CONSTRAINTS IN THE WAY OF AGRICULTURAL GROWTH

Historically, India, same as the majority of the Orient (in particular, China, Egypt), belonged (and belongs) to the countries, in which the agricultural system has been developing (and, accordingly, the economic growth in the agricultural sector occurred) following the rules of the so called "land–saving" technologies, i.e., technologies implying the priority of land (water) economy as a (natural) production resource being in the minimum, as opposed to economy in using labor power as a resource in excess, moreover, in the growing excess[28]. It is this type of relationship between these two fundamental factors of production forces in their implementation in the production

[28] Extensive research literature has already been created since the beginning of the XXth century on the issue of the two historic types of technologic agricultural production organization: "labor–saving" and "land–saving". (The quoted terms were conceptualized by Japanese scientist Yujiro Hayami and American scientist Vernon W. Ruttan. See: Idem. Agricultural Development: An International Perspective. Baltimore / London: The Johns Hopkins Press. 1971.) See a very short historiographic review of some works that in our opinion are essential for analysis of the problem: Rastyannikov, V.G., Deryugina, I.V. Sel'skokhozyaistvennaya dinamika. XX vek. Opyt sravnitel'no-istoricheskogo issledovaniya. / Rossiyskaya Akademiya Nauk. Institut vostokovedeniya. (Agricultural Dynamics. XXth Century. Experience of Comparative Historical Research. / Russian Academy of Sciences. Institute of Oriental Studies.) Moscow: IV RAN, 1999. PP. 15–24, 158–163.

process that caused stable trends in "land–saving" production systems for:

– stagnation in labor productivity (LP) in agriculture;

– development of a firm psychological "anti–labor–saving" settings, according to which disregard by the producer of the value of production costs (that suppressed the process of competitive agricultural economy development so badly) became a common standard for production process in the agricultural sphere of India[29]. (Hence, incidentally, the relative expensiveness, though to a lesser degree than, e.g., in Japan, of the food produce in India requiring on an ever-greater scale subsidial inflow to the consumption sphere to create options for its (principal food produce) optimum distribution, especially, as regards the poorest people's strata.)

Labor productivity in the agricultural sphere is a source of both relatively high costs in production of food resources in India and in their low marketability. Stagnation dynamics of such labor productivity is of paramount importance.

[29] Even close to the XXIst century, a number of outstanding researchers in agriculture in India considered it necessary to blame the State economic policy in agriculture. V.S. Vyas: "The emphasis has mainly been placed on increasing yield per hectare rather than improving the productivity of other factors of production, i.e., labor or animal power" (Vyas V.S. Agricultural Policies for the Nineties. Issues and Approaches // National Bank News Review. Bombay. 1994. Vol. 10, no. 3. P. 7). M.L. Dantwala: "We are worried more about quantum of investment than about the efficiency of the use of invested resources" (see: The Economic Times. 09.09.1997). And in some ten years, we hear another appeal to the Government (from the Commission for Agricultural Costs and Prices) as “to the necessity of improving the efficiency of using (the invested. — V.R.). resources” (Reports of the Commission for Agricultural Costs and Prices for the Crops Sown during 2007–2008 Season. 2008. P. 112).

Table 8

Labor productivity in Indian agriculture.

I. Labor efficiency by states, 1983/84–2005/06, kg/hour

State	Wheat			State	Rice (milled eqv.)		
	1983/84	1995/96	2005/06		1983/84	1994/95	2004/05
Punjab	7.1	10.8	19.0	Punjab	6.5	6.3	10.3
Haryana	6.5	11.8	12.2	Andhra Pradesh	1.7	no data	3.6
Rajasthan	3.2	5.9[1]	6.9	Uttar Pradesh	1.7	no data	2.5
Uttar Pradesh	3.6	4.9[1]	6.1	West Bengal	1.6	1.9[2]	2.0
Madhya Pradesh	3.5	5.2	5.6	Orissa	no data	1.8	1.9
Bihar	2.5	no data	4.7	Madhya Pradesh	no data	2.0	1.6

II. States of rice–based region. Rice grain output (in milled equivalent) by periods (years), kg/hour

1933–1936[3]	1954/55–1956/57[3]	1957/58–1959/60[4]	1968/69[4]	1970/71[5]	1972/73[3]	1984/85[3]	1994/95[6]	2004/05[3]
1.3	1.0	1.5	1.1	1.5	1.3	1.7	1.8	2.0 (3.6[4])

III. State of Punjab. Wheat grain output by periods (years), kg/hour

Period[7] (year)	Indicator	Period (year)	Indicator	Period (year)	Indicator
1929/30	1.8	1960/61	1.9	1980–1983	7.1
1935/36	1.5	1963/64	1.8	1984–1987	7.5
1939/40	2.1	1969/70	4.4	1995/96	10.8
1950/51	1.9	1972–1975	4.8	2001/02	18.3
1955/56	2.0	1976–1979	5.3	2005/06	19.0

Compiled and calculated on the basis of: Materials of a series of publications "Farm Management Studies" of agroeconomic centers of the states of West Bengal, Tamil Nadu, Andhra Pradesh, Punjab in 50-ies–70-ies; publications of the Bureau of Economic Inquiry, Punjab (Lahore, Chandigarh, Ludhiana) in 30-ies–60-ies; and also, research materials: Report of the Commission for Agricultural Cost and Prices for the Crops Sown in 1997-1998 Season. Ministry of Agriculture. New Delhi, 1998. P. 173, 176, 277; do.do. 2003–2004 Season. 2004. PP. 271, 272, 435–437; do.do. 2007–2008 Season. 2008. P. 264, 265, 437, 438; *Kurian N.J.* Employment Potential in Rural India. // *Economic and Political Weekly*. Bombay: 1990. Vol. 25. No. 52. P. A-182; *Guha Sumit.* Labor Intensity in Indian Agriculture, 1880–1970. //do.do. P. A-189, A-190; *Sidhu D.S. and Byerlee Derek.* Technical Change and Wheat Productivity in Post-Green Revolution Punjab. // do. do. 1991. Vol. 26. No. 52. P. A-160; *Madhusudan Ghosh.* Technological Change and Employment Generation in a Rice–based Agriculture. // *Agricultural Situation in India*. Delhi. 1988. Vol. 42. No. 10. PP. 881–888.

[1] The state of Rajasthan: 1994/95; the state of Uttar Pradesh: 1990/91.

[2] The state of Assam.

[3] In 1933–1936, the province of Bengal; since 1954/55, the state of West Bengal.

[4] The state of Andhra Pradesh.

[5] The state of Tamil Nadu.

[6] The state of Orissa.

[7] The province of Punjab (1929/30); East Punjab (1935/36, 1939/40); the state of Punjab in today's boundaries.

Further, we will consider various parameters of production, distribution, and consumption of the most massive food product in India: grain, including both cereals and pulses. All the more so that the population of India is largely vegetarian (at the beginning of the XXIst century, the volume of animal protein per capita per day in India was only 10 g against 6 g in the middle of the XXth century. Herewith, this standard corresponded practically exclusively to consumption of milk; Indians consume all kinds of meat at the amount of 5.2 kg per capita per year).

As evidenced by the materials of numerous studies, agriculture in India, despite all achievements of the "green revolution" in the last third of the XXth century, is characterized by surprising stagnation (to a very slight exception in the regions) as regards the efficiency of labor productivity. Technical LP in the rice–based economy (determined by the amount of product per unit time) as dependent on the technology of rice grain cultivation, still remains within the limits of 2–2.5 kg/h *and less* (!) (see Table 8, sections I, II), i.e., in the parameters of classical traditional economy. Rather modest, very dull, with prolonged time intervals (reflecting the stagnation periods) shifts in development of labor productivity are manifested in the recent decades by the wheat–growing economy of India (see Table 8, sections I, II).

Against this lingering sluggishness in LP development, especially in rice--producing economy (to a partial exclusion, possibly, of rice production in the states of Andhra Pradesh and Tamil Nadu), of dramatically high economic efficiency as compared to other states is grain production in the Punjabi region (including the state of Punjab and the state of Haryana that separated from it in 1966), this very small area of the Indian cultivated land (5.5% of the whole arable

land in the country in 2003/04 and 7.5% of its cropped area[30]), where the labor productivity in agriculture in the middle of the expiring decade of the XXIth century allowed providing the yield of almost 20 kg of grain (wheat) per labor input in h (see Table 8, sections I, III), which corresponds to the level of Japan at the turn of the 70-ies–80-ies of the XXth century.

To estimate better this (outstanding for India) achievement of labor productivity (LP) in agriculture, one can consider it in the context of the LP standard formed in the agricultural systems of the "labor–saving" type in the last decades of the XXth century. In Russia (the USSR), e.g., the technical labor productivity in the grain economy in 1990 was 95 kg/h (against 3.9 kg/h in 1922–1925).

By the beginning of the nineties, the USA produced grains of 400 kg (wheat) to 900 kg (maize) per man–hour[31]. Of interest is yet another series of comparisons: by indicators of grain economy product output per laborer. Thus, a single laborer in China produced 1037 kg of grain in 1985, 1241 kg in 1995, and 1395 kg (five cultures) in 2005. Meanwhile, a single Indian laborer occupied in grain economy, at the assumption that the labor power in the agrarian sector was distributed between the branches in proportion to their concentration in the cropped area (in this case, the grain economy corresponds in the XXIst century to 63.3% of the national labor power in the sector), produced 1412 kg of grain in 1992-93 to 1994-95 and in 2006-07 to 2008-09 1583 kg (seven cultures)[32]. In the countries of "labor–saving"

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[30] Agricultural Statistics at a Glance 2006. Table 14.5 // http://dacnet.nic.in/eands.

[31] See: Rastyannikov, V.G., Deryugina, I.V. Modeli selskokhozyaistvennogo rosta v XX veke (Models of Agricultural Growth in the XXth Century). PP. 418, 419.

[32] China Statistical Yearbook 2006. / National Bureau of Statistics of China. Tables 13–17, 13–24 // www.stats.gov.cn. (Original data are specified:

agricultural systems quite different scales of measurement units are required for LP calculations. In the USA at the end of the seventies of the XXth century per laborer occupied in the commodity grain production, *375 tons* of the sector output (six grains) were produced. Meanwhile, in Russia in 2006–2010, at the assumption that 60% of agricultural laborer's were occupied in grain production, each laborer produced *20.8 tons* of grains (ten grains) or *41,6 tons* (which is possibly closer to the reality) at the assumption that the share of laborer's in the sector was 30%[33].

In short, grain production in agrarian giants of the world occupying leading positions in the sphere of domination of "land–saving" technologies as estimated on the basis of the criterion of economic labor productivity is one or two orders of magnitude lower than the grain economy of the countries in the zone of classical "labor–saving" agriculture.

The historically formed technological organization of agriculture with its stagnation--marginal labor productivity requires domination in the regions of "land–saving" technologies of tremendous live labor costs per each created unit mass of agricultural produce (as compared to the regions where "labor–saving" technologies are wide–spread). As a result, an *enormous* ("additional"

The values for the rice grain are calculated for indicators in China in milled grain equivalent). For India, calculations are based on: Agricultural Statistics at a Glance. 2001. PP. 23, 26, 118, 122, 123; do.do. 2006. Table 4. 5; The XI th FYP (2007–12). Report of the Steering Committee on Labor and Employment. 2008. PP. 12, 13; Economic Survey 2010-11. Tables 1.12, 1.13.

[33] Statistical Abstract of the United States 1980. 101st ed. / US Bureau of the Census. Wash. 1980. PP. 685, 710, 714; Rossiiskii statisticheskii ezhegodnik 2007. Statisticheskii sbornik (Russian Statistical Annual 2007. Statistical Report) / Rosstat. Moscow: 2007. PP. 147, 457; do.do. 2011. PP. 124, 417, 418.

as compared to the regions of "labor–saving" agriculture) *share of the manufactured product is expended in consumption by the very producers who create this product*. Therefore, in the regions of this type, the proportions of the commodity output of the mass consumption product (in this case, grain) under stable conservation of the production parameters determined by the "land–saving" technologies are characterized by *steadily low values*. That is what we observe in rice– and wheat–producing economies of India at least from the mid-fifties of the XXth century to the end of the nineties (see Table 9).

Table 9

Arrivals of rice/wheat to the wholesale assembling markets of India, mid-fifties to the end of nineties of the XXth century, percent of gross grain product

Period/culture	Rice	Wheat	Period/culture	Rice	Wheat
1956/57	31.4[1]	32.7[1, 2]	1987/88	31.6	27.3
1970/71	25.2	29.8	1990/91	30.5	28.1
1975/76	26.2	30.5	1993/94	40.3	31.3
1981/82[3]	31.2	28.5	1996/97	41.0	30.3
1984/85	30.0	26.6	1997/98	40.9	29.3

Complied by: Indian Agriculture in Brief. 4th Ed. / Govt. of India. Ministry of Agriculture New Delhi. 1958. P. 76; do.do. 27th Ed. 2000. P. 229; Bulletin on Food Statistics. 1992 and 1993. / Govt. of India. Ministry of Agriculture New Delhi. 1995. PP. 50, 51.

[1] Here, the calculated marketable surplus.

[2] 1955/56.

[3] In the indicators from 1981/82 to 1996/97, average three–year values are presented, in which the given year is the middle year.

The presented data reflect quite distinctly the following trend in the traffic of marketability of grain economy. The commodity grain output in the wheat–based economy in India corresponds to grain arrivals to wholesale assembling markets where practically the whole bulk commodity grain flows being distributed both outside the village, in town, and centrally and accumulated in the reverse flow (see further) in the village itself. The share of such commodity grain output during the whole second half of the XXth century has never risen above 1/3: an indicator of gross yield of this second grain by its significance in the national food ration. It often even sank (see Table 9) below 30% of their (output) value. As follows from Table 9, the rice–based economy is more successful as regards formation of the market grain mass: rice produce marketability reached the level of 40%; however, in the nineties of the XXth century, the actual share of the rice commodity output seems to be much lower than the mentioned value[34]. We would hardly be wide off the mark, if we

[34] It seems appropriate here to give some facts to explain such a conclusion. Thus, as we see, it would appear that major economic progress occurred in the agrarian economy of India in the shortest period, in fact, at the turn of triennials of 1990/91 and 1993/94 and the corresponding adjacent years. This progress manifested itself in particular in an abrupt rise in rice production marketability: all at once by 32.13% (See Table 9). Meanwhile, the gain in the rice yield in the triennial of 1993/94 as compared to the triennial of 1990/91 was 5.6% (4.1 mln. tons), but the above gain of the rice grain commodity output reached 39.5% (8.9 mln. tons), i.e., grew more than twofold by its absolute value (see Agricultural Statistics at a Glance 2001. PP. 30–31; Table 9). And this was accompanied by a relative, comparative stability of the production conditions, but at a continuing extinction of the massive cohort of economic agents supplying rice to the market due to the occurring marginalisation of the economic system). I'll venture a guess that the phenomenon of such discordance probably appeared as a result of changes in the accounting treatment that affected variously the two

assume that marketability of the Indian rice–based economy in the nineties of the past century tended sooner to a more modest value: one-third of the gross rice output.

It is clear herewith that the formed product share estimated as compared to the production scale (otherwise, farm size) "consumed" (due to the given, extremely low, labor productivity) is the higher, the smaller the economy producing this product. Hence one can understand the historical "mission" fulfilled in the agriculture of India by the irrepressible "mole" of destruction: 'land–demographic complex'. It deforms the historically natural course of differentiation of the farm groups in the vast territories of densely populated regions of the country, turning it from the processes of economic polarization (enhancing the "strong", i.e., efficient producers creating the commodity product and weakening the "poor" ones) towards the processes of *general* — top to bottom — dispersion (marginalization) of farms, *thus reducing the potential of commodity production on all levels of agricultural economy struck by this disaster*.

Herewith, let us not overlook the particular feature of the process dynamics that 'land-demographic complex' superimposed on the economic systems adhering to the regularities of protruding "land–saving" technologies causes a *synergistic effect*[35] in slowdown of the growth of the commodity part of the mass consumption production. And if the process is estimated in the context of the nationwide spectrum of problems, even under relative compression of this commodity mass. The fact of stable descending movement of grain (rice) commodity production in the states of West Bengal and Orissa

components of the process of commodity grain formation (gross output, commodity yield of the produce).

[35] That is, an effect appearing when the joint effect of the two process components proves to be stronger than the simple sum of their individual effects.

attests visibly to the reality of this process in the last decades of the XXth century (see Table 10).

How extensive is this process in the actual economic life? For example, the rice harvests in West Bengal emerging from the "school" of "green revolution" in the last fifty years (1954/55–2005/06) increased almost fourfold (from 3.8 mln. tons to 14.5 mln. tons), but the rice commodity yield increased by only 1.75 times (from 1.2 mln. tons to 2.1 mln. tons). (A separate (brief) essay is dedicated to dynamics of the agricultural economy of Orissa. See Annex 1.)

In the trend, the 'land–demographic complex' drains (economically) such regions, excluding the greatest branches, the "supporting constructions" of their economy, from the national economy. (This primarily concerns the grain commodity economy, in particular, pulse production, its movement stopped at the level of 1958/59[36]). As a result of the effect of 'land-demographic complex', *a drastic compression of economic space occupied by production of commodity resources* of mass consumption food for nationwide distribution occurred in India in the XXIst century. A relay race of their delivery is ever more accepted by the Punjabi region mentioned above (as will be remembered, with its 5.5% of cultivated land and 7.5% of gross cropped area in India) supported by the grain economy of coastal areas of the Andhra Pradesh region (see Table 10), and also the grain production of the Tamil Nadu state.

Let us point out a very important circumstance here: that is the reason why Punjab becomes ever more the "All–India nourisher" standing out due to the high concentration of commodity grain. Among other issues, it managed to start developing labor productivity in its grain economy (see Table 8, sections I, III).

[36] The XIth FYP (2007–12). Report of the Working Group on Crop Husbandry. P. 15.

Table 10

India: changing weight of different regions in arrivals of marketed rice to the nationwide market in the last third of the XXth to the beginning of the XXIst century, in %

Year (period) / Region	Punjab		Andhra Pradesh		West Bengal		Orissa		India	
	I[1]	II[1]	I	II	I	II	I	II	I	II
1970/71	79.3[2]	7.9[2]	35.9	15.9	17.3	9.8	5.9	2.4	25.5	100.0
1980/81	90.6[3]	26.1[3]	41.4	17.9	18.0	8.0	3.6	1.0	30.2	100.0
1987/88–1989/90	82.7	28.2	42.9	14.3	16.9	7.4	5.8	1.1	31.1	100.0
1995/96–1997/98	78.9	32.4	67.9	19.2	15.0	5.8	5.8	0.9	41.0	100.0
2004/05	89.0[4]	37.3[4]								

Compiled and calculated on the basis of: Studies in Economics of Farm Management. Ferozepore District (Punjab). Report for the Year 1969-70. / Govt. of India. Ministry of Agriculture. Delhi. 1973. P. 328; Indian Agriculture in Brief. 13th Ed. / Govt. of India. Ministry of Agriculture. Delhi. 1974. P. 136; do.do. 23rd Ed. 1990. PP. 334–336, 393; do.do. 27th Ed. 2000. PP. 195, 229, 231; Bulletin on Food Statistics. 1992 and 1993. / Govt. of India. Ministry of Agriculture. New Delhi. 1995. PP. 50, 51; Economic Survey 1990–91. / Govt. of India. Ministry of Finance. New Delhi. 1991. P. S-19; Agricultural Statistics at a Glance. 2006. / Govt. of India. Ministry of Agriculture. Table 4.7(a,b) (quoted from: http://dacnet.nic.in/agStat06-07.htm); Punjab Mandi Board. Arrivals and Rates (quoted from: http://mandiboard.nic.in/arrnew/jpg 03.07.2007).

[1] I: share of marketed rice in the gross rice harvest in the region; II: share of the region in marketed rice deliveries to the nationwide market.

[2] 1969/70.

[3] 1981/82.

[4] The data refer only to the state of Punjab.

So far, it is namely this state[37] (!) that largely compensates the losses due to the currently observed *falling out from the series of commodity food suppliers of the large regions* that earlier produced "excess" commodity grain accessible (more or less) for nationwide mobilization. (See more detailed data on the dynamics of commodity grain production in the Punjabi region in the historic perspective in Annex 2.) It specifically demonstrates, as yet in the form of prerequisites, creation of conditions for formation of *economy of scale* in grain production (i.e., economy asserting its upward efficiency as a result of a stable decrease in production costs).

The presented data and estimates of the historical trend of *regional* concentration of grain production must be supplemented by the data of the degree of its concentration in *local economy*. Indeed, as follows from numerous materials, the ever enhanced inequality typical for regional concentration of commodity grain production is also characteristic for the processes of concentration among the very producers growing grain for the market.

[37] We say "so far" because the annual gain in productivity of the main agricultural grain in the state of Punjab, wheat, in the XXIst century was characterized by negative values (–1.16% per year in 1999–2007).

CHAPTER 4.
TRENDS IN THE CONCENTRATION OF COMMODITY FOOD PRODUCTION IN AGRICULTURAL SECTOR

We command the data on the unique (All–India) study[38] allowing revealing (as of 1983/84) the groups of the so called "large" farms by states being leaders of the processes of marketed food production concentration (at the example of grain economy of India). Such economy types in the study included farms possessing five hectares of cultivated land and more per farm and the group of leaders were the states/regions, in which the "large" farms were responsible for the highest share of production of any key grain, wheat and/or rice. Herewith, farms of this category also simultaneously concentrated the highest share in the All–India marketed grain mass (wheat and/or rice) belonging to the "large" economies of *all* states of India. Finally, groups of "large" farms were identified in the Punjabi region including the states of Punjab and Haryana (and separately, "large" farms in the state of Punjab) and in the region (state) of Andhra Pradesh.

Let us specify in advance that the "large" farm group of interest includes the farms possessing the cultivated land area of 10 hectares per farm and more. The researchers also assign to the same group a significant part of sturdy "medium" farms encompassing farms with the area of 5–10 hectares per farm (the officially accepted lower boundary of land area of "medium" farms, 4 hectares). In the

[38] See: Production, Utilization, Marketable and Marketed Surplus of Wheat, Rice and Maize. / Government of India. Ministry of Rural Development. Indian Agricultural Research Institute. Faridabad. 1995.

materials of the study carried out by Indian Agricultural Research Institute (IARI), this "aggregation" of farms is mentioned as a group of "large farmers". This is the term used for them in Tables 11 and 12 below.

