

CAN THE INDIVIDUAL SUBSIDIARY HOLDINGS BE A SUSTAINABLE ALTERNATIVE TO LARGE-SCALE ENTERPRISES IN UKRAINE?

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ABSTRACT

The current case study attempts to explain the large share of the Individual Subsidiary Holdings¹ (ISH) output in the total agricultural production in Ukraine. Moreover, it aims at estimating the efficiency of the ISH and their production determinants, and considering their development opportunities, in terms of their possibilities to establish farm enterprises. The results of the study show that the efficiency of ISH is strongly dependent upon of how and where they received their production inputs.

Keywords: Ukraine, Individual Subsidiary Holdings, sustainability, gross margins.

1 INTRODUCTION

Having only 13% of Ukrainians agricultural land, the ISH manage to produce almost 60% of the gross agricultural output (State Statistical Committee of Ukraine, 2003). The production of these ISH relies to a great extent on inputs from large-scale enterprises (LSE). Moreover, significant part of inputs comes into ISH's production illegal, i.e. stolen. All this fact can be seen as a form of external financing of the ISH through the LSE.

The current case study attempts to explain this large share of the ISH' output in the total agricultural production in Ukraine and considers their development opportunities. At the same time, the following questions should be answered: What are the main sources of production inputs for the ISH? How do the ISH pay for these inputs and what is their actual value? What extent is the margin between revenues from sales and production costs? What is the outlook for the future development of the ISH in terms of their possibilities to establish farm enterprises?

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