Table 11

Concentration of wheat production and its marketed mass in the agricultural sector of India, 1983/84, *in %*

Group of farms and region	Share of wheat–producing farms in Indian agrarian sector	Share of wheat production in India per particular farm group	Crop yield productivity, 100 kg per hectare	Share of marketed mass of wheat in gross wheat production	Share of marketed mass of wheat in nationwide marketed mass of wheat
All wheat–producing farms of India	100.0	100.0	18.43[2]	58.9	100.0
including "large" ones[1]	15.5 (7.0)[1]	37.2	25.11	72.4	45.7
All wheat–producing farms in the region of Punjab–Haryana	11.9 (4.08)	37.15	29.34	81.90	51.65
including "large" ones	3.03 (0.52)	19.86	29.37	84.37	28.44 (62.21)[3]
All wheat–producing farms in the state of Punjab	5.95 (2.55)	25.22	31.30	87.18	37.22
including "large" ones	1.24 (0.28)	13.80	31.62	91.04	21.34 (46.67)[3]

Compiled and calculated on the basis of the data of the study carried out by Indian Agricultural Research Institute (IARI). Production,

Utilization, Marketable and Marketed Surplus of Wheat, Rice and Maize. / Government of India. Ministry of Rural Development. Faridabad. 1995. PP. 15, 20, 28–36, 63–68. Agricultural Statistics at a Glance / Govt. of India. Ministry of Agriculture. New Delhi. 1988. PP. 9, 11.

[1] The authors of the study carried out by IARI qualified as "large" the farms cultivating 5 ha of land and more, i.e., included also some of the sturdy medium farms into this group, apart from those large indeed (10 ha of land and more per farm). Let us recall that in accordance with the technique of official inventory of land holdings carried out by the Ministry of Agriculture (MA) every five years and also the technique of the National Sample Survey Organization (NSSO), the "medium" farms are those with the area of 4–10 hectares. In the brackets, the data are presented on the share of the identified farm groups (i.e., those with the area of 5 hectares and more) in the overall number of farms in the agricultural sector of India, according to the results of the 37th round of the study (January–December, 1982) carried out by NSSO.

[2] Arithmetic mean values by India on the whole are presented for 1982/83–1984/85.

[3] In the brackets, the data on the share of marketed wheat/rice sold by "large" farms of the region/state in the overall marketed wheat/rice mass sold by all "large" farms of the agricultural sector of India in 1983/84.

Let us also pay attention to the significant discordance of indicators of the shares of farm groups producing this (those) principal grain crop(s) (wheat and/or rice) by regions/states and in the whole country (see the indicators in the brackets in Tables 11 and 12).

These discordances obviously reflected the difference in the scales of an array of selected (initial) data that served as a basis for

development of estimates on different levels (nationwide, local, group).

Table 12

Concentration of rice production and its marketed mass in the agricultural sector of India, 1983/84, *in %*

Group of farms and region	Share of rice–producing farms in Indian agrarian sector	Share of rice production in India per particular farm group	Crop yield productivity, 100 kg per hectare	Share of marketed mass of rice in gross rice production	Share of marketed mass of rice in nationwide marketed mass of rice
All rice–producing farms of India	100.0	100.0	13.68[2]	41.7	100.0
including "large" ones[1]	14.1 (7.0)[1]	32.4	15.69	51.7	39.8
All rice–producing farms in the state of Punjab	3.88 (2.55)	9.91	22.72	89.19	20.74
including "large" ones	0.81 (0.28)	6.71	21.32	87.12	13.87 (34.85)[3]
All rice–producing farms in the state of Andhra Pradesh	9.69 (7.26)	19.20	23.19	30.06	13.69
including "large" ones	1.65 (0.59)	9.98	26.03	33.08	7.84 (19.69)[3]

See the sources in Note to Table 11.

[1] See Note [1] to Table 11.

[2] See Note [2] to Table 11.

[3] See Note [3] to Table 11.

For example, in the study of the 37th round of NSSO (the results of which, same as the results of studies of other rounds, are used in development of the state policy in different directions of the socioeconomic process in the Indian society), the sample included 29089 farms (located in 3692 villages) and the sample in the specific study of the set of questions touching on production and distribution of the marketed grain mass was only 3096 farms.

Already for this cause, the first study obviously could more fully (precisely) reflect, all other conditions being equal, the actual distribution of the farm groups in the agrarian sector by size of operational land area; all the more so that the sample of the specific study inevitably included to a certain degree a "distortion trend" towards the selection of a larger number of more specialized, better operating farms[39], as compared to the "impersonal", but a larger survey of the farm distribution of operational land area carried out by NSSO in its 37th round. In other words, the sample, will or nil, shifted to the groups of commodity producers growing the main marketed crop and primarily the more stable, sturdier farms among them.

All this naturally resulted in larger deviations of the final results of the studied values from the true ones as compared to the case of a large data array, at least, as regards a number of items estimated in this section (see, e.g., the data of Tables 11 and 12; compare with the data of the Table in Annex 2).

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[39] See in detail: Rastyannikov, V.G., Deryugina, I.V. Modeli selskokhozyaistvennogo rosta v XX veke (Models of Agricultural Growth in the XXth Century). PP. 183-185.

What do these data indicate?

While the general gap between the share of such farms in the overall (All-India) number of farms, on the one hand, and their share in production and concentration of the wheat marketed mass, on the other, is comparatively low (2.5 to 3.0 times) in the sector of "large" wheat–producing farms in India, the pattern in the poles of growth of the marketed grain production is essentially different. Thus, the share of "large" farms in the Punjabi–Haryana region corresponded already by mid-eighties (1983/84) to *one-fifth* of wheat production. But such farms were concentrated, amounting only to 3% of the overall number of wheat–producing farms of India (the overall share of "large" farms was 15.5%), *almost three-tenths (28.4%) of the nationwide marketed wheat mass*. Herewith, they dominated in the All–India group of "large" producer farms (and holders) of marketed grain of this crop. Indeed, "large" farmers of the Punjabi–Haryana region amounted only to *one-fifth* (19.5%) of this group of Indian farmers, but they possessed *more than three-fifths (62.2%) of the overall wheat marketed mass* that belonged to this whole group (see Table 11). Let us recall that this region produced in the eighties of the XXth century *more than half the marketed mass of wheat in India* (see Table 11 and Annex 2).

The concentration of wheat commodity fund in the economically leading state in the region, Punjab, was even higher than in the whole region. Here, in Punjab, the share of *only 1.24%* of all wheat–producing Indian farms (they amounted to 8% of the whole group of "large" farms of this category in the country) corresponded to *more than one-fifth (21.3%)* of the whole commodity wheat mass in India and the group of "large" wheat–producing farms of the country corresponded to *about one-half (46.7%)* (see Table 11). Let us also point out that the degree of the concentration under consideration is already seen *differently* after comparison of the "large" farms (i.e., those possessing five hectares of land and more each) of Punjab to the

whole number of farms in India. *More than one-fifth (21.3%) of the nationwide fund of commodity wheat* was possessed in mid-eighties by a group of farms amounting to 0.28% of the total number of farms in the country! The corresponding indicators over the whole region were 28.4% and 0.52% (see Table 11).

All this form convincing evidence of a rather high (already by the last decade of the XXth century) degree of commodity production concentration of one of the two principal Indian types of foodgrains in a rather negligible by its share regional interlayer of "large" producers disposing of only 5.5% of all operational land area of the agricultural sector in a vast country (1991/92)[40]. And moreover, this is a vivid example of growth of *nonuniformity* in development of economically and socially different segments of the agricultural sector in the Punjabi–Haryana region of marketed grain production in India, an area, in the leading "half" of which (the state of Punjab) wheat producers taken together supply to the state market (according to the data as of the beginning of the XXIst century) *more than three-fifths of the gross yield of this crop* (see Annex 2). This considerably exceeds the regional marketability level (according to the data on the turn of the XXth and XXIst centuries). One can hardly doubt that the greatest contribution to this difference is made by the group of "large" farmers (marketability of wheat production in this group exceeded 90% already by mid-eighties according to the data of the IARI study! See Table 11). In other words, the economic growth obviously enhanced farm differentiation, ever more shifting intraregional poles of growth to the group of the "large" (i.e., sturdiest) farms.

Agricultural sectors of the states of Punjab and Andhra Pradesh were identified in the regions of rice production in India as poles of growth, only forming as yet, but already quite well

[40] See: Sarvekshana. Journal of NSSO. Vol. XX. 1997. No. 3. PP. 71, 76, 85.

developed. In particular, it is here that marketed rice production concentrated in several coastal state districts is characterized by the highest maturity degree.

Comparison of the data of Tables 11 and 12 describing the degree of concentration of production and marketed grain mass and other agricultural growth indicators shows that marketed rice production even in the pole of growth regions is represented by a weaker (smaller), economically less effective type of "large" farm as opposed to marketed wheat production in similar pole regions. That is the reason why we observe such great differences between the regions in the degree of concentration of the considered growth elements. In particular, it comes under notice that there is a great differential in rice production marketability in the identified poles of growth: Punjab, on the one hand, and Andhra Pradesh, on the other.

In the environment of the forming market agricultural economy, the essence of these differences consists in the size of operational land area in the principal farm groups producing the marketed product. The All–India agricultural census of 2000/01 established the following differences in the density of such farm groups in the states, specifically, in the considered poles of growth (see Table 13).

The enormous advantage of Punjab as regards the indicator of the density of the group capable of independently ("on its own account") producing the marketed agricultural product is obvious as compared to the much more modest economic potential of agriculture in the state of Andhra Pradesh. The above difference, among the other observed ones, is also explained by the historical factor, namely, the earlier jump in the rice–producing economy of Punjab (and the areas it formerly included that later, in 1966, formed the state of Haryana) to the benefits of market specialization offered to it (in addition to such stimuli as the stable demand and accordingly altogether favorable prices) the ever growing State support (see Section 7).

Table 13

Operational land area of "medium" and "large" farmers in the states of Punjab and Andhra Pradesh, 2000/01

Indicator	Punjab		Andhra Pradesh	
	"medium" (4 – less than 10 ha)	"large" (10 ha and more)	"medium" (4 – less than 10 ha)	"large" (10 ha and more)
Share of farms, %	30.2	7.2	4.3	0.6
Share of farm area, %	43.0	27.3	19.8	7.5
Area of an average farm in the region, ha	4.03		1.25	

Complied on the basis of: Agricultural Statistics at a Glance. 2006. / Govt. of India. Ministry of Agriculture. New Delhi. 2006. Table 16.2(A), 16.2(B) // http://dacnet.nic.in.

Indeed, the paddy culture in the Punjabi–Haryana region has developed since the fifties of the XXth century almost exclusively as *market production* and the rice crop has firmly occupied in the region the place of one of the most important *cash crops*: in *all* groups of rice–producing farms of the state. The marketability indicator steadily amounting to 80–90%(!) of the rice crop gross yield for the recent three and half decades confirms this fact reliably (see Table 12 and Annex 2, Table 2B).

On the contrary, the rice–growing farms in the state of Andhra Pradesh, smaller by their average size of operational land area and also amply "diluted" by subsistence economy–type of production activity, entered the phase of active evolution towards the market

much later. Hence, their progress in development of commodity production were much smaller. For example, these are the data of the Ministry of Agriculture of India characterizing the change in the market arrivals of the rice–producing economy in this state in the seventies–at the end of nineties of the XXth century[41] (in *% in the gross yield*):

1970/71	1974/75	1978/79	1980/81	1987/88–1989/90	1990/91–1991/92	1992/93–1994/95	1995/96–1997/98
35.9	30.2	34.5	41.4	43.3	41.8	59.0	67.9

The level of market arrivals of rice production (the key branch of agriculture in the state) surpassed the level of 40% only in the eighties, though such a result, at least in the beginning of the period, apparently possessed as yet no great "safety margin" and participation in the market process of a group of "large" farms was still relatively small. Thus, the "large" farms of Andhra Pradesh did not differ much as regards the indicator of rice economy arrivals, e.g., in 1983/84 (33% *versus* 30%) from the whole bulk of rice–growing economies of the state (see Table 12). Most of these farms, as follows from the data shown in the table, corresponded to a particular type of as yet basically traditional type of production, where the leftover principle in distribution of the produce was still active. And this principle implied that it was the grain excess, small or large, that was to be sent to the market. This excess was left over from the grain mass required for consumption by the producing farm itself or within the village (this

[41] Complied on the basis of: Indian Agriculture in Brief. Delhi. 16th ed.1978; 19th ed. 1982; 21st ed. 1987; 23rd ed. 1990; 27th ed. 2000; Bulletin on Food Statistics 1992 and 1993. / Govt. of India. Ministry of Agriculture. New Delhi. 1996. PP. 50–51.

mass also included the share used for barter exchange). Apparently, the situation started advancing more actively only by the nineties of the XXth century[42].

And nevertheless, the concentration of production and marketed product in the sector of "large" farms was obviously enhanced not only in the wheat–producing, but also in the rice–producing branch. While in the whole India, "large" farmers amounting to *one-seventh* (14.1%) of the *total* number of rice producers concentrated two-fifths (39.8%) of the total marketed rice mass in India by mid-eighties (concentration indicator of 1 : 2.8), the value of concentration indicator in the two above poles of growth, the states of Punjab and Andhra Pradesh, was much higher: here, it amounted to 1 : 8.8 (or 2.46% of "large" rice–producing farmers in these two regions of India supplied *more than one-fifth — 21.7% — of the nationwide marketed rice mass*). And of course, Punjab with its ratio of 1 : 17.1 dominated this "team" of regions. As could be expected, the "large" rice growers of the considered "team" of regions, while amounting to 17.4% of the total number of "large" Indian rice producers, concentrated the bulk (54.5%) of the national marketed rice resources produced by the whole cohort of "large" rice growers of the country (see Table 12).

Punjab also stands out due to this type of concentration of the sectorial product (rice). By mid-eighties of the XXth century, the state had only 5.7% of the total number of "large" rice growers of India. But this group possessed *more than one-third* (34.8%) of the total marketed rice mass belonging to "large" farms of India. Even on the basis of the data on the (priority) growth rates of the Punjabi share of marketed rice in the Indian rice market (37.3% in 2004/05 *versus*

[42] And still, we should pay attention to the statistically significant phenomenal jump in the market arrivals of rice production in 1991/92–1992/93. See the possible explanation of this fact in Footnote 34.

20.7% in 1983/84; see Annex 2 and Table 12), on the one hand, and the fact that the bulk of rice production in Punjab was concentrated even in 1983/84 in the "large" (i.e., holding five hectares of land and more) farms (this corresponded to 6.7% of the whole *paddy* yield in India and the *whole* group of Punjabi rice growers produced 9.9%; see Table 12), on the other hand, one can positively state that the degree of marketed rice concentration (besides wheat) in the sector of "large" Punjabi farms in the XXIst century increased significantly.

The policy of high State purchase prices for grain produced an undoubtedly significant (in fact, determining) influence on the leading dynamics of the rice–growing sector of agricultural economy of the state (same as in wheat–growing economy). The policy of State subsidies of the very production sphere in agriculture[43] organically supplemented the influence of high purchase prices for food produce causing a synergistic effect (see note 35).

Thus, the subsidies in various forms directed by the State to the production sphere in agriculture grew fast in the nineties of the XXth century and in the 2000-ies: they increased 2.2-fold (current prices) in the period of 1993/94–1999/00, 1.8-fold (the prices of 1999/00) in the period of 1999/00–2005/06, and amounted to 598.9 bln. Rs in 2005/06[44]. As a result, the share of production subsidies in the agricultural part of GDP also increased, especially, since the beginning of the XXIst century. The growing role of the subsidiary

[43] The policy subsidies to agriculture in this case includes costs of fertilizers (price reduction), payments for a part of power consumed, maintenance of the irrigation process, expenditures in other agricultural objects, including crop insurance, production of individual crops, functioning of cooperative associations, production and use of the high–yielding seeds, and also costs of loans and crediting of various farmer groups.

[44] Calculated on the basis of: Agricultural Statistics at a Glance 2008. / Govt. of India. Ministry of Agriculture. New Delhi. 2008. Table 12.1(A) // http://dacnet.nic.in.

"inflow" in the economic growth in the agriculture of India is vividly evidenced by the following data (*arithmetic mean values for every three years, share in % in the agricultural part of GDP*)[45]:

1993/94–1995/96	1996/97–1998/99	1999/2000	1999/2000	2000/01–2002/03	2003/04–2005/06
6.5	7.3	6.9	8.2	9.1	10.2
Current prices			Prices of 1999/2000		

As can be seen, the government was frantically searching for the ways of effective support of production in agriculture to overcome the decreasing rates in the dynamics of gross agricultural product (see details in Section 8). On the whole, in the five years since the beginning of the XXIst century, the State production subsidies to agriculture increased in respect to the gross agricultural product by *one-fourth* and on the whole, in the given period (from 1993/94), their relative value probably increased approximately *by half*.

All this, the growth of purchase prices and increasing State subsidies into agriculture, finally predetermined the active expansion of the grain economy of the region's leading in the regional agricultural growth to the grain markets of India in the first decade of the XXIst century (see Sections 4 and 7).

It is of great interest to analyze the phenomenon of the Punjabi region persistently mounting the All-India Olympus of the commodity grain production (in this case, rice) (see Annex 2) in the context of the distribution dynamics characteristic of the rice production economy of

[45] Calculated on the basis of: Agricultural Statistics at a Glance 2001. / Govt. of India. Ministry of Agriculture. New Delhi. C.13; do.do. 2008. Table 2.1; 2.8; 12.1(A).

the country in a certain historic retrospective. The available materials of special studies show that the shares of rice yield utilization in the rice–growing economy were characterized by surprising stability at least in the recent two-thirds of time of the XXth century (see Table 14).

As one can see, the bulk of rice (more than half the harvest) was consumed on the very farm. Moreover, to provide the necessary grain reserve, the producer as of 1983/84 purchased in the market or (a small amount) by means of barter exchange in the village itself the rice mass of somewhat more than 1/10 (11.1%) of the value of the gross yield of this crop. (The case in hand is the periods of relatively "quiet", free of inflation state of market, such as not presented here.) Macroproportions of product distribution in rice–growing farms in the production process spheres were obviously characterized in such periods by a certain "safety margin", even though rice production in India, e.g., in the eighties and nineties of the XXth century experiences the era of technological transformations (the "green revolution" before the beginning of the last decade of the XXth century"). (In particular, in 1936/37–1938/39, the average rice yield in India in milled equivalent was 910 kg/ha. By mid-eighties of the XXth century, it rose to 1450 kg/ha, while by mid-nineties it grew to 1860 kg/ha[46].) It would have seemed that the "green revolution" would have fundamentally changed the structure of rice produce utilization in the (primary) cell of its production. However, this was not the case: technological advances served to a great extent to the purposes of personal and farm (i.e., subsistence) consumption of the producer and his family.

[46] Report on the Marketing of Rice in India, P. 410, 416; Agricultural Statistics at a Glance 2001. / Govt. of India. Ministry of Agriculture. New Delhi. 2001. PP. 30, 31.

Table 14

Distribution of rice harvest in the rice economy of India, XX century, *% of gross yield*

Period (years)	Utilization on the farm	Including family consumption	Marketed rice share	
			Virtual estimate: "potential market excess"	Actually sold in the market
1936/37–1938/39	59.5	42.0	40.5	no data
1983/84	53.5	43.5	46.5	41.7
1995/96–1997/98	no data	no data	60.1[1]	41.0

Complied on the basis of: Report on the Marketing of Rice in India. / Govt. of India. Series Agricultural marketing in India. Calcutta. 1954. PP. 418, 419; Production, Utilization, Marketable and Marketed Surplus of Wheat, Rice and Maize. / Govt. of India. Ministry of Rural Development. Faridabad. 1995. PP. 49, 56, 66; Indian Agriculture in Brief. 27th Ed. / Govt. of India. Ministry of Agriculture. New Delhi. 2000. PP. 229, 231; Agricultural Statistics at a Glance 2001. / Govt. of India. Ministry of Agriculture. New Delhi. 2001. P. 134.

[1] According to the estimate of the authors who calculated this indicator, the latter characterizes the "share of recommended market excess", i.e., the possible "leftover" remaining in the farm in excess of the required home consumption of the produced grain (rice).

Let us recall that the given comparative data sample corresponding to the eighties included much sturdier farms than those existing in the rice–growing agricultural sector on the whole. And this confirms it anew that the structural changes in the utilization of the main grain produce in India by the end of the XXth century were minor. It seems that the socioeconomic process of the nineties introduced too slight changes into the macrodistribution of the (rice) produce (see Table 14, the data on actual sales in the rice market) to secure the changes in the share of the *actual* marketed rice harvest. This was even despite the considerable gain in the crop yield (by 28% in one and a half decade).

And still the idea of the historically extended uniformity of product distribution in rice–growing farms as per spheres of the production process requires a certain explanation. Indeed, in the course of the socioeconomic process in the XXth century, the Indian cultivator ever more broke away from the umbilical of the *"traditional forms*" of the subsistence economy. However, the progressively growing 'land–demographic complex' already under the new, subjected to large changes, technological production conditions forced (and still forces) the farmer (especially a marginal farmer) to adhere to the *subsistence type of economy*: then and there, when and where they remain the only (more precisely, the only economically acceptable) guarantee of subsistence. It seems that it is on the basis of the conflict of these two opposite trends that the above "balance of uniformity" is developed (though as we saw, its subsistence component is gradually subject to ever more enhanced corrosion). Their "power balance" maintains as yet the "stability" of proportions in the above distribution process in the rice–growing economy.

The problem of a crisis in the market arrivals of food production in India, especially, as regards grain, has however deeper roots. While subject to the strongest influence of the 'land-demographic complex' dynamics, the production sector obtains a powerful crisis inflow from the processes determined by the socioeconomic life of the village society. These include an intensive increase in the number of people consuming *commodity* grain. Herewith, not only their *number* increases, but also their *share in the whole rural population*. Thus, let us consider some factors affecting the dynamics of social food demand.

CHAPTER 5.
CHANGES IN THE DIRECTION OF FLOWS OF MARKETED FOOD PRODUCE

An Indian village knows two major types of customers in the food market. These are vast numbers of rural laborers working for hire in various ways and getting wages for their work. (In official documents, these include persons with the total income consisting more than by half of earnings from wage work.) These are marginal agricultural producers that are forced to supply their means of subsistence through transactions regulated by the market laws and labor (including paid work) elsewhere, outside their own farming.

The life of Indian rural communities in the last several decades was marked by an increase in the cohort of rural laborers (particularly, their most numerous subpopulation, agricultural proletariat: 77.3% of the total number of rural laborers in 1987/88 and 80.2% in 1999/2000 against 85.5% in 1964/65). This increase occurred though irregularly during different periods, but at a much higher rate than the gain in the total rural population. The research team headed by one of the most competent Indian agrarian experts, Hanumantha Rao, pointed out this special feature in its fifth serial fundamental survey of the state of rural laborers, characterized its causes and its dynamics, as of the end of the eighties of the XXth century. If the data analyzed by the group of H. Rao are supplemented by similar data from the materials of the two latest serial studies dated by the nineties of the XXth century, we obtained the following, quite impressive result (see Table 15).

Thus, the presented data show that an Indian village considered historically is sweepingly *proletarianised*. In the period of three and a half decades, while the total number of rural households nearly doubled, the size of rural labor households increased by *more than 3 times*.

Table 15

Dynamics of size of rural labor households,
1964/65–1999/2000, *mln*.

Year of survey	Rural households, total		Households of rural laborers			Households of agricultural laborers		
	number	index	number	index	percentage of total, %	number	index	percentage of total, %
1964-65	70.4	100	17.9	100	*25.4*	15.3	100	*21.8*
1977-78	95.7	136	35.2	197	*36.8*	28.6	187	*29.9*
1987-88	108.4	154	43.1	240	*39.7*	33.3	218	*30.7*
1993-94	119.5	170	45.8	256	*38.3*	36.2	237	*30.3*
1999-2000	137.1	195	55.1	308	*40.2*	44.2	289	*32.2*

Compiled and calculated on the basis of: Report of the National Commission on Rural Labor. / Govt. of India. Ministry of Labor. Vol. I. New Delhi. 1991. P. 9; Rural Labor Enquiry (55th Round of NSS) 1999-2000. Report on Employment and Unemployment of Rural Labor Households (Main report). / Govt. of India. Ministry of Labor and Employment. Labor Bureau. Shimla. Chandigarh. 2006. PP. 37, 46.

While in mid-sixties of the XXth century, they amounted to *one-fourth* of the rural households, by the end of the eighties, their fraction grew already to *two-fifths* of the total number of the rural

households. Their fraction remained within these limits up to the beginning of the XXIst century[47] (see Table 15).

In India, in the last third of the XXth century up to the beginning of the XXIst century, two processes were initiated that promoted intensification of growth of the number of persons that entered (and are entering) the labor markets in the agricultural sphere.

These include the "green revolution" that started in mid-sixties of the XXth century and gained wide acceptance in irrigated lands in the seventies. One of its prominent, revolutionizing results was the greatest impact on the ramparts of traditional relationships still remaining from the communal life in the Indian village community and delaying the formation of conditions for establishment of market economy. In other words, the "green revolution" acted as a catalyst of *individualisation* in the growth process of a farm household. Historically, it swept like a hurricane liberating economic agents of the agrarian sphere from a system of traditional relationships (including those based on non-economic coercion of a producer) in the form of traditional exchange of products and specific services between farmers and their economic counterparts in villages (craftsmen, "community servants"). This results in breakdown of the system (it is this which has happened and keeps happening, e.g., with the "jajmani" system in the "green revolution" regions[48]).

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[47] In fact, the total size of rural labor households as compared to the whole rural population is much lower than the fraction and number of rural labor households relative to all households living in rural areas, just because the size of poor families to which households of rural (including, naturally, agricultural) laborers belong, is much lower than the size of households of wealthy or middle–class rural population. This factor is of great importance for comparative analysis of some aspects of demographic dynamics.

[48] One of the observers of the process confirms: "The interpersonal relations between different caste groups in the village are shifting from traditional jajmani system to formal contractual relations. The mode of

Dilution of traditional barter relationships predetermined a significant emission of manpower formerly bound by the chains of subsistence economy relationships to the labor market. Or, to put it in a different way, this process introduced to the labor market the amount of work (and labor) which was earlier carried out by a traditional laborer according to the laws of intracommunal (traditional) division of labor and which now has to be performed by a paid employee on the basis of the market mechanism and its controls. Moreover, the result of production intensification was an increase in the amount of work to be carried out. All these metamorphoses due to the "green revolution" were reflected in the dynamics of data for the sixties and seventies (see Table 15).

As follows from the presented data, this was the period of the most intensive growth of rural/agricultural laborers in the whole semicentenary history of social development of the Indian agricultural sphere: in only thirteen years (1965–1978; see Table 15), the absolute number of laborers of both categories *paid in cash doubled* (rural laborers) / *nearly doubled* (agricultural laborers). (Their bulk joined the ranks of casual laborers; this process evidenced, among other issues, the growth of the agricultural labor "excess" in an Indian village; see further.)

Another factor of intensification of the growth of rural proletariat is the effect of the ‘land–demographic complex’ that transformed this process in India, practically into an "automated merry-go-round" starting from the last third of the XXth century. It is due to incessant operation of the ‘land-demographic complex’

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payment for the labor which was mainly in kind in the past is being replaced by cash payments. There is a sharp decline in mutual aid practices and informal cooperation". (Sidhu D.S. Socio-economic Implication of Rapid Agricultural Growth. The Experience of Punjab. / Indo-Soviet Symposium on Agricultural Productivity. May 11–13. 1982. Dushanbe. P. 10 [mimeo]).

mechanisms, that the classes of marginal and small peasantry have now become one of the most significant sources of landless rural laborers. As follows from the report of Hanumantha Rao, this group of laborers "consists of those who before joining the ranks of laborers were small/marginal cultivators, but either decided to move out of farming (owing to meagre returns from farming) or were forced out by circumstances beyond their control."[49]. The report also discloses the "routine" forcing marginal and small peasantry to leave their land: "Amongst the small and marginal farmers, population growth and subdivision of holdings has resulted in extremely tiny and uneconomic holdings. This has led to distress sale of land and proletarianisation, thus swelling the ranks of landless rural labor."[50].

There is however a circumstance to be explained. As follows from the data of Table 15, the ratio of rural laborers remained practically unchanged at least in the period of 1987/88–1999/2000 (a similar pattern may be traced in the group of agricultural laborers even starting from an earlier period, at the end of the seventies. See Table 15). Meanwhile, the number of rural proletariat grew quite explosively during these years: the number of rural labor households increased in the above twelve years by 12 mln. or by 27.8%, though the size of the whole group of rural households increased to a lesser degree: by 26.5% (by 28.7 mln. units).

An "equilibrium" ratio between the two rural population groups was achieved, as seen from the data of Table 15, as a result of the fact that the degradation factor of the bulk of peasant farms was basically "balanced" by intensity of the swelling of the ranks of rural laborers by "old" and "new" marginal farmers. This factor was manifested, among other issues, in the processes of their fractionation (particularly, a decrease in the land area per household) and ultimately

[49] Report of the National Commission on Rural Labor. Vol. I. P. 64.

[50] Ibid. P. VI.

in outrunning growth of the sector of petty farming, primarily, marginal farming households. (Hence, the lasting relative "sustainability" of the fraction of rural/agricultural laborers. See Table 15.) However, such "equilibrium" was shifted by the end of the XXth century, though as yet negligibly, towards rural/agricultural laborers. In particular, the fraction of the latter at the turn of the century (XX/XXI) came already very close to *one-third* of the total number of rural households in India (see Table 15).

The social–professional structure of rural/agricultural proletariat also changed significantly simultaneously and in parallel with this process.

According to detailed analysis of Ajit Ghose who used the materials of the National Sample Survey Organisation (NSSO), there is a pronounced trend in the group of "employed labor with paid wage" in India towards transition from regular–wage employment to *casual* hire, generally, with a daily payment. In the studied period (1977/78–1993/94), the ratio of casual Indian laborers (seasonal and other similar categories) increased on the whole from 28.2% of the total number of all employed laborers to 33.2%, while in the agricultural sector, it changed from 33.8% of all employed ones to 41.6%. In other words, the gain in the number of such laborers in the agricultural sector occurred at an outstripping (as compared to average national) rate of variation of the number of those employed (including those having petty farms of their own and wage–employees). As a result, the casual laborers replaced practically completely regular employees ("attached laborers") among the agricultural laborers already by mid-nineties: the ratio of casual laborers in 1993/94 reached 96.1% (against 88% in 1977/78)! All this pointed convincingly to deterioration towards the end of the XXth century of

stability (sustainability etc.) of the conditions of employment of the major part of hired laborers in the Indian agricultural sphere[51].

Let us also note: progressive changes in hired labor in the group of all *rural laborers* (extension of the casual hire ratio at the expense of regular hire) are in fact typical for formation of the labor market in village economy in India in the whole second half of the XXth century. (You will recall that in this group, *agricultural laborers* amounted to approximately four-fifths of its total size.) Thus, according to the data of research carried out by H. Rao et al., the ratio of casual rural laborers on daily wages in village labor market increased as follows (by *years*, in %):[52]:

1972/73	1977/78	1983	1987/88
64.5	71.5	73.9	75.8

Of some *two-thirds*, the fraction of casual laborers grew in just fifteen years to more than *three--fourths* of all *rural laborers* obtaining wages.

In fact, the point at issue was that the "excess" working time resource of Indian agricultural laborers that could not be used in productive paid labor continued growing[53].

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[51] Quoted and calculated on the basis of: Ghose Ajit K. Current Issues of Employment Policy in India. // Economic and Political Weekly. 1999. September 4. PP. 2593, 2597, 2600.

[52] Report of the National Commission on Rural Labor. Vol. I. P. 9.

[53] "The growing casualisation of employment implies that the level of underemployment has also been increasing". According to the calculations of Ajit Ghose carried out on the basis of the NSSO data, in 1993/94, only 3.3% of regular laborers were seeking or available for additional work, while the corresponding ratio in the group of "casual" laborers was 27.4%. The vast

Of great interest for comparison is also the early estimate of proportions of fractionation of *agricultural laborers* by socio–professional characteristics, as of mid-fifties of the XXth century. According to the Second All–India Survey of Agricultural Laborers carried out by the Indian Ministry of Labor and Employment in 1956/57, the families of "attached laborers" corresponded to 26.6% of the overall number of families of agricultural laborers, while the families of casual workers amounted to 73.4%, accordingly.

The researchers themselves believed the attached labor ratio to be "to some extent" overrated. An explanation for its inadequacy was found in the behaviour of major Indian landowners who used outside labor force on their land on a large scale in an effort to circumvent the tenancy laws as of the beginning of the fifties that afforded certain tenant groups (particularly, share croppers) occupancy rights and prohibited their unwarranted eviction. These landowners proclaimed their tenants to be agricultural laborers who allegedly worked for wages in their farms; moreover, were "permanent farm hands". Thus, the fraction of such laborers ("attached laborers") in the overall cohort of agricultural laborers grew inevitably. (It was however impossible to estimate whether such overstatement designated by an intriguing mark of "to some extent" indeed took place[54].)

For a better (and more significantly, more precise) assessment of the effect of changes occurring in the Indian rural labor markets, let us consider, inevitably briefly, the dynamics of economical component of the situation of rural/agricultural laborers. These are the bulk consumers of marketed food produce and such dynamics is

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majority of the latter were concentrated in the agricultural sector (Ghose Ajit K. Current Issues of Employment Policy in India. PP. 2600, 2603, 2605).

[54] See: Agricultural Labor in India. Report on the Second Agricultural Labor Enquiry. 1956-57. Vol. I — All India. / Govt.of India. Ministry of Labor and Employment. Delhi. 1960. PP. 54, 62.

reflected, in particular, in a change in the ratio of wage and price growth rates for grain, which is the foodstuff that is most important for laborers (in retrospective of two decades).

Table 16

Growth of average daily nominal earnings of agricultural male workers in India, 1983 to 1999/2000, *times*

Estimated parameter	1983–1987/88		1987/88–1993/94		1993/94–1999/2000	
	I	II	I	II	I	II
Increase in earnings, rupees	2.0	2.0	2.3	2.6	1.9	2.0
Increase in indicator II in rupees as compared to indicator I	1.1		1.3		1.4	
Increase in minimal purchase price in rupees for:						
rice (*paddy*)	2.0		2.1		1.6	
wheat	1.5		2.0		1.7	

Calculated and compiled on the basis of: Rural Labor Enquiry 1999-2000. 2006. P. 39; Bulletin on Food Statistics. 1992 and 1993. / Govt. of India. Ministry of Agriculture. New Delhi. 1995. P. 87; Indian Agriculture in Brief. 23rd ed. New Delhi. 1990. P. 244; do.do. 27th ed. 2000. P. 120; Agricultural Statistics at a Glance. New Delhi. 2001. P. 132.

Note. I correspond to earnings in agriculture; II is related to earnings in non-agricultural sectors of economy.

Materials of serial studies of the state of Indian rural laborers afford such a possibility (see Table 16). The data on the three chosen periods (there is a whole set of indicators regarding these that are

required for comparative estimates) in the 80–90ies of the XXth century point to the development of the following trends in the labor markets of rural India (also characteristic of today's India). During the first period (mid-eighties of the XXth century), earnings and prices (these are assumed to be the minimal purchase prices paid by the state in free grain markets, i.e., the so-called *support prices* preventing grain price collapse and providing sustainable conditions for the grain-grower for sales of his product) started "diverging" only in part as regards their parallel variation (this concerned only wheat prices as yet).

But of utmost importance is that signs of outrunning rate of growth of labor costs (and accordingly, earnings) appeared in *non-agricultural* fields, where the labor market started a more active drawing away of the laborers from agriculture (possibly; more precisely in many cases, part of the labor hours of agricultural laborers). This process provided grounds for the conclusion of the commission of H. Rao: "Some rise in real wages noticed in the 80s is not so much due to the rise in agricultural productivity, as to the rise in demand for labor in the non-agricultural activity /…/ The major cause for the decline in labor absorption in crop output in the country seems to be the rise in wages relative to the prices of crops. The rise in wages itself is due to growing demand for labor in the non-agricultural occupations"[55]. And this is a very provocative circumstance: the "wage boom" in non-agricultural spheres of economical activity played the role of a trigger causing the upward dynamics of wage rates in the rather inertial actual agricultural "segment" of Indian rural economy!

The above trends were given renewed momentum in the following period (at the turn of the 80–90s). Breakaway in the upward dynamics of earnings of agricultural laborers (especially in non-agricultural spheres of activity) from similar dynamics of grain prices

[55] Report of the National Commission on Rural Labor. Vol. I. P. VI, 38.

was still more enhanced. Herewith, the earnings of laborers in non-agricultural fields as compared to earnings in agriculture increased in six years in total by *one-third*! And though in the third period (the last two-thirds of the nineties of the XXth century), the aggressive rush of both trends was to some extent dampened (decreased), the deep gap between the growth rates of each of these remained. An increase in the grain prices continued *lagging behind* as compared to the gain in the earnings of laborers. Moreover, the earnings of laborers from the households of agricultural laborers in non-agricultural spheres of activity underwent in fact an *abrupt* increase: in just six years, it grew as compared to that in agriculture as much as by *two-fifths* (see Table 16). Let us stress here once more: *not the internal* processes surging in the agricultural sector itself determined the upward trend of wages in agriculture, but on the contrary, the processes of *exogenous* (for the agricultural sector) origin (in particular, the building "boom" in non-agricultural fields in rural areas); *it was these processes that pushed the wages in agriculture up*.

The paradox was however manifested in the fact that all this versatile process of an increase in the *actual* (as opposed to nominal) wages of agricultural (and, in general, rural) laborers occurred against the *actual* increase (as indicated out above) in excess of the "unemployed" labor hours of rural/agricultural laborers, i.e., aggravation of the state of their underemployment (which is pointed out by a number of researchers of India, e.g., A.K. Ghose, H. Rao quoted above). Besides, in the nineties of the XXth century, "bonanza" (a source of large profit) in the form of non-agricultural spheres of activity in rural areas started noticeably shrinking.

Thus, while in 1993/94, agricultural male laborers were employed in these works for 17 days out of 254 paid days, in 1999/2000, it was only 7 out of 245. In full working days equivalent, such laborers employed only in non-agricultural work were employed

in 1999/2000 for only 198 days against 234 days in 1993/94 or by 15% less[56].

Wage rates of rural laborers thus grew so much in the course of economical advance of the agrarian sector (especially in non-agricultural fields) that the aggregate income (earnings) of laborers allowed them to compensate amply (as yet, until the turn of the XXth–XXIst century) economic losses occurring due to reduction of the annual labor time reserve (i.e., days with paid wages) both as a result of transformation of "regular" labor into "casual" (see above) and, in the period after 1993/94, a decrease in the employment volume in non-agricultural spheres of activity; herewith, despite the simultaneous increase in the food costs.

This circumstance ultimately caused a decrease in the Engel coefficient (ratio of foodstuff costs to the costs of all vital requirements of the family), which definitely evidenced gradual improvement in the state of rural/agricultural laborers of India by the end of the XXth century. Further, the data are presented on variation of the Engel coefficient in the studied years[57] (in %):

Category of laborers	1963-64	1974-75	1977-78	1983	1987-88	1993-94	1999-2000
Rural	73.3	78.4	67.7	68.2	66.2	65.3	61.4
Agricultural	73.9	78.8	68.6	68.7	67.1	66.3	62.3

[56] Rural Labor Enquiry. 55 Round of NSS 1999-2000. Report on Employment and Unemployment of Rural Labor Households (Main Report). Shimla. 2006. P. 25, 47.

[57] Ibid. P. 40.

A special feature of this process was that all these changes (to the better) occurred (and in any case up to the end of the XXth century) within the groups of Indian rural population corresponding chiefly to its poorest, most destitute layer: according to assessment of the Planning Commission of India, 27.1% of the total population lived below the *poverty line* in 1999/2000 in rural areas of the country.(In 2004/05, this indicator in the case of actual semi-stagnation in agricultural production from the beginning of the XXIst century was 28.3%)[58].

Herewith, the Planning Commission emphasized that the count ratio of the poor (persons who live beyond the poverty line) in India has barely changed over the last three decades (1973–2004/05); from 321 mln. in 1973 and 320 mln. 1993/94, it decreased only to 302 mln. in 2004/05. "Therefore, income poverty in the country has declined over three decades by less than one million a year, and it will take at least 300 years at this rate to eliminate poverty from India"[59]. Of interest is also the estimate of the World Bank made in 2000: in this year, according to WB, 30.2% of the total rural population of India lived below the "poverty line"[60].

And still, the initially low wages remained (and probably will remain in the XXIth century) the veritable "scourge" for vast groups of rural/agricultural laborers. As applied to the period ending with year 1993/94, Ajit Ghose states: "Many of those counted as employed actually earn incomes which are below the official poverty line". The

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[58] Agricultural Statistics at a Glance. 2004. Table 2.4; do.do. 2007. Table 2.4; Report of the Steering Committee on Rapid Poverty Reduction and Local Area Development for the Eleventh Five Year Plan (2007–2012). / Govt. of India. Planning Commission. New Delhi. 2007. P. 6.

[59] See: Ibid. P. 3.

[60] See: World Development Indicators 2005. // www.ruralpovertyportal.org 14.06.2006.

cause for their (casual laborers) distress "is to be found in the extremely low wages for casual labor... There is evidence to suggest that even if the casual laborers had full–time employment at the prevailing wage rates, they would still be poor... In reality, what is needed is not much additional days of employment as a higher level of wage per day of work"[61].

Hanumantha Rao interprets such an estimate formulating the following law (under the conditions of India): "As an increase in employment opportunities has been slow, high population growth has resulted in *keeping wages down for rural labor*" (italics added. — *V.R.*)"[62]. The problem naturally consists in the way how the antagonism of all the above development trends would come to pass (also including, of course, the demographic component determining the degree of pressure on the growth resources), in which direction their vector will head (designating as yet positive dynamics for rural laborers) in the nearest decades of the XXIst century, whether the rural laborers will break in their bulk the "vicious circle" delineated by the "poverty line".

Thus, as follows from the above, rural India goes over the last three–four decades through a crisis in formation of a nationwide marketable foodstuff fund. However, this crisis is experienced the more acutely, the closer to the present time the given point of its development is. This crisis is caused mainly by two groups of internal processes. A powerful source of its exacerbation is, as shown earlier, continuous *marginalisation of production units* of Indian agricultural sphere catalyzed by the effect of the 'land–demographic complex' and manifested in rampant expansion of marginal and small farms to the ever-greater fraction of the operational land areas in India. In the area

[61] Ghose Ajit K. Current Issues of Employment Policy in India. P. 2607.

[62] Report of the National Commission on Rural Labor. Vol. I. P. IV.

of such farming, progressive fractionation of production units acts as the process that constantly generates *subsistence economy trends in agricultural production* (i.e., trends that are organic specifically for production with the primary aim being the provision of the producer himself and his household by foodstuffs and other means of subsistence). Such trends suppress (at a particular degree of efficiency) and in some cases even block formation of conditions and prerequisites for growth of *absolute size* of the efficiency and ratio of *marketable* foodstuffs (in reality, chiefly its grain component). The above data on many decades of stagnation of the ratio of arrivals of grain to the national wholesale assembling markets are a demonstrative example of this fact.

The second group of processes is transition of ever growing fraction of the available resources of marketable foodstuffs into the sphere of their *intravillage consumption* (or maybe, more precisely: *consumption within the very rural areas*, where they are produced). Herewith, as pointed out above, the amount and ratio of rural foodstuff purchasers (specifically, as represented by "rural laborers", including those employed in non-agricultural trades and petty "farmers") grow much *faster* than the rural population itself. Moreover, an increase in the *actual* wages of rural/agricultural laborers occurred in rural India in the last three–four decades, at least, until the turn of the XXth–XXIst century, according to the data of mass field surveys (especially prominent in non-agricultural spheres of activity), even though this process in most of its manifestations is as yet limited by the "poverty line" and does not go beyond it.

All this together increases *social demand in marketable foodstuffs* in rural regions. Large–scale gain in this demand is satisfied through the marketable foodstuff resources that would otherwise be used to replenish the foodstuff–raw material resources of the growing industrial urban centres (or, e.g., sectorial departments of national economy requiring raw materials of agricultural origin, e.g., cattle

breeding, including poultry breeding). Or, in other words, by reducing the economic potential of *marketable foodstuff produce* (due to processes of economy marginalization), the village at the same time grows into a powerful and effective factor ever more actively *competing with the national city for marketable foodstuff resources* produced in the agricultural sector.

And this occurs against the ever-deepening differences in dynamics of macrocomponents of the Indian foodstuff complex (social demand in marketable foodstuff resources and national agricultural production providing these). But this challenge of our age originated by the natural course of economic growth, agricultural sector of the state, despite the phenomenal success in development of "green revolution" in the last third of the XXth century, proved to be as yet not wholly prepared both economically (actively continuing *process of marginalisation of the economy of the agricultural sector* accompanied by relative reduction in the volume of investments into its production), and resource–technologically (*stagnation* in dynamic characteristics of *productivity of the key food crops* with drastically aggravating environmental stress). Indeed, the XXIst century set up the imperative problem for the agricultural sector of India: not only production of foodstuff resources must be increased dramatically, but it must also be enhanced against such distribution ratios (to marketable and nonmarketable fractions) that would be adequate to the occurring structural changes in social demand for foodstuffs (which would be reflected in the outrunning growth of marketable foodstuff resources).

CHAPTER 6.
THE EMERGING ALL-NATIONAL FOOD MARKET VIS-À-VIS THE DESTRUCTIVE WAVES OF DISPERSION PRESSURE

The process of commodity food circulation implemented within the rural area represents to a great extent a completely different type of commodity relations as compared to those serving the commodity food flow directed outside the village to a wider national (particularly urban) or even international market. It is here, in industrial–urban centres, to a much higher degree than in rural areas that in the words of K. Marx, "replacement – commodity by commodity– thus contingent on the production of surplus-value" occurs. (The case is the capitalist commodity circulation.) The original exchange forms reflecting the primary stages of commercial farming are still rather strong in village circulation. These are the stages in which "product exchange in itself only mediated by money" is observed "having for its end the existence of the producer"[63]. All the more so, as we were convinced, the social demand formed by basic commodity food consumers in such an economic scheme, increases ever more intensively in rural areas, ahead of the overall growth of the commodity agricultural product – both due to growth of new contingents of marginal "cultivators" and to swelling of rural worker groups, a part of which is related to marginal farm patterns.

[63] See: Marx, K. Kapital. (Capital. A Critique of Political Economy.) Vol. II // Marx, K. and Engels, F. Sochineniya. (Works.) Moscow: Progress Publishers, 1978, vol. 24, pp. 76, 77.

In the above context, one should pay attention to the emerging type of market space organization, particularly, the food production complex of India integrated into this space. The well-known French sociologist É. Durkheim who studied the historical (and which is very important – natural) market dynamics, defined very precisely the essence of the stagewise process of its establishment and development: «As the segmental type (of economy. – V.R.) is quite pronounced, there exist nearly as many economic markets, as various segments; therefore, each of them is very limited /.../ On the contrary, as the organized society type develops, the segment interpenetration results in *merging of markets into a single market* encompassing nearly the whole society. It extends even further and tends to become *universal*, as *the borders separating peoples disappear simultaneously with the boundaries that separated segments of each of these* (emphasis added. — *V.R.*)".[64]

The cited theoretical conclusions of É. Durkheim are very useful for preliminary assessment of the Indian variant of food market formation considered here. Indeed, a characteristic (clearly anomalous) feature of this process in India is that "competition" between the both components of the market food system of India (as opposed to their "merging") started developing ever more actively over the vast territories of the country at an increase in the pressure from the 'land–demographic complex' and the process of marginalisation of the agricultural sector economy it determines. One of them is the process of formation of a single (integral) food market

[64] Durkheim, É. De La Division Du Travail Social. Livre III. P. 116. [Translated from the French electronic edition based on the book of É.Durkheim (1897), De la division du travail social. Paris: Les Presses universitaires de France, 8e édition, 1967, 416 pages. http://classiques.uqac.ca/classiques/Durkheim_emile/division_du_travail/division_travail_2.doc].

accumulating nationwide trends (though, as shown below, in its rather modified, "etatised" form; see section 7); the other consists in waves of development of independent fragmentary internal village markets and any similar fractional food markets (though sometimes extending to the whole territory of some of the states) that overflow this historically natural process. As shown by the historical experience of India of the second half of the XXth – beginning of XXIth century supported by the data of national statistics, the segmental type of food market development (particularly encompassing the mass consumption ware groups) subjugates ever more decisively the nationwide trends of its development[65]. It is this that sources the nowadays increasing threat to food security of India forcing the *State* under the effect of the complete stagnation in increase in the yield of the main grain crops in the XXIth century (2000–2007)[66] to resort to ever more large-scale purchasing of food products while infinitely increasing herewith the fund of agricultural and food subsidies etc to prevent breakdown of the market sector that fulfils nationwide functions (see details in section 7).

A similar situation though probably in an even more dramatic form was observed in China by the end of the seventies, just before the

[65] Here is some history. For example, this is how the grain market was formed at its yet segmental stage in the rice granary of colonial India, Bengal, in the thirties of the XXth century. The provincial government pointed out in one of its reports concerning the situation in rice trade: "The exchanges in the marketable surplus of paddy (unhulled rice) takes place mostly within the province, so that, generally speaking, they register mere transfers of purchasing power from one part of Bengal to another. This is typified by the fact that trade in paddy is overwhelmingly inter-district, whereas that in jute is almost wholly international" (Report of the Bengal Paddy and Rice Enquiry Committee. Vol. I. // Alipore: Bengal Govt. Press. 1940. P. 12.).

[66] See: Economic Survey 2007–2008. Delhi. P. A-19.

reforms in the agrarian setup initiated by Dèng Xiǎopíng. According to authoritative evidence of the Chinese researchers Yang Jiangbai and Li Xuejiang[67], marketability of agriculture over the period of two decades preceding the beginning of reforms was "extremely low" and grew annually by 0.38% (the marketability indicator as per parameters of pure sector production and being 41.5% in 1957 reached the level of 44.9% in 1979). Grain farming marketability was especially low. The fraction of grain purchases in its gross national output accumulating nearly the whole commodity grain bulk produced in public economy (only 4.9% of the grain produce gross yield corresponded to personal peasant farms) remained persistently for "many years" "at the level of 20%" (e.g., this fraction was 20.8% in 1979 and 20.3% in 1957).

The situation was complicated by the fact that a part of grain accumulated by the state was sent back to the village for its food needs. (The same occurs in modern India.)

Thus, the grain commodity fund intended for city (local!) consumption "shrank" considerably (it was 14.7% in 1979). As a result, (attention! — *V.R.*) "only 1% of the overall grain yield entered the interdistrict exchange in 1979" (!). The authors derive an impressive conclusion: "of the 29 administrative units, only 11 have a small surplus of grain. This indicator is highest in Hunan, where this surplus corresponds to merely 3% of the overall grain production. *For the most part, all provinces and autonomous districts look up to grain self-supply* (emphasis added. — *V.R.*)"[68]. One can see that just before the reforms of the eighties–nineties, agricultural China remained at the level of development, at which the system of segmental and also underdeveloped, limited local markets rejecting and firmly opposing

[67] See: Struktura ekonomiki Kitaya (Structure of China Economy). Moscow: Progress. 1984. Chapter 3 [Yang Jiangbai, Li Xuejiang]. PP. 134, 135, 136. (Translated from Russian).

[68] Ibid. PP. 134, 135.

the processes of nationwide market development actually gained absolute dominance (provinces of the Hunan type are not to be taken into account). It proved possible to raise the blockade of a set of factors generating and conserving the segmental character in the case of a radical transition to a fundamentally new form of social production organization in agriculture ("family contract") with its market labor motivation. Such a transition is accompanied by partial liberation of the producer from the effect of the mechanisms of noneconomic enforcement, a gradual increase, among other issues, in national purchase prices that hitherto suppressed severely the farm household economies. And the results were not long to appear: already by mid-eighties of the XXth century, purchases (marketability) of grain cultures reached a stable level of 34–36% of the gross output of the latter with significant growth of grain harvesting (by one-third in 1984 and up to one half in 1990)[69]. (It will be remembered that the marketability indicator in India reached 30% (wheat) – 40% (rice) of the gross yield of the key grain crops in the nineties. See: Section 3.) It is probably at this time point in the economic evolution of the Chinese village that the complicated process of movement of *segmental markets* of the key crops towards the development of *nationwide market* starts. However, it is as yet based on activisation (same as in India) of the *State* distribution system and has rather poor initial economic grounds (same as in India) for development of commodity production. Herewith, the latter is still largely based on farming economy ever shrinking under the pressure of the land–demographic complex. Its functioning sphere is burdened by the growing number of persons belonging to the category of "rural overpopulation"[70]. Such

[69] See: Bonie, L.D. Kitaiskaya derevnya na puti k rynku (Chinese Village on Its Way to Market). / Institute of Far East. Moscow. 2005. PP. 509, 510, 520.

[70] See: Ibid. PP. 49, 419, 420, 427–433.

are the "accompanying" processes of market transformation of the present-day Chinese village supplemented by the cases of significant grain import abounding from the nineties of the XXth century and replenishing the national reserves of commodity grain (its import was, e.g., about 20 mln. tons in 1995, i.e., 10% of the world grain import at the time, 8 mln. tons [of wheat] in 2004)[71].

[71] See: Prodovol'stvennaya bezopasnost' KNR i rol' gosudarstvennogo regulirovaniya (Food Security of P.R.C. and Role of State Regulation) / Institute of Far East, Russian Academy of Sciences. Moscow. 2002. P. 43 [I.N. Korkunov]; FAOSTAT: World Bank — Website.

CHAPTER 7.
AND THE STATE HAS COME ...

As follows from the above, the boundaries of a structural crisis affecting the food complex are outlined ever more prominently in India at the turn of the century and at the beginning of the XXIst century. And this is yet another link in the chain of *disruption in the economic growth ratios* in the agricultural sphere. It is due among other issues to the processes of marginalisation in the Indian farming system.

The above facts also show that the unregulated market relationships prove to be ever more impotent in the role of a circulatory system for distribution of food (agricultural, at large) resources in the country. Under such conditions, it is the state that has to fill in the functions of private capital in this area of national economy and herewith ever more actively over the years (incidentally, this capital often acts as a trade profiteer). In this, it compensates its inability by activities of its institutes of distribution (primarily, as regards the "poverty sphere") and exchange. This, ever more exacerbated structural clash determines the whole policy of state regulation of agricultural production flow in the second half of the XXth century – the beginning of the XXIst century.

In what way is this policy in India remarkable?

The growth rates of national grain procurement (purchases) *outran* constantly and largely the processes of commodity grain mass formation for the markets during the last fifty years. The spurt of the modern state fraction in the commodity grain "basket" started after the end of the period of mobilization strain during the war years and

further remission (see Table 17). The impact driving this spurt was primarily supplied by two factors: by the growing threat of shortage of marketable grain surplus (starting industrialization in the country) and especially by an acute food crisis breaking out in mid-sixties owing to crop failure and accompanied in a number of regions by multiple cases of starvation deaths.

Table 17

India: the changing role of the State in purchases of grain at wholesale assembling markets, 1959/60 – 2006/07

Period	Market arrivals of grain purchased by the State, *mln tonnes per annum*	Percentage of market arrivals of grain purchased by the State, %	Period	Market arrivals of grain purchased by the State, *mln tonnes per annum*	Percentage of market arrivals of grain purchased by the State, %
1959/60–1962/63	0.75	6.9	1979/80–1985/86	15.7	56.0
1963/64–1967/68	4.1	35.1	1999/2000–2006/07	36.9	66.4
			2007/08–2009/10	51.03	70.3

Compiled and calculated on the basis of: Report on Price Policy for Kharif Cereals for the 1968-69 Season. / Agricultural Prices Commission. New Delhi. 1968. PP. 42, 43; Report of the Agricultural Prices Commission on Price Policy for Rabi Foodgrains for 1968-69 Season. New Delhi. PP. 12, 17; Agricultural Statistics at a Glance. 1988. / Govt. of India. Ministry of Agriculture. P. 57; do.do. 2004. P. 133; do.do. 2006. Table 9.1; do.do. 2007-08. Tables 4.6(a), 4.7(b), 9.1. See: http://dacnet.nic.in; Indian Agriculture in Brief. 27th Ed. 2000. PP. 230, 231; Reports of the Commission for Agricultural Cost

and Prices for the Crops Sown during 2007–2008 Season. / Govt. of India. Ministry of Agriculture. New Delhi. 2008. PP. 236, 238; *Gulati I.S., Krishnan T.N*. Public Distribution and Procurement of Foodgrains. // *Economic and Political Weekly*. 24.05.1975. P. 833; *Rastyannikov, V.G., Deryugina, I.V.* Models of Agricultural Growth in the XXth Century. P. 575; Economic Survey 2010-2011/ Govt. of India. Ministry of Finance. P. 210.

Note. Grain resources formed by the State through purchases of grain in wholesale markets consist in most cases of two grain crops: rice and wheat. Other grains correspond in the XXI century to 0.07% to 2.8% of the overall purchased amount (see: Agricultural Statistics at a Glance. 2006. Table 11.1(b)).

The State of India ever remained under the pressure of the economic growth demands and experienced continuously the threat of a failure in the system of provision for many nodal points of its economy in critical development resources. Thus, it was later forced to strain constantly (and ever more intensely at an increase in these demands) to accumulate large masses of food products. Hence such a phenomenal result of efforts of the state to penetrate the national grain market.

Indeed, at the beginning of the XXIst century, after six decades, the State acquired *more than two-thirds of the broadest market of agricultural produce: the grain market* (see Table 17 on the achievements of the State in gaining control over the national grain market). Herewith, the influx of wheat, e.g., into the "national garner", from mid-sixties increased *ninefold* (and its harvest *less than sixfold*). In so doing, the State was solving a major nationwide problem: it provided, more or less, *stability* (despite the barring activity of the trade speculative capital) of *distribution* of mass consumption food

resources, though by means of a continuous and ever more aggressive penetration into the market game rules[72].

An organic element of state regulation of food flows is the policy of *purchasing prices* that has so far for many years played the role of the core directing force of such regulation. In the recent fifty years, this policy underwent significant changes. Let us point out the most important of these.

In the sixties of the XXth century, the state endeavoured to carry out the policy of low (grain) prices. (The researchers observed, in particular, that "fixed" purchasing prices obtained in some years by the producers for the product they provided to the State were only 50% of the prices formed in open unregulated markets[73].)

Philosophy was even developed that consecrated enforcement of the producer to sales of his produce at the prices below the market value. Its postulates in tune with the Russian past reality deserve being heard in full. "The proposal to raise the volume of procurement from the level of 4 million to that of 8 million tonnes or more (see Table 17) would, no doubt, encounter resistance from certain quarters. If a

[72] Thus, in the period of 2001–2003 (including the year of a major harvest failure in India, 2002/03), the amount of grain purchased by the State was one and a half to twofold of that required for domestic needs. The "surplus" procured grain from national garner in 2002/03 – 2004/05 was for the most part exported. (Let us also note that the national grain reserves in 2002 intended for the purposes of domestic distribution reached the highest value in the last fifty years: 64.7 mln. tonnes, which was about one-third of the yearly cereal production.) But then in 2006/07, when the State procured 35.8 mln. tonnes of grain, the "grain basket" was already insufficient for the public distribution demands and 5.5 mln. tonnes of grain (wheat) had to be imported (see Economic Survey 2007–2008. PP. 177, 178).

[73] Gulati I.S., Krishnan T.N. Public Distribution and Procurement of Foodgrains. A Proposal. // Economic and Political Weekly. 1975. May 24. PP. 829–842.

country is to progress towards self-sufficiency, such resistances need to be worn down. It should be a social obligation on the part of the cultivators to surrender (!) a portion of the produce to the State in the wider national interest. In this context, just as in the case of direct taxes, such as taxation of income and property, a uniform code is laid down for the whole country and all citizens, so also should a system be evolved under which a part of the output of the agriculturist would be obtained for the purposes of the State. The only difference here would be that while direct taxation involves no *quid pro quo* (here, substitution of one thing by another. — *V.R.*), in the case of procurement the transactions would still be in the nature of buying and selling and the producers could receive a price, even though this price may be lower than the prevailing open market price. The case for such an impost becomes particularly strong in view of the extremely light incidence of agricultural taxation in the country"[74].

However, the State found itself under threats to food security arising, particularly, due to difficulties in commodity grain mobilisation as part of the policy of compulsory low prices. It was thus gradually forced to give up noneconomic pressure and undertake (in the seventies of the XXth century) to be guided in its procurement operations by the market prices. The result did not fail: mobilization of commodity grain provided to wholesale assembling markets rose.

The procurement policy of the Indian State in the XXIst century was marked by two "achievements".

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[74] Report on Price Policy for Kharif Cereals (Procurement Prices) for 1967-68 Season. / Agricultural Prices Commission [Ashok Mitra, Dharm Narain, S.C. Chaudhri]. Delhi. 1969. P. 5. On early stages of the national regulation policy in the field of subsistence support of the country, see the detailed study of: Mironova, E.I. Rynok prodovol'stvennogo zerna v sovremennoi Indii (Food Grain Market in Modern India). Moscow: "Nauka". 1972. Chapters II, III.

Firstly. Internal purchasing prices for grain (wheat) have already *exceeded* (by 10–30%) the world prices (by the beginning of the nineties, they equalled the latter) in the first half of the first decade of the XXIst century. And secondly. In the second half of the first decade, "the purchase price offered to farmers, particularly, in the efficiently producing States, *usually is significantly* higher than the cost of production (emphasis added. — *V.R.*)"[75]. (Let us recall that in the early days of the procurement policy, in mid-sixties of the XXth century, the purchasing price established on the basis of the average cost scale could not exceed the level of costs of 85 households out of a hundred of grain seller households.)

It is obvious that a truly dramatic situation is formed in procurement of grain resources for the country, the key food product of the bulk of the more than a billion population of India, when the rate of "rigid" gain in the latter (about 2% per annum) exceeds by more than 1.5 times the growth rate of grain production (1.18% per annum in the period of 1989/90–2006/07)[76]. Thence, the fact that the State set essentially infinite purchase prices (more precisely, not complying with the very principles of market cost control) proves, paradoxically, to be as yet the optimum choice of drift from the ever more acute threat to food security.

Earlier, we have already mentioned the progressive shrinkage of the economic area where commodity food resources are created for the purposes of nationwide distribution, gradual falling out of major regions of the country from the ranks of suppliers of such resources, concentration of their production in the ever-narrower territorial entities of the Indian agricultural sector. This production still secures the nationwide market from involutory processes in providing it with

[75] Reports of the Commission for Agricultural Costs and Prices. 2008. P.430; Economic Survey 2007–2008. P. 162.

[76] Economic Survey 2007–2008. P. 161.

mass consumption products (primarily, grain). The same occurs with the *territorial sources of commodity food resources mobilized by the State through market purchases*.

The immensity and intensity of the process of *decay* in the options regarding mobilization of resources of mass consumption commodity food by the State is dramatically illustrated by the economic distribution performance of commodity wheat mass in the largest state of India, Uttar Pradesh (population of 166.2 mln. people in 2001), the largest consumer and producer of this grain in the country (more than a third of the gross yield of wheat in India) in the last third of the XXth century – the beginning of the XXIst century.

Table 18

India, the state of Uttar Pradesh: efficiency of the policy of commodity grain mobilization, in various parameters of national wheat purchases, 1970/71–2006/07

Indicator	1970/71–1972/73	1995/96–1997/98	2004/05–2006/07
Purchases of marketed wheat, *percentage*			
— as the share of the all-India wheat purchases by the State	15.0	9.9	5.4
— as the volume of market arrivals to the state markets	75.9	24.9	18.8
— as the share of wheat harvests in the state	12.3	4.3	3.3
Volume of purchases, *mln. tonnes*	1.2	1.0	0.8

Compiled and calculated on the basis of the sources to Table 17.

The data presented in Table 18 show convincingly that the state acting as one of the important suppliers of commodity grain to the "national garner" in the initial period (the beginning of the seventies of the XXth century) reached the XXIst century with a rather small "luggage" of State–mobilized food resources. It lost its function of the "bearing structure" in the support of the national subsistence system. Even despite the fact that wheat production in the state in the historical period under consideration increased by more than three (3.1) times, the actual volume of grain procured by the State decreased by one-third (see Table 18; the decrease in other positions shown in the table was 3–4-fold).

Uttar Pradesh is of course not at all the only state rather weakly responding to mobilization efforts of the State. The Ministry of Finance of India observed: "Procurement of wheat in Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh (in short, everywhere where this grain is cultivated in India. As regards Punjab, see below. — *V.R.*) was significantly lower relative to the production". "Similarly, for rice, the ratio of procurement to production was significantly lower" in many states where it is cultivated[77].

The other side of the spectrum of food produce suppliers to the State is dominated by the Punjabi region (note, in possession of

[77] Economic Survey 2007–2008. P. 178. See: http://indiabudget.nic.in/. A decrease in mobilization of foodgrain by the State before the financial crisis that broke out in the autumn of 2008 was in part "assisted" by competition of grain sellers that bought the latter before it arrived at the purchasing centers of the Food Corporation of India. An increase in purchasing prices in this period by no means always kept pace with an increase (especially in 2007/08) in the grain market prices (see, ibid. P. 177). All this enhanced the overall trend to a decrease in the "tone of grain mobilization" by the State.

7.5% of the cultivated area in India) that provided *93.4%* (!) of all wheat purchases by the State in 2005/06–2007/08 and *40.4%* of rice (2004/05–2006/07). On the whole, the region provided *about three-fifths* (57% in the given years) of the gross yield procured for "public distribution system"[78]. It is herewith obvious that the Punjabi region established an almost absolute monopoly over filling the "national garner" of the number two foodgrain in India: wheat.

The above data on the conditions of national mobilization of agricultural produce lead to the following conclusion: the Indian State meets in its desperate efforts to create *a single national market of agricultural (particularly, food) produce* stout resistance from forces focused on the support and consolidation of *markets* that are *segmental* and are supplied from the most diverse sources of the reality of the Indian society. These include demographic pressure and its manifestation in the sphere of agricultural economics, marginalisation of farms, and stagnating productive forces in agriculture, and aggression on the part of the element of private — speculative — capital and its agents etc. However, in the areas of the agricultural sector of India where such a market is formed, it occurs generally due to *active measures of the State as an institute of nationwide rank*. (Sales of mass consumption food produce belong in India specifically to such spheres). The agricultural sphere economy is unable to achieve that on the basis of unregulated market mechanisms. In other words, the *single market of agricultural produce*[79] may gather momentum under the prevailing conditions

[78] Calculated on the basis of: Ibid.

[79] Let us note that "formation of a single national market of agricultural produce" is postulated as one of the priority tasks of the policy of

only as a *national* market, i.e., the market in the system of which the predominant regulating role is played precisely by the State that involuntarily formed a powerful protective roof. The favours of such are primarily employed by economic agents of the market (agricultural produce) monopoly.[80].

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the Indian government in the agricultural sector of its economy (see: Reports of the Commission for Agricultural Costs and Prices. 2008. P.123).

[80] The effect of Punjabi monopoly extends far beyond the sphere of socioeconomic life of the Indian society. Thus, the function of the national purchasing prices for grain is fulfilled by the "minimal support price" fixing the price ceiling at which the State undertakes to buy in the market the product intended for filling the "public distribution" fund. And the role in ballooning such national prices is played by wide options for blackmailing the State formed on the basis of such a monopoly by a small group of extortioners being major foodgrain holders and is by no means secondary. As a result, as pointed out by the President of the Association of Flour Enterprises of the Tamil Nadu State already in the end of the nineties of the previous century, "the internal wheat price in India is at present the highest price in the world" (see The Economic Times. 25.10.1999). Many political groups dream about destruction of the monopoly of the group of "North" monopolists. In particular, they offer projects that would allow "tearing the slipknot tightened on the subsistence supplies by the peasantry of Punjab and Haryana" (The Times of India. 12.04.1997; translated from Russian). Since then, as we can see, the situation became even tenser.

CHAPTER 8.
FOUR CENTRAL FACTORS OF ECONOMIC GROWTH IN AGRICULTURE. PHENOMENON OF LAGGING

So, how does the economic growth in agriculture correlate with the nationwide economic process? What is its performance (or inefficiency) as compared to the latter?

We identify for minimum analysis four parameters of agricultural growth corresponding, in the opinion of the author, to the type of the basics characterizing its in-depth principles. Thus:

I. How effectively does the agricultural sector of the national economy fulfill its key function: supplying the country with the basic food produce? We have statistical data on this subject for more than a century (from the end of the XIXth century to the beginning of the XXIst century). This timespan is divided into two temporal (and simultaneously, social) periods; the boundary passes through mid-XXth century. They display the following trends in the grain complex of India (see Table 19; Fig. 4).

Though the above data on the selected periods are not quite comparable (see the note to Table 19), nevertheless, they point forcibly to the character of subsistence support dynamics in India in the chosen retrospection.

Intensified lagging in food production in agriculture even due to very low annual population growth (less than 0.9% on the average

in 1901–1951[81]), the diminishing gain in the yield of food crops etc were not the only disasters caused by the agricultural crisis in the first half of the XXth century. Apart from these, it resulted in runaway reduction from decade to decade of the 10–year standard of per capita food grain consumption in India (see Table 19). In the period of 1893/94 to 1945/46, this factor *decreased by almost a third (to 68%) from that as of the end of the XIXth – beginning of the XXth century.* (Here, a destructive role was also played by expansion of technical crop production in this period covering precisely the best areas[82].)

Table 19

India: per capita food grain availability,
the end of the XIXth to the beginning of the XXIst century, *kg*

Period (years)	Amount	Period (years)	Amount
1893/94–1895/96	233.0	1951–1955	152.9
1896/97–1905/06	222.0	1956–1965	164.8
1906/07–1915/16	217.1	1966–1975	160.1
1916/17–1925/26	213.5	1976–1985	163.9
1926/27–1935/36	183.0	1986–1995	174.2
1936/37–1945/46	158.5	1996–2005	167.5
		2006–2007	161.4

[81] See: Petrov, V.V. Naselenie Indii. Demograficheskii ocherk. (Population of India. A Demographic Outline). Moscow: "Nauka". 1965. PP. 106, 107.

[82] See: Blyn G. The Agricultural Crops in India. 1893/94 to 1945/46. A Statistical Study of Output and Trends. // Thorner, Daniel and Alice. Land and Labor in India. Bombay: Asia Publishing House. 1962. P. 104–106.

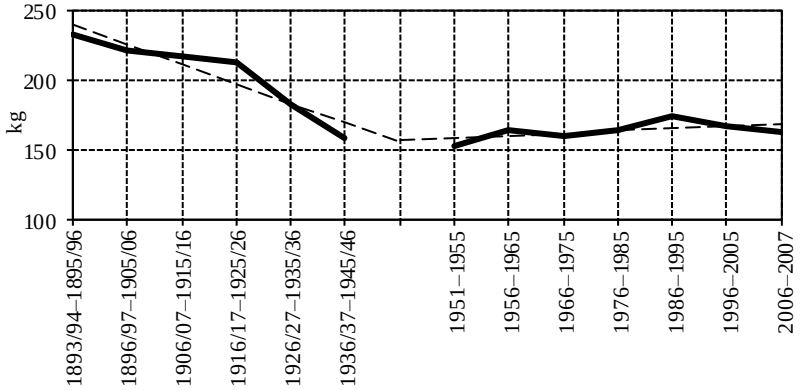
Calculated on the basis of: *Blyn, George*. The Agricultural Crops in India 1893-94 to 1945/46. A Statistical Study of Output and Trends (unpublished ed. University of Pennsylvania, 1951) // *Thorner, Daniel and Alice*. Land and Labor in India. Bombay: Asia Publishing House. 1962. PP. 104–106 (*colonial period*); Agricultural Statistics at a Glance. 2006. / Govt. of India. Ministry of Agriculture. New Delhi. 2006. Table 10.2; do.do. 2008 (www.nic.in/agricoop) (*epoch of independence*).

Note: Statistical series compiled for the periods under consideration are not quite comparable. The series for the second period is represented by indicators, with the values corresponding to food grain availability including grain gross output (per capita) less the losses and seed "basket" (it is conventional to allot 12.5% to these items in Indian statistics) plus the external balance of grain turnover (less the export plus the import). Meanwhile, the first period is represented by the indicators of the grain gross output (that were complied by G. Blyn) less the losses and seed "basket" (i.e. 12.5% of the overall grain yield); but these values do not include the external balance (per capita) of the grain turnover. In the meantime, the value of this indicator reached significant values in some years of this period. For example, in 1909–1914, the export of rice and wheat from India was (in some years) about 8% of their gross output (in these cases, the possible per capita food grain availability could be approximately 200 *kg* against 217 *kg* of the indicator in Table 19); in 1914–1917, it was about 5% (in these cases, it could be up to 203 *kg* per capita against 217–213 *kg*); meanwhile, in 1921–1924, it was only 2–3% (the data on the foreign grain trade, see: *Dingelshtedt, F*. Agrarnyi vopros v Indii / Mezhdunarodnyi agrarnyi institut (The Agrarian Issue in India / International Agricultural Institute). Moscow–Leningrad: "Priboi". 1928. PP. 21, 22).

In the meantime, the agricultural economy of India in the second half of the XXth – beginning of the XXIst century could in fact *barely maintain the precarious stability in providing the country with major food resources* (see Fig. 4), incidentally, at a *low* (especially, up to mid-eighties) level of standard per capita consumption[83].

Fig. 4

India: per capita food grain availability. Trend.
The end of the XIXth to the beginning of the XXIst century



And all this is despite the fact that the country underwent a "green revolution" from mid-sixties of the XXth century to the end of the eighties. This revolution accomplished a technological breakthrough in grain production and laid the foundation in at least a number of irrigated cropping areas for an essentially *new type* of producer farming units *integrated economically* into the national economy. As, one can clearly see from the "heights" of the XXIst

[83] Vostok: prodovolstvie i razvitie (The Orient: Food and Development). Moscow: "Nauka". 1986. P. 172 (E.I. Mironova), P. 236 (V.G. Rastyannikov).

century, in the absence of such a revolution (or its delay), the extreme crisis caused by the demographic "bomb" and its inevitable tragic outcome would have occurred in India much earlier. At the same time, let us emphasize: the factor of direct degradation of the basic elements of natural production forces is ever more pronounced since mid-nineties of the XXth century[84]. This negative process resulted in development in the food complex of India of a tendency for *a decrease in the per capita subsistence support* as compared to the most significant achievement in the grain economy in the independency period (174 kg of the overall annual per capita grain "package" in 1986–1995. See Table 19).

The agricultural production in India in the second half of the XXth century and the beginning of the XXIst century has *never reached* the indicators of per capita subsistence of the population with the key foodstuffs consumed (compare, in particular, with the indicators in Table 19) characteristic of the period of the end of the XIXth – beginning of the XXth century. The average upper boundary remained (and remains) in the second half of the XXth – beginning of the XXIst century at the level of only 70% of the average indicator of the former colonial epoch. Here, the effect is produced not only by the extreme pressure on the natural resources, their degradation or, e.g.,

[84] The Planning Commission of India, right up to its Chairman (Prime-Minister of the country) is widely using the following concepts with respect to agriculture: "growth fatigue" (in agriculture); "soil fatigue" (as the yield of the key food crops is no longer growing); "dying soils"; "degradation of natural resources"; "technology fatigue"; 85% of "farmers" use "their own" seeds (while the seeds of hybrid crops require regular renewal); 80% of wheat area is seeded with "their own" seeds etc. (See: The XIth FYP (2007–12). Report of the Working Group on Crop Husbandry. P. 23 etc; Narayanamoorthy A. Deceleration in Agricultural Growth. // Economic and Political Weekly. 2007, June 23. P. 2375, 2376 etc; Seminar. Delhi. No. 595. 2009. March. PP. 12–18).

"fatigue" of the technologies employed, but also by the *increasing impact of the demographic "hammer"*.

Herewith, the reduction of the food "basket" satisfying the public needs progresses. The output of products representing one of the basic daily foods of Indians is "depleted" (or, to be more precise, is ever more markedly behind the social needs). In the XXIst century, the country produces only 55% of vegetable oil required for national consumption. At the end of the first decade of the XXIst century, national production of India could provide its population with *less than half* the volume of such an important and indispensable food components as pulse produce, as compared to the volume that the country maintained half a century ago (72 *g* per capita per day in 1957, as opposed to 33 *g* in 2007). Herewith, the pulse area has been decreasing to the accompaniment of unceasing lamentation for two decades (1986–2005) by 0.37% a year. In the last decade (1996–2005), the pulse yield has also been dropping (by 0.07% a year)[85].

As follows from the above data, *the agricultural sector of India keeps increasingly failing the task that is its most important public function*. And this impotence as considered in its dynamics gradually builds up. Let us note however: the growth of the public demand for food resources (namely, basic food products) is already considerably ahead (and in historical time will be ever in advance) of an increase in the potential of the far more inertial national production supplying such resources in the dynamic competition of the components of the national food complex. It is for this cause that the progress in food production estimated under such (diverse) conditions of evolution looks inevitably like *relative regress* in actual life (and in the time already gone ahead along the historical stairs) in view of dynamic comparison (with variation in the public needs).

[85] The XIth FYP (2007–12). Report of the Working Group on Crop Husbandry. PP. vii, 16, 17. Economic Survey 2007–2008. PP. 155, 157.

II. During the two and a half decades (starting from 1980/81), the agriculture of India manifested a *downward* economic growth/gain rate in agricultural GDP. Its annual gain dropped in the decade ending 2006-07 to 2.1–1.9% (see Table 20, part I), i.e., just near to the average annual population growth rate.

Table 20

India: dynamics of lag in agriculture,
the second half of the XXth to the beginning of the XXIst century

I. Lagging in the economic growth rate, 1980–2007

Five–year plans of national development	Average annual increase of produce, %	
	Agricultural produce[1]	Gross Domestic Product
VI (1980/81–1984/85)	5.7	5.5
VII (1985/86–1989/90)	3.2	5.8
VIII (1991/92–1995/96)	4.7	6.8
IX (1996/97–2001/02)	2.1	5.5
X (2002/03–2006/07)	1.9 (4 years)	7.5

II. Lagging in GDP production per worker, 1950/51–2006/07

Indicator / year	1950-51	1960-61	1970-71	1980-81	1990-91	1996-97	2000-01	2003-04	2009-10
(1) Those employed in agriculture[1], *%*	72.3	69.5	69.7	65.4[2]	66.9	64.0	59.0	58.0	54.0[3]
(2) Agricultural product[1] *as share in GDP, %*	51.2	48.5	45.8	39.6	32.9	29.4	24.6	20.9	17.8
Ratio (1:2)	*1.41*	*1.43*	*1.52*	*1.65*	*2.03*	*2.18*	*2.40*	*2.78*	*3.04*

Compiled and calculated on the basis of: Part I: The XIth FYP (2007–12). Report of the Working Group on Crop Husbandry, Agricultural Input, Demand and Supply Projections and Agricultural Statistics for the Eleventh Five Year Plan (2007–12) / Govt. of India. Planning Commission. New Delhi. 2006. P. 13; Part II: Indian Agriculture in Brief. 4th ed. New Delhi. 1958. P. 14; do.do. 21st ed. 1987. PP. 3, 5, 7; Economic Survey 1996–97. Delhi. 1998. P. 155; Census of India 1991. State Profile 1991. India. New Delhi. 1998. P. 136; The State of Food and Agriculture / FAO. Rome. 2006; FAOSTAT: World Bank — Website; Data for the use of Deputy Chairman, Planning Commission. 15th January 2012. Table 42. / http://planningcommission.nic.in; Economic Survey 2007–2008 / Govt. of India. Ministry of Finance (http://indiabudget.nic.in). P. 164; Agricultural Statistics at a Glance. N.D. (http://dacnet.nic.in) 2004; do.do. 2006; do.do. 2008. Table 3.6(C); The XIth FYP (2007–12). Report of the Steering Committee on Labor and Employment Constituted for the Eleventh Five Year Plan (2007–12). / Govt. of India. Planning Commission. New Delhi. 2008. P. 13.

[1] The indicator also includes the data on forestry and fisheries (approximately, 1.5–2% for the two items).

[2] 1983.

[3] 2004-05.

According to the estimates of the other experts in the Planning Commission, the "average annual sectorial growth had decelerated from 3.2% in eighties to only 1.5% subsequently"[86]! Meanwhile, the economy progressed (especially, as a result of the economic reform in the nineties) on the whole at a much higher rate: 5.5–7.5% a year (see Table 20). (Let

[86] The XIth FYP (2007–12). Report of the Working Group on Crop Husbandry. 2006. PP. 4, 12.

us recall that the annual growth in "means of subsistence" in India in 1989/90–2006/07 amounted only to three-fifths of the annual population growth rate (see Section 7). However, 150 years ago in England, in 1810–1850, this indicator was even less than two-fifths (38%) (see Preface). But England while being transformed into the "worldwide workshop" could afford sealing the gap formed in the required "means of subsistence" by abundant grain import. Meanwhile, in India, where the economic policy had historically followed the principle of providing grain self-sufficiency, the situation was much more rigourous.)

As pointed out by the Planning Commission, "as a result, the economic gap between agriculture and non-agriculture gradually widened". The same conclusion in a different process measurement was: "This had widened the gap between rural and urban economy" [87]; yet another groups of the experts of the Commission points out the fact of "rapidly worsening ratio between the per capita income from farm and non-farm sectors is causing serious concern", while "the majority of the work force (52% in 2004) is still dependent on agriculture"[88].

In other words, the national economy of India keeps gaining renewed momentum towards reinforcement of the *dualistic national economy type* with acceleration of the economic growth rate occurring as from the end of the XXth century (see Table 20) entirely due to the

[87] Ibid., P. ii, 4.

[88] The XIth FYP (2007–12). Development Policy. Ch. I. P. 97. The same process (an increase in the gap between the per capita income in town, on the one hand, and in the village, on the other) can also be observed in China, where the average per capita income in town in 2007 was 3.33-fold that in the rural area as compared to 2.57-fold in 1978, accordingly (China Statistical Yearbook 2008. / National Bureau of Statistics of China // www.stats.gov.ch/tjsj/ndsj/2008/).

growth of the nonagricultural sector[89]. Thus, the economic process in India allows drawing up a rule:

The more intensive the economic growth of the nonagricultural sector and the greater the agricultural sector lagging, the greater the activity and strength of the already existing economic dualism (note, the dualism of a new, "updated" type, with "the mounting demographic pressure", among other issues, "having accentuated the rural distress").[90]).

III. What is then the basis for the "new economic dualism"? In this respect, of great interest are the data given in Table 20, part II.

As follows from these data, the agricultural produce was (relatively) displaced from GDP much more actively than the workers producing it were forced out the nationwide work force. Indeed, the share of agricultural produce in GDP has decreased in six decades 3-fold, while the share of workers producing it dropped only 1.4-fold. What did this mean in practice? It was thus: While production of a GDP unit in agriculture required the labor of 1.4 workers in the initial period (1950-51), in the final period (2004-05), the output of a GDP unit corresponded to the more than *double labor consumption*: the labor of 3 workers. In other words, the dynamic lagging of agriculture in the average production rate in the sector in the past six decades as compared to the nonagricultural sector was *twofold*. Herewith, as we remember (see section 3), the initial production rate was *extremely low*.

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[89] The theory of the problem of dualism in the Indian economy was developed by A.P. Kolontaev. See: Ekonomika Indii. Obshchaya kharakteristika. (Indian Economy. General Characteristics). Moscow: "Nauka". 1980. Chapter I.

[90] The XIth FYP (2007–12). Report of the Working Group on Crop Husbandry. P. 4.

The lagging of the agricultural sector is also evidenced by the dynamics of the *investment process*. Agriculture (together with the allied sectors, forestry and fisheries) concentrating, as we have already seen, 52% of the nationwide work force (2004/05) corresponded in the period of the Xth Five–Year Plan (2002/03–2006/07) annual investments equivalent to 2.3% of GDP (the market prices of 1999–2000), while the whole national economy received annual investments of 27.5% of GDP[91]. Let us note though that even a lesser amount of investments (in relative terms) was directed in the nineties (1993/94–1999/2000) to agriculture (together with the allied sectors). The total was equivalent only to 1.9% of GDP. Herewith, the average percentage of workers employed in these years in these sectors was higher: 58.8%[92]. The lagging of agriculture was thus *economically feasible*: it explained in fact by the difference in the epochs, during which economic growth occurred in town, on the one hand, and in the village, on the other. While industrial modernisation took place in other sectors of the national economy, economic growth in agriculture was (and is) still based on using a huge mass of *live labor*. In this respect, the present agricultural practice in India caused by the nature of "land–preserving technologies" is also historically "aligned" with that characteristic of the epoch of the classics of political economy.

B.I. Slavnyi with a reference to A. Smith, Th. Malthus, D. Ricardo (and also the modern Puerto-Rican political economist A.S. Tarniella) noted that at the time "the problem of the ratio between the live and materialized labor was not as yet distinct" and makes an important conclusion: "The central problem of the economic science

[91] Agricultural Statistics at a Glance 2008. Table 3.6(ñ) // www.dacnet.nic.in; The XIth FYP (2007–12). Report of the Working Group on Crop Husbandry. P. 4.

[92] Agricultural Statistics at a Glance 2001. PP. 14, 16; The XIth FYP (2007–12). Steering Committee on Labor and Employment. 2008. P. 13.

was still *live labor mobilization* with the subsistence resources available to the society"[93] (emphasis added. — *V.R.*). This is just what we observe in the agriculture of contemporary India.

In the context of the lagging agriculture, one can also explain the permanently *low marketability* of the agricultural food sectors (as subsistence is required for the workers and members of their families producing agricultural produce in general and marketable products, in particular) (the same is also observed in China; see above). And the relative *expensiveness of the sector produce*, despite the low labor compensation. This also explains the growth of "environmental costs" directly related to enhancement of demographic pressure on the natural resources etc.

Chinese statistics suggested taking into account the contribution of various sectors of national economy to the annual increase in the gross domestic product to estimate their role in the economic process. According to this method, while the contribution of the "primary" sector (agriculture, forestry, fisheries) in P.R.C. in 1991 to the GDP gain was evaluated as 7.1%, the percentage of this contribution decreased to 5.1% in 2001 and dropped to 3.6% in 2007 at the percentage of counted workers in the "primary" sector being 44.1% (2002)[94]. One can see that the phenomenon of the "primary sector" lagging with the leading role played by the agricultural economy is also of high priority for the today's actively developing China.

Here, we can derive the following rule: under the conditions of unceasing marginalization of the economic system in agriculture and steadfast effect of the "hammer" of demographic pressure, the

[93] Slavnyi, B.I. Nemarksistskaya politekonomiya o problemakh otstalosti I zavisimosti v razvivayushchemsya mire (Non-Marxist Political Economy on Problems of Underdevelopment and Dependence in the Developing World). Moscow: "Nauka". 1982. P. 31.

[94] China Statistical Yearbook. 2008. Table 2–12; Table 4–5.

extremely low labor productive force in agriculture (in fact, ever more lagging from that in the "soaring up" non-agricultural sectors of economy) is a fundamental factor of reproduction of poverty as a special state of the major part of the national work force (concentrated mainly in agriculture). This is a factor "tearing in half" the national economy (as regards the reproduction mechanism), a factor, if considered under the above conceptual paradigm of D. Torner (see Section 1), as yet another image of a built-in-depressor of economic growth.

Let us not forget that all these processes of lagging occur under a constant, *ever increasing pressure of the population on the natural resources* on the agricultural sector of the country, especially those used in agricultural production (as already repeatedly mentioned above).

Here, we have to return to the "population law" of Th. Malthus in order to answer the question: how do the postulates of the Malthusian theory correlate with the present-day *practice of agricultural growth* and what is the difference between such forms of pressure in the context of the historical epochs of technological development of the society?

IV. The present-day power and scale of the demographic "hammer" is manifested, e.g., by the materials on the most (economically) favorable region of India: the state of Punjab.

To this purpose, we used the corresponding statistical data visualising the dynamics of changes in the population density (per unit farmland area) in historic Punjab (i.e., the territory including all the present administrative units of this region both in India and in Pakistan) by periods covering on the whole 120 years: from the end of the XIXth to the beginning of the XXIst century (see Table 21).

Table 21

India and Pakistan, historic Punjab: dynamics of population density, the end of the XIXth to the beginning of the XXIst century, *population per one ha of arable land*

Areas of the Punjabi Region	1881	1931–1936	1951–1958/59	1970/71	2000/01
Indian	3.8	3.2	2.2	3.1	5.9
Pakistani			3.0	3.7[1]	6.8

Compiled and calculated on the basis of: *Fazal C.P.K.* The Menace of the Punjab's Growing Population. // The Tribune. Lahore. 04.08.1938. PP. 4, 5 (data for 1881 and 1931–1936); Statistical Abstract. India, 1962. / Government of India. Central Statistical Organisation. Delhi. 1962. PP. 47, 48, 49; Statistical Abstract of Punjab. 1968. / Govt. of Punjab (India) Economic and Statistical Organisation. Chandigarh. 1969. PP. 45, 48, 49; Indian Agriculture in Brief. 4th ed. 1958; do.do. 7th ed. 1965; do.do. 13th ed. 1974; do.do. 23rd ed. 1990; do.do. 27th ed. 2000; Agricultural Statistics at a Glance 2006. // http://dacnet.nic.in; Pakistan Statistical Yearbook 1957. / Government of Pakistan. CSO. Karachi 1958. PP. 3, 9, 54; do.do. 1968. Karachi 1970. PP. 3, 112; do.do. 2008. Table 1.1, 16.5 // www.statpak.gov.pk. See also: Agricultural Statistics of the Punjab 1901-02 to 1935-36. Publication N52. / Board of Economic Enquiry, Punjab. Lahore. 1937; do.do. 1936-37 to 1943-44. Part II. Lahore. 1945.

Note. The presented data ignore the area of the current fallow lands. In 1881, the current fallows occupied, as reported by S.P.C. Fasal, about a tenth of the total arable land area. In the twenties–thirties and in the first half of the fourties of the XXth century, they amounted consistently to 10–12% of the arable land. As Punjab was divided (1947) and its Eastern and Western territories were included,

accordingly, into India and Pakistan, the dynamics of fallow land areas in the two parts of the region changed significantly. At the beginning of the XXIst century, Pakistani Punjab still retained the percentage of fallow lands characteristic of the end of the XIXth century: it was 12%, as before. On the contrary, fallows practically disappeared in Indian Punjab due to a change in the crop rotation system: in 2001–2004, their share corresponded to 0.3–0.6% of the whole arable land area in the state. Such a disappearance process started long ago. Thus, by the end of the fifties of the XXth century, the current fallows occupied only 5.5% of the whole arable land in Eastern Punjab.

[1] 1966/67.

As follows from the presented data, two periods can be clearly traced in the given 120 years in the population density dynamics. The first seventy years feature the *descending* dynamics (see Table 21).

This is explained by the fact that English administration started on a major scale irrigation construction from the end of the XIXth century and especially in the first third of the XXth century (particularly substantial on the Chenab and Sutlej rivers).

As a result of this, the irrigation water arrived not only in the large areas of old, already developed land, but also to vast new territories, former culturable wastelands and laylands. The extent of irrigated cropping expansion in Punjab in these years is confirmed by the following data (see Table 22).

Thus, irrigation modernisation of agriculture in Punjab allowed not only increasing the cultivated land area (by one-fifth), but also significantly enhancing its quality: here, the percentage of the

irrigated earth area increased from 1/3 up to more than 1/2 of the whole cultivated land plot in this region.[95].

Table 22

Irrigated cropping expansion in Punjab, 1901/02 – 1943/44

Year	Area of cultivated land in Punjab, *mln. ha*	Including that of irrigated land, *mln. ha*	Percentage of irrigated land area from the total cultivated land area, %
1901/02	10.9	3.6 (2.0)[1]	33.0
1935/36	12.6	6.1 (4.25)	48.3
1943/44	13.1	7.1 (5.3)	54.3

See the sources given in Table 21.

[1] Within brackets: indicators of land area receiving water from irrigation channels.

Expansion of the cultivated land area occurred in Punjab at a *priority* rate as compared to the increase in the Punjabi population (at least, up to the beginning of the fifties). Thus: the population density indicators decreased, herewith, in the both parts of Punjab, though at a different rate (see Table 21).

Nevertheless, already in the thirties of the XXth century, as culturable waste land disappeared, alarmist voices all over Punjab

[95] See details about the irrigation boom in Punjab in the first half of the XXth century: Rastyannikov, V.G. Agrarnye otnosheniya v Pendzhabe (1900–1947 gg.) (Agrarian Relations in Punjab (1900-1947)). Dr. (Economics) Dissertation / Institute of Oriental Studies, USSR Academy of Sciences. Moscow, 1954. Chapter I.

started articulating the "threat" on the part of the "growing population" of the region. S.P.K. Fazal, a writer of that time, even tried calculating the importance of this "threat" in time parameters. In his opinion, as of the eighties of the XIXth century to the thirties of the XXth century, "This broadly means that the cultivated area has kept pace with the increase in population so far". "If… the cultivated area keeps pace with the increase (sic!) as before, all this reserve area will have been absorbed in another twenty years". Herewith, Fazal did not fail to point out a very important circumstance: "even a proportion of one human being to every acre (0.4 ha) is too high with the present uneconomic methods followed in agriculture".[96]. The author was mistaken in his vision of the future by not so much, by about a decade: the physical increase in the cultivated land due to reclamation of waste lands stopped in the state of Punjab by the end of the sixties of the XXth century and the residual cultivated land that was earlier used for current fallows started being introduced into the yearly cropping pattern. Thus, was this process in the region in practice (*mln. ha of arable land without account for the current fallow*s)[97]:

1950/51	1960/61	1967/68	1970/71	1986/87	2001/02	2003/04
3.6	3.8	4.0	4.1	4.2	4.3	4.2

[96] Fazal C.P.K. The Menace of the Punjab's Growing Population. // The Tribune. Lahore. 04.08.1938. PP. 4, 5.

[97] Statistical Abstract of Punjab. 1968 / Govt. of Punjab. Chandigarh. 1969. PP. 44, 45; Indian Agriculture in Brief. 13th ed. 1974. P. 34; do.do. 23rd ed. 1990. P. 275; Agricultural Statistics at a Glance 2006. Table 14.5 // http://dacnet.nic.in. Here, the region is the territory of the state of Punjab (India) in the territory established after 1966, after separation of the state of Haryana.

The second period (starting in the fifties of the XXth century) was marked by the population density in Punjab undergoing an actual *jump* as a result of the "demographic explosion" effect: it increased about 2.5-fold as per 1 ha of the cultivated land area in the second half of the XXth century (see Table 21). But an increase in the capacity of the principal Punjabi crop, wheat, by the beginning of the XXIst century surpassed even this very high indicator by much: thus, while the yield of what in the thirties of the XXth century in the as yet undivided region was 8.5 quintal/ha (1931–1940), it rose at the turn of the XXth–XXIst centuries, owing to the generalized implementation of the new farming system, to 43 quintal/ha (1997–2006) in Indian Punjab and to 23.4 quintal/ha in Pakistan (where the bulk of wheat is grown in Punjab)[98]. In short, the crop yield in Indian Punjab reached the level, at which each hectare of this crop sowing, as compared to the situation of the thirties of the XXth century, when "noneconomic methods of agriculture" were predominant, produced at the turn of the centuries the harvest equivalent to the yield of 5 ha of the former cropped area! Thus we may derive the following conclusion.

The ever more acutely felt *absolute* scarcity of natural resources used in agricultural production dictates an imperative need for a new biotechnological breakthrough in the food complex of the national economy. *While earlier (at the time of Th. Malthus, and also, as we have seen, much later), the shortage of cultivated land area could be compensated by implementation of the actual possibilities for extensive production expansion to the waste land to be cultivated, even in the case of "noneconomic methods" of their cultivation, now, when the resource options are depleted, this fault cannot be compensated other than by the ever greater activation of the R&D*

[98] See in detail: Rastyannikov, V.G., Deryugina, I.V.. Urozhainost' khlebov v Rossii: 1795–2007 (Yield of grains in Russia: 1795–2007). Moscow: IV RAN, 2009. PP. 16–21.

sphere. This can supply the production sector of agriculture by high-yielding materials and the required "package" of technologies, while at a relatively decreasing (per capita) extent of available resources (e.g., in the case of multidecade stagnation, as in Indian Punjab, cultivated land area under the conditions of fast growing population that exploits these land resources ever more intensively). Or, in other words, the *critical growth center* in the agricultural sphere moved at present from the problem of reclamation of waste lands (including the case of "noneconomic methods") to the problem of implementation in the production process in agriculture of the results of development in "*knowledge–based economy*": moral elements of productive forces that at present became a *determinate* system factor for the latter[99].

Meanwhile, the problem of their implementation consists in the fact that as shown by the experience of many countries, particularly, rather graphically, that of Japan, development of biopotential, this base of agricultural growth in the case of prevailing "land–saving" technologies is *not uniform and progressive, but of an uneven character*. This can be manifested over the historical time period in *prolonged phases of productivity stagnation in agriculture* with its following (wild?) jumps: in the agricultural sphere on the whole or in its individual branches of trade[100]. *The grain production in*

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[99] In detail about the systems of productive forces, see a fundamental work of Krylov, V.V.: Idem. Proizvoditelnye sily razvivayushchikhsya stran i formirovanie ikh sotsial'no–ekonomicheskoi struktury (Productive forces of developing countries and formation of their socio–economic structure. Dr.sc. (Economics) Dissertation. / IMEMO AN SSSR. Moscow. 1974. Chapter I.

[100] See in detail: Rastyannikov, V.G. Agrosfera Yaponii: paradoxy ekonomicheskogo rosta. // Yaponiya: mify i real'nost'. / Tsentr po izucheniyu sovremennoi Yaponii. Institut vostokovedeniya RAN (The Agrarian Sphere in Japan: Paradoxes of Economic Growth. // Japan: Myths and Reality. / Centre for Studies of Modern Japan. Institute of Oriental Studies of the

India has obviously entered precisely such a growth phase. Indeed, no new technological breakthrough has occurred in the agricultural sphere of India in the last two decades after the recession of the first "green revolution" wave.

Table 23

India and China: annual rates of grain productivity growth, 1978–2011, *in %*

Period (years)	India		India (Punjab)	Period (years)	China	
	All grains	Rice	Wheat		Rice	Wheat
1980/81–1989/90	2.95	3.20	2.95	1978–1990	3.26	5.12
1989/90–1999/00	2.00	1.20	1.56	1990–1999	1.55	2.74
1999/00–2010/11	0.64	1.28	(–) 0.44	1999–2010	(–) 0.88	2.33

Compiled and calculated on the basis of: Agricultural Statistics at a Glance. / Govt. of India. Ministry of Agriculture. New Delhi. 1988. P. 9; do.do. 2001. P. 26; do.do. 2008. Tables 4.5(a), 4.6; do.do. 2011. Tables 4.6(A)–4.7((B); China Statistical Yearbook / National Bureau of Statistics of China. 2006. Tables 13-15, 13-17; do.do. 2008. Tables 12-1, 12-2; FAOSTAT Agriculture / www.faostat.fao.org.

Technological transformations corresponding to a new stage of scientific and technical revolution found no place in the production

Russian Academy of Sciences. Moscow: "Vostochnaya literatura" RAN. 1999. PP. 80–83.

process of Indian agriculture (at least, in developments significant for an agricultural economy). Moreover, agricultural growth in India at the turn of the XXth–XXIst centuries stalled to the level of the yearly population growth rate (see Table 20, part I) and in some cases (e.g., the growth rate of the grain yield) to a twice lower value than the population growth: 1%. Meanwhile, in the main region of *commodity* grain production of *nationwide* importance, the state of Punjab, the growth rate of the yield of the principal grain, wheat, decreased altogether to negative values: (–)1.16% per annum. (1999–2007) (see Table 23). And this *"technological" factor has produced (and is still producing) major influence on formation of the phenomenon of lagging in agriculture of India*.

Something has to be added to the above. As one can see from the data of Table 23, the downward trend in the yield gain up to appearance of stable negative values in their dynamics in the last three decades was characteristic for the agricultural sphere of not only India, but also China.

This makes it obvious that the time of "weariness" in the production technologies (depletion of the growth potential) of at least grains is inexorably approaching (has approached) to this Asian giant, same as in the case of India[101]. The fact that India and China

[101] The researchers date the state of "weariness" of the production technologies in the grain sector of economy in Punjab (India) as far back as the eighties of the XXth century: "It was also found that (in Punjab. — V.R.) the operating points in the highly productive areas were nearer (in the eighties. — V.R.) to the flattening part of the production surface; that means the further growth in such areas demands more of the new technology rather than just making the finer adjustment with the available technology" (See: Karam Singh, Kulwinder Kaur. Growth in Agricultural Production and Nature of Technological Change in Punjab Agriculture, in: Agricultural Situation in India. Vol. 47. Delhi. 1992. No. 5. P. 358). The above assessment

demonstrate *synchronism* in the development of such a state of "weariness" (though at a different intensity as regards the crops and periods) newly emphasizes the world-wide universal character of the information revolution that is called for to launch a crisis in the trends of foodcrop productivity dynamics from its downward and even negative values towards the upward trend.

Let us remark here that it is relevant for a better understanding of the modern state of agriculture in India to evaluate its present development (as follows from the above). We must distinguish two independent processes: one, appearing as a result of the effect of the 'land–demographic complex' and manifesting itself in marginalisation of land holdings; and another, determined by the regularities of the scientific and technological revolution in the sphere of agricultural production (we mean, in the first place, the discrete character of this revolution in terms of the Asian countries). Superimposition of these two processes (the latter in the phase of contraction) induces the *negative synergistic effect* pushing its way in Indian agriculture. And this inevitably *enhances* the effects of agrarian distress in many agricultural regions of India.

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is rather in tune with the dynamics of the corresponding statistical data (see Table 22).

CHAPTER 9.
AHEAD IS THE CHOICE

"Here all suspicion needs
must be abandoned,
All cowardice must
needs be here extinct[102].

The demographic "hammer" affecting all spheres of economic activity, where natural resources are not just an object, but also an *active subject of production*, as, e.g., in agriculture, is capable of producing the strongest influence on the whole model of economic growth (as opposed, in particular, to changes caused, for example, by the market dynamics, special national policy, the very economic process (differentiation of producers) etc).

Thus, by the end of the XXth – the beginning of the XXIst century, the Indian village was filled "to the brim" by "agrarian overpopulation". For example, in the period of 1983–1993/94, the agricultural sphere of India "received" annually 2.4 mln. "casual" laborers (see Section 5), but in 1993/94 – 2004/05, these amounted to only 0.54 mln per year. According to the estimate of the Planning Commission, such reduction "mainly reflected the lower absorption in agriculture which was not offset by an expansion in other sectors". An excess of labor, in its turn, all the time gave new impetus to the effect of "the major supply side constraints (in agriculture. – *V.R.*)", such as previous (and still remaining) "depletion and degradation of (natural) production resources, mainly land, water and soil. As a result,

[102] Dante Alighieri. La Divina Commedia. Inferno. Canto 3, 14-15. Translated by H.W. Longfellow.

production response to inputs has significantly eroded".[103]. The chain was ever lengthening: such a constraint naturally hit the raw nerve of the "returns" (in a wider sense, profitability) of agriculture; its decrease in the nineties (by 14.2%) "could be one of the major reasons for lack of growth in the private sector investment in agriculture"[104]. The following dramatic conclusion of the Planning Commission is also in tune with the situation that developed in the first decade of the XXIth century: "Starvation deaths and suicides continue to plague a large section of the farming community in different parts of the country"[105].

Similar processes occurred in agriculture of China that was also burdened by large "agrarian overpopulation" (see Section 6). It is of interest that the phases of the Chinese crisis dynamics coincided even as regards the historical time with the Indian phases. L. D. Boni states: "While capital investments have been the main factors of growth in agriculture up to mid-eighties, the role of labor power as the main form of investment into production grew significantly as of the beginning of the nineties, as capital outflow to the more profitable sectors and spheres was enhanced (i.e., the labor–intensive growth type was ever more actively replacing the investment–intensive one. — *V.R.*). At the beginning of the new century, this trend (i.e., involution trend. — *V.R.*) only increased"[106].

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[103] The XIth FYP (2007–12). Report of the Steering Committee on Labor and Employment. 2008. P. 13; The XI th FYP (2007–12). Report of the Working Group on Crop Husbandry. 2006. P. 8.

[104] The XIth FYP (2007–12). Development Policy. Ch. I. P. 98.

[105] The XIth FYP (2007–12). Development Policy. Ch. I. P. 97. From 1997 to February, 2009, 183,000 suicides were officially registered in India in rural regions. The majority of suicides are those of marginal "farmers" (Seminar. 2009, March. P. 12).

[106] Boni, L.D. Kitaiskaya derevnya na puti k rynku (Chinese Village on Its Way to Market). P. 430.

The multiyear decline in the most important branch of national subsistence gave rise not only to passionate dreams of the "second green revolution"[107], but simultaneously, to the full–fledged philosophy of "economic negligence" of sorts that affects the lot of the many millions of Indian people. Let us discuss this in more detail.

In accordance with this philosophy, significant "corrections" must be introduced into the chosen model of the national economic growth. One of the key corrections proclaims the "uselessness" of supporting agriculture as a *special branch organically "integrated" into the national economy* and requiring for its recovery and further progress both very large financial assets and incessant attention on the part of the State and its policy. This sector of economic life, if left to its own devices, will undergo inevitable degradation (with devastating consequences for the society). It will evolve into an enormous (as regards the employed population) enclave–segment of the national economy with *semisubsistence production* (as regards the reproductive performance). It is this sector that is destined to fulfill the "nationwide collecting function": concentration of the rapidly increasing mass of broke producers crowded below the "poverty line", even despite the fact that the agrarian sector is already oversaturated with "overpopulation"! This is whence these desperate people will inevitably move in thousands (as already shown by the historical experience of many countries of the world) to cities, flooding them in huge numbers. (It is possible that the massive exodus of the village population to the cities in Orissa demonstrates the initial stage of this process. See Annex 1.)

As stated by the Planning Commission, the conceptual headquarters of socio–economic development of the State, the fundamental provision of such "negligence" philosophy is formulated

[107] The XIth FYP (2007–12). Report of the Working Group on Crop Husbandry. P. 5.

thus: "In the emergent economic environment, there are schools of thought arguing for de-linking the issue of food security from the food production self-sufficiency. This argument is based on the premise that India's healthy foreign exchange reserves may take care of bridging the demand–supply gap through liberalized imports (of food. — *V.R.*)" and … thus deal the national food production with its enormous and growing costs, with prices of the national produce already rising above the world prices, a shattering blow.

To the credit of the Commission, it puts a certain constraint, though, as yet virtual, on the possibilities of appearance of such a prospect, responding: "Yet consideration of livelihood of large population dependent on agriculture, with limited occupational choices (productive. — *V.R.*) in short–to–medium term cannot be ignored"[108].

What will be the choice of the State?

[108] The XIth FYP (2007–12). Report of the Working Group on Crop Husbandry. P. 11.

CHAPTER 10.
NEW CONFIRMATION: AGRICULTURAL CENSUS 2010-11

The current Agriculture Census with reference year 2010-11 is ninth in the series. The Agriculture Census 2010-11 was conducted in the country on census – cum-sample survey basis. The whole operation was completed in three Phases. In Phase-I, List of holdings with their operated area and social characteristics was prepared on census basis in land record States/UTs (covering about 86 % of reported area) and on 20 percent sample villages in non-land record States/UTs. In Phase-II, detailed data on agricultural characteristics was collected on a sample basis from 20 percent selected villages, both in Land Record and Non-Land Record States, and the parameters are then estimated at the Tehsil/District/State level. In Phase-III, data on input use pattern were collected on a sample basis from selected holdings from selected 7 percent villages and the parameters were estimated at the District/State level[109].

The basic data of the Agriculture Census, 2010-11, show that marginalization in the media sphere continues to grow, and this trend is applicable to almost all States of India.

The total number of operational holdings in the country has increased from 119.31 million in 2000-01 to 138.35 million 2010-11 i.e. an increase of 16 % for 10 years (see Table 24).

[109] Agricultural Census in India. Department of Agriculture & Cooperation. Ministry of Agriculture. Govt. of India. New Delhi. October 30, 2012.

Table 24

Number of operational holdings by size, *million*

Size Group	1970-71	1980-81	1990-91	2000-01	2005-06	2010-11	Variation 2000-01 to 2010-11
All size	71.01	88.88	106.64	119.31	129.22	138.35	+16.0%
Marginal	36.20	50.12	63.39	73.41	83.69	92.83	+26.5%
Small	13.43	16.07	20.09	22.70	23.93	24.78	+9.2%
Semi-Medium	10.68	12.46	13.92	14.02	14.13	13.90	–0.9%
Medium	7.93	8.07	7.58	6.38	6.38	5.88	–7.8%
Large	2.77	2.17	1.65	1.23	1.10	0.97	–21.1%

Compiled and calculated on the basis of: Agricultural Census 2010-11 (Phase 1). All India Report on Number and Area of Operational Holdings. New Delhi 2014.

Notes: Marginal holdings have a size less than 1 ha; Small – from 1 to 2 ha; Semi-Medium – from 2 to 4 ha; Medium – from 4 to 10 ha; Large – more than 10 ha.

The greatest increase in number of farms occurred in the group of marginal holdings (less than 1 ha), the number of such households increased by 26.5% from 2000-01 to 2010-11. A slight reduction was in the group of small holdings, it was 9.2%. The number of farms declined in other groups: semi-medium – by 0.9%, medium – by 7.8%, in large – by 21.1% (see Table 24).

This resulted in a change in the structure of land use. While the total operated area has not changed from 2000-01 to 2010-11, the area of marginal farms rose from 29.8 million hectares to 35.9 million hectares, i.e. 20.5%. The area of the small farms increased by 9.6%.

Operated area decreased in other groups: semi-medium – by 1.3%, medium – by 11.5%, large – by 19.7% (see Table 25).

Table 25

Operated area by size, *million ha*

Size Group	1970-71	1980-81	1990-91	2000-01	2005-06	2010-11	Variation 2000-01 to 2010-11
All size	162.32	163.80	165.51	159.44	158.32	159.59	+0.09%
Marginal	14.60	19.74	24.89	29.81	32.03	35.91	+20.5%
Small	19.28	23.17	28.83	32.14	33.10	35.24	+9.6%
Semi-Medium	29.99	34.65	38.38	38.19	37.90	37.71	–1.3%
Medium	48.23	48.54	44.75	38.22	36.58	33.83	–11.5%
Large	50.06	37.70	28.66	21.07	18.72	16.91	–19.7%

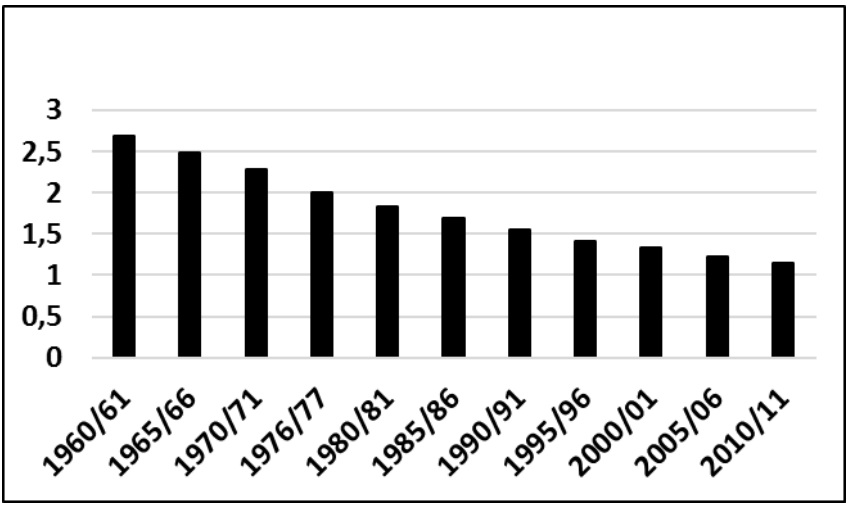
Compiled and calculated on the basis of: Agricultural Census 2010-11 (Phase 1). All India Report on Number and Area of Operational Holdings. New Delhi 2014.

Notes: Marginal holdings have a size less than 1 ha; Small – from 1 to 2 ha; Semi-Medium – from 2 to 4 ha; Medium – from 4 to 10 ha; Large – more than 10 ha.

The average size of operational holding has declined to 1.15 ha in 2010-11 as compared to 1.33 ha in 2000-01 (see Fig. 5). The average size of a farm has decreased since the first Agricultural Census 1960-61. For 50 years it has declined from 2.69 ha to 1.15 ha. And the processes of marginalization of agriculture has accelerated for 50 years.

Fig. 5

Average size of operational holdings as per different Agriculture Censuses, *ha*



The increasing of the number of farms while decreasing operational area occurs in all States of India in one degree or another. But the greatest increase in the number of farms was observed in the States of Andhra Pradesh, Bihar, Chhattisgarh, Madhya Pradesh, Odisha, Rajasthan from 2005-06 to 2010-11 (see Table 26). At the same time, operational area declined in most States of India, and if it has increased in some States, the number of farms there jumped more (see Table 26).

The structure of land use has changed for the period from 2005-06 to 2010-11. The small and marginal holdings taken together constituted 85.0% in the Census 2010-11 against 83.3% in the Census 2005-06 (see Table 27).

Table 26

Statewise number and area of operational holdings

States	2005-06		2010-11		Variation	
	Number, *million*	Area, *mln ha*	Number, *million*	Area, *mln ha*	Number	Area
Andhra Pradesh	12.04	14.49	13.18	14.29	+9.4%	–1.4%
Bihar	14.66	6.25	16.19	6.39	+10.5%	+2.2%
Chhattisgarh	3.46	5.21	3.75	5.08	+8.3%	–2.4%
Gujarat	4.66	10.27	4.89	9.90	+4.8%	–3.6%
Haryana	1.60	3.58	1.62	3.65	+0.9%	+1.7%
Karnataka	7.58	12.39	7.83	12.16	+3.3%	–1.8%
Madhya Pradesh	7.91	15.99	8.87	15.84	+12.2%	–1.0%
Maharashtra	13.72	20.01	13.70	19.77	–0.1%	–1.2%
Odisha	4.36	5.02	4.67	4.85	+7.1%	–3.3%
Punjab	1.00	3.96	1.05	3.97	+4.8%	+0.0%
Rajasthan	6.19	20.94	6.89	21.14	+11.4%	+0.9%
Tamil Nadu	8.19	6.82	8.12	6.49	–0.9%	–4.9%
Uttar Pradesh	22.46	17.91	23.32	17.62	+3.9%	–1.6%
West Bengal	6.99	5.53	7.12	5.51	+1.9%	–0.3%

Compiled and calculated on the basis of: Agricultural Census 2010-11 (Phase 1). All India Report on Number and Area of Operational Holdings. New Delhi 2014.

The largest increase in the share of marginal and small holdings was observed in the States of Andhra Pradesh (83.4% to 86.1%), Bihar (from 96.3% to 97.0%), Odisha (from 86.2% to 91.9%). A high proportion of marginal and small holdings preserved in the poorest States of India, for example in Tamil Nadu (91.7%), in Uttar Pradesh (92.5%), in West Bengal (96.0%). But even in the leading agricultural States of India – Punjab and Haryana – the proportion of such households increased from 31.6% to 36.2% (Punjab) and from

67.1% to 67.6% (Haryana) (see Table 27). The share of semi-medium, medium, large holdings declined in all States.

Table 27

Statewise percentage distribution of number of operational holdings, %

States	**2005-06**				
	Marginal	Small	Semi-medium	Medium	Large
All India	64.8	18.5	10.9	4.9	0.9
Andhra Pradesh	61.5	21.9	12.0	4.1	0.5
Bihar	89.6	6.7	3.0	0.7	0.0
Chhattisgarh	55.4	22.0	14.9	6.7	1.0
Gujarat	34.0	28.9	23.2	12.5	1.4
Haryana	47.7	19.4	17.7	12.2	3.0
Karnataka	48.2	26.6	16.9	7.3	1.0
Madhya Pradesh	40.4	27.2	19.8	11.0	1.6
Maharashtra	44.6	30.3	17.9	6.7	0.5
Odisha	59.6	26.6	10.8	2.7	0.3
Punjab	13.4	18.2	31.9	29.4	7.1
Rajasthan	33.5	21.4	20.4	17.8	6.9
Tamil Nadu	76.0	15.1	6.6	2.1	0.2
Uttar Pradesh	78.0	13.8	6.2	1.9	0.1
West Bengal	81.2	14.4	4.0	0.4	0.0
	2010-11				
	Marginal	Small	Semi-medium	Medium	Large
All India	67.1	17.9	10.0	4.3	0.7
Andhra Pradesh	63.9	22.2	10.6	3.0	0.3
Bihar	91.1	5.9	2.5	0.5	0.0
Chhattisgarh	58.3	22.2	13.4	5.4	0.7
Gujarat	37.2	29.2	22.1	10.5	1.0
Haryana	48.1	19.5	17.6	12.0	2.8
Karnataka	49.1	27.3	16.2	6.5	0.9
Madhya Pradesh	43.9	27.6	18.6	8.9	1.0
Maharashtra	49.0	29.6	15.7	5.2	0.5

Odisha	72.2	19.7	6.7	1.3	0.1
Punjab	15.6	18.6	30.8	28.4	6.6
Rajasthan	36.5	21.9	19.4	16.3	5.9
Tamil Nadu	77.2	14.5	6.2	1.9	0.2
Uttar Pradesh	79.5	33.0	5.7	1.7	0.1
West Bengal	82.2	13.8	3.7	0.3	0.0

Compiled and calculated on the basis of: Agricultural Census 2010-11 (Phase 1). All India Report on Number and Area of Operational Holdings. New Delhi 2014.

At the same time, the operated area of small and marginal holdings increased at 44.6% in the Census 2010-11 as against the corresponding figure of 41.1% in the Census 2005-06 (see Table 28).

The largest share of the square was occupied marginal and small holdings in the States of Tamil Nadu (60.6%), Uttar Pradesh (64.8%), Bihar (76.0%), West Bengal (80.7%) according to the Census 2010-11(see Table 28).

The largest share of the area under semi-medium, medium, large holdings in the States of Punjab (90.7%), Rajasthan (83.9%), Haryana (77.4%), Gujarat (70.1%) according to the Census 2010-11 (see Table 28).

Table 28

Statewise percentage distribution of area operated by operational holdings, %

States	**2005-06**				
	Marginal	Small	Semi-medium	Medium	Large
All India	20.2	20.9	23.9	23.2	11.8
Andhra Pradesh	22.7	25.7	26.5	19.0	6.1
Bihar	53.0	19.6	18.1	8.1	1.2
Chhattisgarh	16.1	20.7	26.8	25.5	10.9

Gujarat	7.7	19.1	29.3	32.9	11.0
Haryana	9.7	12.5	22.3	33.1	22.4
Karnataka	13.3	23.2	28.0	25.9	9.6
Madhya Pradesh	9.9	19.3	26.9	31.8	12.1
Maharashtra	14.0	26.2	30.7	24.4	4.7
Odisha	26.7	31.7	24.9	13.1	3.6
Punjab	2.1	6.5	21.6	42.9	26.9
Rajasthan	4.8	9.1	17.1	32.4	36.6
Tamil Nadu	33.5	25.2	21.5	14.1	5.7
Uttar Pradesh	38.9	24.2	21.2	13.3	2.4
West Bengal	50.7	28.9	14.0	2.4	4.0
	2010-11				
	Marginal	Small	Semi-medium	Medium	Large
All India	22.5	22.1	23.6	21.3	10.6
Andhra Pradesh	26.1	28.8	25.8	15.4	3.9
Bihar	57.4	18.6	16.8	6.5	0.7
Chhattisgarh	18.7	23.2	26.5	22.7	8.9
Gujarat	8.9	21.0	30.2	29.6	10.3
Haryana	9.9	12.7	22.3	32.5	22.6
Karnataka	15.2	24.8	27.9	23.9	8.2
Madhya Pradesh	12.1	21.9	28.5	28.7	8.8
Maharashtra	16.1	29.0	29.2	20.2	5.5
Odisha	39.6	30.9	18.9	7.9	2.7
Punjab	2.5	6.8	21.6	43.2	25.9
Rajasthan	5.9	10.2	17.9	32.7	33.3
Tamil Nadu	35.3	25.3	20.9	13.1	5.4
Uttar Pradesh	40.7	24.1	20.6	12.5	2.1
West Bengal	52.5	28.2	13.3	2.0	4.0

Compiled and calculated on the basis of: Agricultural Census 2010-11 (Phase 1). All India Report on Number and Area of Operational Holdings. New Delhi 2014.

The values of average size of operational holding to show the growing differentiation between States of India. Despite the fact that average size of operational holding has declined in almost all States, the value of the indicator for different States several times (see Table 29).

Table 29

Statewise average size of operational holding and average monthly income per agricultural household

	Average size of operational holding, ha		Average monthly income per agricultural household, Rs
	2005-06	**2010-11**	**2012-13**
All India	1.23	1.15	6426
Andhra Pradesh	1.20	1.08	5979
Bihar	0.43	0.39	3558
Chhattisgarh	1.51	1.36	5177
Gujarat	2.20	2.03	7926
Haryana	2.23	2.25	14434
Karnataka	1.63	1.55	8832
Madhya Pradesh	2.02	1.78	6210
Maharashtra	1.46	1.44	7386
Odisha	1.15	1.04	4976
Punjab	3.95	3.77	18059
Rajasthan	3.38	3.07	7350
Tamil Nadu	0.83	0.80	6980
Uttar Pradesh	0.80	0.76	4701
West Bengal	0.79	0.77	3980

Compiled and calculated on the basis of: Agricultural Census 2010-11 (Phase 1). All India Report on Number and Area of Operational Holdings. New Delhi. 2014; Agricultural Statistics at a Glance 2015. Govt. of India. 2016.

The lowest average size of operational holding is stored in the States of Bihar (0.39 ha), Tamil Nadu (0.80 ha), Uttar Pradesh (0.76 ha), West Bengal (0.77 ha) in 2010-11 (see Table 29). The highest average size of operational holding available in the States of Punjab (3.77 ha), Rajasthan (3.07 ha), Haryana (2.25 ha), Gujarat (2.03 ha) in 2010-11. But average size of operational holding decreased by 8% - 10% in the Census 2010-11 compared to the Census 2005-06 in these prosperous States. And only in Haryana, the figure has increased, but by less than 1% (see Table 29).

A very strong disparity in economic growth in the agricultural sphere India is manifested in the irregularity of income. In two States of India – Punjab and Haryana – income several times higher than in other States. For example, the average monthly income per agricultural household in Punjab is 5 times higher than in Bihar, 4.5 times higher than in West Bengal, and 3.5 times higher than in Odisha (see Table 29).

According to the Census 2010-11 51.8% of number of operational holdings and 47.8% of operational area are irrigated in India. Share of marginal holdings with irrigation is 52.8% against 47.6% in the group of large holdings. Share of area of marginal holdings with irrigation is 51.3% but share of area of large holdings is 40.4% (see Table 30).

Share of cropped area treated with fertilizer amounts 72.6%, and with pesticides – 40.4%. Share of cropped area treated with fertilizer amounts 73.6% in marginal farms, 76.6% in small farms, but 58.1% in large farms (see Table 30).

In India, 29.7% of cropped area irrigated by canals and tanks, 18.5% – by wells, 45.2% – by tubewells (see Table 30). Access to a variety of irrigation is approximately equal in different size groups of farms.

Table 30

Share of operational holdings with irrigation, share of cropped area treated with fertilizer and pesticides, share of area irrigated by sources, *in %*

Size Group	Share of operational holdings with irrigation		Share of area treated with		Share of area irrigated by		
	Number	Area	Fertilizers	Pesticides	Canals &Tanks	Wells	Tubewells
All size	51.8	47.8	72.6	40.4	29.7	18.5	45.2
Marginal	52.7	51.3	73.6	38.9	33.8	13.4	46.4
Small	49.0	46.7	76.6	38.1	28.9	20.3	43.7
Semi-Medium	50.8	47.8	75.5	41.4	24.8	21.5	44.2
Medium	53.6	49.1	71.5	43.1	27.9	20.6	45.2
Large	47.6	40.4	58.1	40.9	29.2	15.7	47.7

Compiled and calculated on the basis of: Agricultural Census 2010-11 (Phase II). New Delhi. 2015; Agricultural Statistics at a Glance 2015.

The processes of marginalization affect most areas of agriculture. These processes are inextricably linked to the agrarian overpopulation. Although agriculture now accounts for only 14 per cent of Gross Domestic Product (GDP), it is still the main source of livelihood for more than 50 percent of the population. As such rapid growth of agriculture is critical for inclusiveness. Important structural changes are taking place within the sector and there are definite signs of improved performance. Agricultural growth has accelerated compared to the Tenth Plan and diversification is proceeding. The National Sample Survey Organisation (NSSO) data brings out that

rural labourers are shifting to non-agricultural work, tightening the labour market in agriculture and putting pressure on farm wages. However, dependence on agriculture remains unchanged among the rural self-employed whose average farm size continues todecline with population growth. This is also an ageing, more feminised population, whose educated young members are less likely to want to stay in farming. The viability of farm enterprise, mostly small farms, must therefore be a special area of Plan focus in the Twelfth Plan. The Plan must also focus on other priorities such as resource-use efficiency and technology to ensure sustainability of natural resources, adaptation to climate change and improvements in total factor productivity.

EPILOGUE: LOOK INTO THE FUTURE

In conclusion, let us consider any set of crucial factors affects the deformation of economic growth in Indian agriculture at present and their expression in the future.

First and foremost is the high rate of population growth. In the first decade of the XXI century the average annual growth rate was 1.65%, slightly lower than in the last decade of the twentieth century, when it was equal to 1.95%. In 2011-2016 this fell to 1.22%, and by 2050 will decrease to 0.4% according to the forecast of the UN. That is, the annual rate of growth will gradually decline, but more than 53% of the population will live in rural areas in 2050, which also will account for almost half of the labor force. This will lead to strengthening of the agricultural overpopulation.

The second factor comes in – the lack of natural resources. A growing population with limited area suitable for treatment, will certainly contribute to further marginalization of the agrarian economy. During the five years between Agricultural Census 2005-06 and 2010-11 ones the number of agricultural holdings increased by 7%, and the area under them is only 0.8%. The size of a farm decreased from 1.23 ha to 1.15 ha. When compared with the early 1960s, the number dropped two and a half times. As was shown in Chapter 1, large farms (with an area of over 10 hectares) disappear, and the number of small farms (with an area less than 2 hectares) increased.

This will cause a further decline in the productivity and performance of agricultural production and, therefore, the decline in

the growth rate of agricultural GDP (lower than 2.6% per year). This assumes that the growth rate of total GDP will increase about 7% -8% per year. The widening gap between the growth rates of GDP and agriculture will reinforce existing conflicts.

Why in India deformation of economic growth escalated? We see the "trap" of accelerated growth in densely populated developing countries. According to economic and demographic laws high rate of economic growth was to cause a demographic transition and a significant number of the population of working age to realize the demographic dividend[110]. However, the economic model of India, involving the development of high-tech industries, which require high levels of education, cannot absorb low educated employees, who came from the village. And currently the new jobs arise in India in high-tech sectors of the economy only, more specifically in the sectors of ICT and IT services.

This fact is the reason perhaps that since the beginning of 2000-ies the industrial sector and services sector have completely stopped taking labor from agriculture. If, before the beginning of the XXI century the share of agriculture fell in the structure of GDP and structure of employment, although more slowly, the 2000s, the decline continued only in the GDP structure, in the structure of employment decline has stopped, there is even some growth. So, the share of employment in agriculture in 2002-2003 was equal to 51%, but 2014-2015 has risen to 55%, while the GDP share of the agricultural sector fell over the period by 5 percentage points – from 22% to 17%. But it was a period of accelerated economic growth.

This fact confirms the conclusion that in modern conditions the laws of the market will prevent the filling of the industrial sector

[110] Development scenarios of India described in the book: Akimov A.V., Yakovlev A.I. Civilization in the XXI century: problems and prospects. Moscow. 2012.

and service sector new labor flowing from agriculture. The state should create mechanisms that will help to eliminate the "market failures" in a postindustrial society. The state must not only provide economic support to farmers or to create jobs for the poor in public works programmes, but the state should develop a program to change the educational base of young people in the village. Hence the transformation must address the institutional bases of public life. But will this state?

* * *

And while, as half a century ago, the words initially said about a completely different country and other people are surprisingly topical; they reflect with impressive accuracy the imperatives of the reality of today's rural India with its ever-increasing millions of labor people: "What can one do to lift up this huge body lying prostrate on the ground?"[111].

[111] Airu A. Fellakhi Egipta (Fellahs of Egypt). Moscow: Inostrannaya literatura. 1954. P. 166.

ANNEXES

1. Peripheral region of agricultural growth: Orissa

Of all the large states of India, the state of Orissa, stands out due to the *greatest share of subsistence economy* in its agriculture, its technologic underdevelopment (here, including also the crop yield), extent of discrepancy between the marketed production output of the mass–consumption food items (grains) and scope of the (growing) social demand for these and, finally, *the highest percentage in India of population living below the "poverty line"*. Let us briefly analyze in terms of this work the phenomenon of Orissa in a certain historic retrospective: in the XXth century.

In the second half of the XXth – the beginning of the XXIst century, the dynamics of rice–producing economy, the key grain producer in the state (93% of all grain harvests at the end of the nineties of the XXth century) passed several stages. The rehabilitation period (the fourties–sixties of the XXth century), as follows from the data of Table 1(A), was marked by a rather intensive gain in rice harvests. They increased by three-odd times in a quarter of a century (from 1943/44 to 1970/71). But even without that, the low initial (assuming it to be the situation in the second half of the fourties) value of market arrivals of the rice crop (even accepting that these arrivals estimated as potentially possible *actually* reached 15%) decreased drastically: by 2.5 times in the same period. By the beginning of the seventies, it amounted to 6% (see Table 1(A)).

Table 1(A)

India, state of Orissa: dynamics of production and market arrivals of the rice crop, 1943/44–2005/06*

Period / year	Gross production of rice		Market arrivals of rice (to assembling markets)			
					State purchases	
	Mass, 1000 tonnes	Index	Mass, 1000 tonnes	Share in gross production, %	Mass, 1000 tonnes	Share in gross production, %
1943/44–1946/47	1366	99			134	9.8
1946/47–1948/49	1380	100	207	15.0[1]		
1962/63–1966/67	3881	281			197[2]	5.0[2]
1970/71	4347	315	260	5.9	150[3]	4.5[3]
1974/75	3166	229	54	1.7		
1977/78–1978/79	4360	316	126	2.9	44	1.7
1975/76–1979/80	3878					
1980/81	4301	312	155	3.6	124	2.9
1982/83–1984/85	4096	297			97	2.4
1985/86–1986/87	5030	364			132	2.6
1987/88–1989/90	5017	364	291	5.8		
1990/91–1991/92	5968	432	360	6.0	240	4.0
1990/91–1994/95	6058	*439*	345	5.7	315	5.2
1995/96–	5301	384	276	5.2	466	8.8

1996/97						
1998/99–1999/2000	5290	383	323	6.1[4]	685	12.4
2001/02–2002/03	5195	376			1072	20.6
2004/05–2005/06	6665	483			1686	25.3

* *Compiled and calculated on the basis of*: Report of the Marketing of Rice in India / Govt. of India. Calcutta. 1955. PP.418–420; Report on Price Policy for Kharif Cereals for the 1968-69 Season. / Agricultural Prices Commission. Govt. of India. New Delhi. 1968. P. 47; do. do. the Season 1967-68. 1967. P. 25; *Economic and Political Weekly*. [Bombay] 24.05.1975. P. 833; Indian Agriculture in Brief. / Govt. of India. Ministry of Agriculture. Delhi. 4th ed. 1958; 7th ed. 1965; 13th ed.1974; 16th ed. 1978; 19th ed. 1982; 20th ed. 1985; 21st ed. 1987; 23rd ed. 1990; 27th ed. 2000; Bulletin on Food Statistics 1992 and 1993. / Ministry of Agriculture. Delhi. 1996. PP. 50–51; Economic Survey 1981-82. / Govt. of India. P. 81; do. do. 1987-88. P. S-19; do. do. 1990-91. P. S-20; do. do. 1997-98. P. S-20; Agricultural Statistics at a Glance 1988. / Ministry of Agriculture. PP. 10, 57; do. do. 2001. PP. 32, 138; do. do. 2004. P. 45; do. do. 2006. Tables 4.6(b), 9.1.

[1] The calculated possible (potential) grain surplus remaining in the household in excess of the consumed grain (rice) harvest in kind.

[2] Average annual value in 1964/65–1967/68.

[3] 1972.

[4] 1997/98.

In the further decade, up to the beginning of the eighties, the gain in rice harvests stopped altogether and the percentage of its

market arrivals tended to zero: the lowest level of market arrivals from rice production in the state within six decades (mid-fourties of the XXth century – the middle of the first decade of the XXIst century) of 1.7%! — occurred in mid-seventies (see Table 1(A)).

The facts thus show that the objective goal of grain production in Orissa in the rehabilitation period was to raise the average standard of food consumption of a resident of this state to the level providing him with, in the words of K. Marx, at least the "physical minimum of subsistence" (in fact, a half-starved existence)[112].

This very function was fulfilled by gains in the grain harvest in this region from mid-forties to the beginning of the seventies of the XXth century. As a result, the wholesale assembling markets of grain (rice) were curtailed, i.e., the market arrivals of the rice crop reduced: *of the whole gain mass of grain (rice)*, the rice producer released to such markets in these 25 years (i.e., before the beginning of the seventies) only 1.74% of his gross output annually. The situation deteriorated in the following, stagnant (by such indicators as rice crop production and market arrivals) decade (1970/71–1980/81). The state

[112] The process of rehabilitation of the average nutritional standard per capita after separation of India into the Indian Union and Pakistan (1947) naturally encompassed the whole territory of the country. In 1949/50 – 1950/51, the energy intensity of the daily food ration in India, according to the data of Food and Agricultural Organization (see issues of the series: The State of Food and Agriculture) was only 1630 kcal per capita; it reached the level of 2073 kcal in 1961, and remained at about 2000 kcal with slight annual deviations to either side until the turn of the seventies to eighties. The nutritional benefit of such a ration as compared to the "poverty line" developed (in 1978) by the Planning Commission of India and accordingly the upper limit of food consumption per capita in the "poverty zone" was at this time lower than that corresponding to "poverty line" in town (2100 kcal) and much lower than that characterizing "poverty line" in the village (the latter limit was set at the level of 2400 kcal).

started "eating away" (literally) even that very modest share of the rice economy produce that had earlier formed the market grain mass arriving at the wholesale assembling markets of the state (and the percentage of which in the gross production determined the parameters of market arrivals (see Table 1(A)).

And there is a curious detail that visually demonstrates the degree of agricultural stress in this economically backward region. Orissa was for the above three decades characterized by the highest intensity of town population increase among all the states of India. In 1951–1981, it was 6.2–5.2% annually (against the average national rate of 2.3–3.8%). As a result, the percentage of town percentage in the state has increased in these thirty years from 4% to 11.8% of the total population[113]. The mass exodus to cities of village inhabitants, of whom the majority corresponded to the needy population groups, pumped up the *social demand for commodity* food resources much more intensively than in an increase in the overall food resources. Meanwhile, the mass and percentage of market arrivals faded away dramatically. The situation was to a certain (minimum) degree corrected by the "green revolution". Its decaying waves reached the rice producing economy of Orissa by mid-eighties of the XXth century[114]. At the beginning of the nineties, the production indicators

[113] State Profile 1991. India. / Census of India 1991. New Delhi. 1998. PP. 280, 289.

[114] The "green revolution" in Orissa fell back significantly as regards its efficiency (performance) from the concurrent technologic transformations observed in other large agricultural regions of India. For example, the rice yield in the state in 1998/99–1999/2000 was only 11.7 quintal(100 kg)/ha; a similar yield per ha was also obtained in 2001/02–2002/03 against 19–20 quintals per ha in India on the whole (see Agricultural Statistics at a Glance 2001. P. 32; do.do. 2004. P. 45). The "light at the end of the tunnel" possibly appeared only by the middle of the first decade of the XXIst century, when the yield of rice in the state reached 14.9 quintal/ha (2004/05–2005/06).

and arrivals of commodity rice to assembling markets somewhat increased (see Table 1(A)). The indicator of rice market arrivals was also stabilized at the level of the beginning of the seventies (6%). This is the lowest indicator as compared to that in other large states of India (though the town population of the state was 13.4% in 1990/91 and rose to 16.9% in 2001 according to the forecast of the Commissariat for population census, and 18.9% in 2006)[115].

But since the first half of the 1990-ies to the beginning of the 2000-ies, the production dropped down (see Table 1(A)) (the same fate befell also the commodity resources of grain–producing state economy). By the middle of the first decade of the XXIst century, a decline in rice production was stopped and it even somewhat (by 10% from the first half of the nineties) grew (temporarily?) (see Table 1(A)).

And at the same time, if one analyzes the (official) indicators of State purchases/procurement of rice in the state of Orissa in 2000-ies (see Table 1(A)), it is recognized that there are no reliable objective data pointing to such significant changes in the economy of state agricultural production. These would allow practically *immediately* (in just several years) enhancing the percentage of the *actual* rice purchases by 5–6 times (e.g., as regards the level of the beginning of the nineties). This would point to an unreasonably great jump in development of *commodity* grain production in this state of India characterized by the highest share of subsistence economy. The events actually developed according to a quite different scenario. After the functions of national grain procurement were officially delegated (1999) to the governments of states (and the latter, accordingly. accepted / did not accept these functions) (on an informal basis, such delegation had started already in 1997/98), the indicators of the volume of procured *paddy* started growing intensively,

[115] State Profile 1991. India. P. 289.

exceeding even 25% of the gross yield of the rice harvest by the middle of the first decade of the XXIst century (see Table 1(A)). Two processes derived from the market economy accompanied the dynamics of these indicators. The State of India (represented by the governments of states) was far from entering the market and purchasing rice for its further distribution. However, same as in the case of West Bengal (and even in the state of Andhra Pradesh, both obviously being less developed rice–producing regions), it imposed on the rice producers obligatory deliveries in kind of grain (*paddy*) to the State according to the predetermined standards and paid them presumably at the predeclared "minimum purchase prices" (or else, assets on these payments were received by other grain holders: usurers, dealers, prosperous land owners who in advance bought nearly for free or collected as a debt a part of the *paddy* harvest produced by the *bona fide* producer). In the meantime, the "too much of reliance on the levy route, in fact, underlines the weaknesses in the infrastructure for price support to *paddy*"[116]. Moreover, as pointed out in one of the reports of the Commission, it was possible that no relationship existed between the set (officially established) standard of obligatory *paddy* contribution to the State and the actual value of its real nonmarket take-over. Therefore, the values of the procurement indicator by the end of the XXth to the beginning of the XXIst century probably mean the planned and not the actually implemented arrivals of grain produce (*paddy*) to the "national garner".

The structure of the food consumption fund estimated in its relation to the market also impresses. Indeed, already in mid-eighties, this fund (particularly, in the rural areas) was largely formed on the basis of *traditional mechanisms* providing arrivals of the grain

[116] Reports of the Commission for Agricultural Costs and Prices for the Crops Sown during 2003–2004 Season. / Govt. of India. Ministry of Agriculture. New Delhi. 2004. PP. 157, 160.

produce *in kind* to the families of the labor groups (predominantly, by way of barter exchange: labor in fields was exchanged to the wages equivalent in kind).

Thus, 28% of the demand for food grain in the families of marginal farmers with their production potential allowing producing only 65% of the grain mass required for their consumption were covered by wages in kind (in the form of rice) paid by the employers, i.e., through barter exchange in kind; herewith, 7% of the grain consumer were bought in the (local) market. Thus, the market system of relations in formation of food resources in such producers was in fact only slightly outlined, at least in the eighties of the XXth century. The connections of small cultivators with the market were even less developed. They provided themselves with "their own" grain by 84%; 13% corresponded to arrivals through barter, and only 3% were market grain purchases[117].

Thus, as regards formation of the food consumption fund of the majority of Orissa farmers, it was based already in the eighties of the XXth century largely on the *subsistence economy* relations. It was still very far to formation of any significant (i.e., corresponding to the state level) even segmental food market.

Therefore, Orissa differs from other large states of India by the fact that though its rate of urban population growth is extremely high, it still largely preserves the production structure in the food sector of agriculture that is strikingly inconsistent with the changing structure of state population. The extent of shortage in *commodity* food resources becomes indeed catastrophic, which was incidentally reflected in fantastic outlines of the plan of national grain (rice) purchases in the XXIst century at a quite slightly changed production potential of the agricultural sector as compared to the times of the

[117] Production, Utilization, Marketable and Marketed Surplus of Wheat, Rice and Maize. PP. 45, 46.

"green revolution" in the state. Herewith, the greater the stress of State mobilization of food resources in the state, the higher the indicator of the share of State outlines in grain procurement (see Table 1(A)). The connection here is quite clear.

To assess more fully the economic distress in Orissa, let us note that though the bulk of grain (rice) harvest gain, when such actually occurred in the recent history (particularly, in the "green revolution" period), was eaten away on the site, within the farm household (and/or became, in part, an attractive object for barter exchange in the village), the state continued to remain a rather large poverty accumulator that was apparently least affected by the national policy of India for eradication of causes for this humanitarian disaster: the share of people below the "poverty line" in the state at the turn of the century (1999–2000) was almost *a half* (47%) of the total population; it was 48% in rural areas of the state against 26.1% and 27.1% of the whole population of India, accordingly. (The corresponding figures for 2004-05 are 46.4% and 46.8% and 27.5% and 28.3%)[118].

[118] Agricultural Statistics at a Glance 2004. Table 2.4; do.do. 2011. Table 2.4(b).

2. *Leading region of agricultural growth: Historic Punjab (some parameters of commodity wheat/rice production)*

The "green revolution" in some regions of India resulted in appearance of a new system of commodity grain production contributing ever more seriously to formation of nationwide resources distributed mainly by the State through its institutions (of which the most important is the "public distribution system") all over India. One of such regions with the highest weight as a supplier of commodity grain to the nationwide (largely, etatised) market (see Section 7) is the region of Punjab–Haryana (the territories forming the state of Haryana were part of the state of Punjab until 1966).

This comparatively small region concentrating 7.9% of the area sown to grains of India in 1992/93–1995/96 and 8.6% in 2005/06–2006/07 [119], turned into the largest producer of *commodity grain* in the country. In less than half a century (mid-fifties to the end of nineties of the XXth century), the production of commodity wheat increased in the region *15–fold* (see Table 2(A)). From the start of the seventies to the end of the nineties, the share of the Punjabi wheat corresponded to more than a half of all the arrivals of this grain to the nationwide market against a little more than one–fifth in the fifties, before the start of the "green revolution".

[119] Report of the Commission for Agricultural Cost and Prices for the Crops Sown in 1997-98 Season. / Government of India. Ministry of Agriculture. New Delhi: 1998. P. 113; Agricultural Statistics at a Glance 2008. Table 4.5(b).

Table 2(A)

India, the region of Punjab–Haryana: dynamics of market arrivals of wheat–producing economy and its role in formation of the all–India wheat market in 1955/56–2004/05. *

Year / period	*Market arrivals of wheat*		Share of market arrivals of wheat		
	Mass, 1000 tonnes	*Index*	In the gross wheat harvest in the region		In the nationwide marketed mass
			%	Index	%
Punjab–Haryana					
1955/56	*710*	*100*	36.0[2]	100	21.8
1969/70	*2645*	*373*	43.8	122	49.3
1970/71–1972/73	3956	557	51.6	143	50.6
1981/82	5362	755	47.5	132	57.2
1987/88–1989/90	7142	1006	44.4	123	55.3
1990/91–1991/92	8397	1183	46.4	129	55.9
1998/99–1999/00	10680[1]	1504	45.1	125	52.9
Punjab					
1998/99–1999/00	7145	1006	47.0	130	35.4
2000/01	9100	1282	58.5	163	47.5
2001/02–2002/03	9600	1352	64.7	179	50.6
2004/05	9000	1268	61.2	170	47.6

* *Compiled and calculated on the basis of*: Indian Agriculture in Brief. Delhi, 7th ed. 1965; 12th ed. 1973; 17th ed. 1978; 21st ed. 1987; Report on the Marketing of Wheat in India. / Agricultural Marketing in India. Marketing Series № 143. Nagpur, 1963, PP. 21, 232;

Bulletin on Food Statistics 1992 and 1993. / Govt. of India. Ministry of Agriculture. New Delhi. 1996. P. 50; Reports of the Commission for Agricultural Costs and Prices for the Crops Sown in 1997-98 Season. / Govt. of India. Ministry of Agriculture. New Delhi. 1998. P. 250; Reports of the Commission for Agricultural Cost and Prices for the Crops Sown in 2003-2004 Season. New Delhi. 2004. P. 397; Agricultural Statistics at a Glance 2001. / Govt. of India. Ministry of Agriculture. New Delhi. 2001. PP. 36, 39; do.do. 2004. PP. 46, 48; do.do. 2006. Table 4.7(a,b) (quoted from: http://dacnet.nic.in/eand/agStat06-07.htm); *Gulati I.S., Krishnan T.N*. Public Distribution and Procurement of Foodgrains. A Proposal. // *Economic and Political Weekly*. 24.05.1975. P. 834; Punjab Mandi Board. Arrivals and Rates (quoted from: http://mandiboard.nic.in/arrnew.jpg 23.07.2007).

[1] It is assumed in calculations of indicators for 1998/99–1999/00 that the market arrivals of a wheat–producing household in the state of Haryana was in the above years similar to that existing in 1987/88–1991/92: 41.7% of the gross harvest of wheat.

[2] Possible (potential) marketable surplus.

Moreover, in response to the high level of national purchase prices (above the world prices), the cultivators enhanced strongly their activity in market wheat production. Only the state of Punjab, the leader in the agricultural growth of the region with its wheat–sown area of 12.7% of the All–India area (2005–2007), possessed by the middle of the first decade of the XXIst century *half the wheat market* of India. Herewith, the cultivators of the state increased the market arrivals of this crop to 60–65% (1.8–1.7–fold that in mid-fifties of the XXth century) (see Table 2(A)).

Similar impressive success was achieved by cultivators of Punjab–Haryana in development of commodity production of rice.

The rice culture so rare in Punjab in the thirties to fifties entered the mode of "pursuit growth" since the "green revolution" causing fundamental changes in the functional role of the rice–producing economy of the region in the All–India arena. While the Punjabi commodity rice corresponded to less than 2% of the overall commodity rice resources in India in mid-fifties, by mid-seventies, this indicator rose to 15%, and at the turn of the XXth–XXIst centuries, the commodity resources of rice in the region reached almost one–third (32.4%) of the total value of rice arrivals to the assembling grain markets of India. Up to the middle of the first decade of the XXIst century, only the state of Punjab concentrated 37.3% of the All–India market mass of this grain and herein, it corresponded to only 12.3% of the rice gross harvest in India (see Table 2(B)). The rice–producing economy of the region became the most significant source of formation of nationwide state reserves of rice via the mechanism of state procurement.

The traditional production system allowed releasing to the market in this region, same as in other regions of India, only one–third of the gross rice harvest (33%, according to the data on 1938/39). By the end of the sixties, *a stable type of a fundamentally new rice–producing economy wholly oriented on production for the market* was formed in the region: almost 4/5 of the rice gross harvest (79.3% in 1969/70) was sent to the market and already more than 9/10 (90.6% in 1978/79) were released by the end of the seventies. At the end of the eighties of the XXth century to the beginning of the 2000-ies, this indicator somewhat decreased and amounted to about 4/5 of the rice gross harvest (see Table 2(B)). This showed that rice gradually entered the usual food ration of farmers producing it (and a part of its harvest obviously formed the in-kind component of the wages fund paid to agricultural wage laborers who migrated in large parties to Punjab from other states of India, particularly, from the rice–producing regions of the state of Bihar).

Table 2(B)

India, the region of Punjab–Haryana: dynamics of market arrivals of rice–producing economy and its role in formation of the all–India rice market in 1938/39–2004/05. *

Period / year	Rice gross harvest in the region		Market arrivals of rice		
	Mass, 1000 tonnes	Share in the gross harvest in India, %	Mass, 1000 tonnes	Share in the gross harvest in the region, %	Share in the nationwide marketed mass, %
Punjab–Haryana					
1938/39	109	0.4	36	33.0	0.3
1954/55	225	0.9	140	62.0	1.8
1969/70	944	2.3	749	79.3	7.9
1975/76	2072	4.3	1869	90.2	14.9
1978/79	4319	8.0	3915	90.6	26.1
1987/88–1989/90	7089	10.5	5862	82.7	28.2
1990/91–1991/92	8368	11.2	6771	80.7	30.0
1998/99–1999/00[1]	10830	12.3	8540	78.9	32.4
Punjab					
1998/99–1999/00	8335	9.5	6739	80.8	25.6
2001/02–2002/03	8850	10.7	7127	80.5	28.6
2004/05	10440	12.6	9295	89.0	37.3

* *Compiled and calculated on the basis of*: The Board of Economic Inquiry. Punjab (India). Statistical Analysis of the Economic Conditions of Peasants in the Punjab. 1939–1949. Publication No.8. Ludhiana. 1950. P. 10; Studies in Economics of

Farm Management. Ferozepore District (Punjab). Report for the year 1969–70. Delhi: Ministry of Agriculture. 1973. P. 328; Indian Rice Statistics. New Delhi, 1956. PP. 1–4, 23; *Agricultural Situation in India*. Delhi. 1973. Vol. 28. no. 4; Indian Agriculture in Brief. Delhi. 16th ed. 1978; 21st ed. 1987; Economic Survey 1990–91. Delhi. 1991. PP. S-19 – S-21; Economic Survey 1996-97. Delhi. 1997. PP. S-21 – S-23; Bulletin on Food Statistics 1992 and 1993. / Govt. of India. Ministry of Agriculture. New Delhi. 1996. PP. 50–51; Agricultural Statistics at a Glance 2001. / Govt. of India. Ministry of Agriculture. New Delhi. 2001. P. 32; do.do. 2004. P. 45; do.do. 2006. Table 4.6(a,b) (quoted from: http://dacnet.nic.in/eand/agStat06-07.htm); Punjab Mandi Board. Arrivals and Rates (quoted from: http://mandiboard.nic.in/arrnew.jpg).

[1] It is assumed in the calculations of the indicators that the share of commodity rice in its gross harvest (markets arrivals) in the state of Haryana was 73% in the above period, i.e., it was similar to the value characteristic for the period of 1987/88–1991/92.

The agriculture of the region underwent in the "green revolution" period deep technologic transformations, as a result of which the productivity of grain production increased drastically (e.g., the yield of the principal crop in the region, wheat, grew from 12.2 quintal/ha (1960–1963) to 43.8 quintal/ha (2000–2003)[120]; the technical base of the grain economy was transformed radically, in particular, due to supplying the agricultural sphere by labor–saving machinery and mechanisms.

Therefore, the labor efficiency increased manifold: thus, the latter in the wheat–producing economy increased by more than 10–

[120] See: Rastyannikov, V.G., Deryugina, I.V. Urozhainost' khlebov v Rossii: 1795–2007 (Yield of Grains in Russia: 1795–2007). PP. 20, 21.

fold; a single hour of labor consumption in Punjab at the beginning of the XXIst century (2005/06) resulted in production of 19 kg of wheat against 5–6 kg in other wheat–producing states of India (see Table 8 in the main body of the text).

Punjab has left all other regions far behind as regards modernization of the production potential of its agriculture, herewith, manifold! About the most visual evidence of the Punjabi superiority in this sphere can be the comparative data on the most labor–intensive branch of agriculture in India: rice production (see Table 2(C)). As follows from the presented data, the draft cattle has practically disappeared from this hitherto most conservative sector of traditional economy in Punjab. It has been almost wholly replaced by machinery. As a result, the share of labor costs in the rice sector of Punjab decreased to 30% against 47–57% in the rice production in other states. However, the sectorial labor efficiency as compared to that in the other states has risen 3–7–fold in value terms and 3–5–fold as regards the mass of the produce yield per unit of labor time (see Table 2(C)).

The direct result of the growing labor productivity in Punjabi agriculture was formation of material prerequisites for a drastic increase in production marketability. The product that was released to the market was earlier, in the terms of the traditional system of management, to be used for compensation of live labor expenditure and a significant increase in the land productivity also provided a higher gain in the very marketable product mass. In Punjab, productivity of, e.g., rice is at least twice that in other rice–producing states. Even in Andhra Pradesh, another rice–producing region of national importance, the indicator of crop yield per ha is a quarter lower than in Punjab (see Table 2(C)).

Table 2(C)

India: some parameters of economic growth in rice–producing economy, by states, 2004/05*

No.	Production parameter / State	Punjab	Andhra Pradesh	West Bengal	Orissa	Uttar Pradesh
I	Labor intensity (rice output per unit of the time expended)					
	— in value terms, *Rs/h*	93.6	32.0	15.9	13.5	20.3
	— in terms of physical mass, *kg/h*	10.3	3.6	2.0	1.9	2.5
II	Structure of production costs (share of expenditures), %					
	— live labor	29.4	50.3	55.6	57.5	46.7
	— use of draft cattle	0.6	5.2	14.2	16.8	4.2
	— use of machinery and mechanisms	22.4	10.7	4.9	4.9	11.9
	— other production costs	47.6	33.8	25.3	20.8	37.2
III	Crop productivity (yield of *paddy* (in milled rice equivalent), *quintal/ha*	46.5	35.4	23.6	20.4	21.1

* *Compiled and calculated on the basis of*: Reports of the Commission for Agricultural Costs and Prices for the Crops Sown during 2007-2008 Season. / Govt. of India. Ministry of Agriculture. New Delhi. 2008. PP. 264–268, 269–272.

One can state with good reason that only due to formation of a technologically mature grain economy in such "focal" regions as agricultural areas of the states of Punjab and Haryana, India manages

to prevent the downfall of national marketability of grain production. A powerful flow of commodity grain to the All–India (to a large extent, etatized) market from such "foci" of intensive agriculture allows measurably compensating the reduction of commodity grain deliveries from vast areas characterized by traditional (semi-traditional) economy, in a number of which the process of transition in the grain production to subsistence-type economy is occurring anew.

Thus, the grain economy of India undergoes a special stage of economic evolution characterized by the ever–deepening "dualism": one (enormous as regards the population coverage) of the sectors of this economy keeps losing the macroeconomic functions that it has been fulfilling earlier (deliveries to the market of basic food produce) and thus (in its trend) gradually falls out of the nationwide system of social division of labor as a commodity food producer; the other (much smaller) sector, on the contrary, keeps undertaking to solve the most acute problems of economic growth and supplying the increasing mass of commodity food produce. It is the latter sector that as yet acts as a strategic basis in the new forming social division of labor. Punjab occupies the key position in this process.

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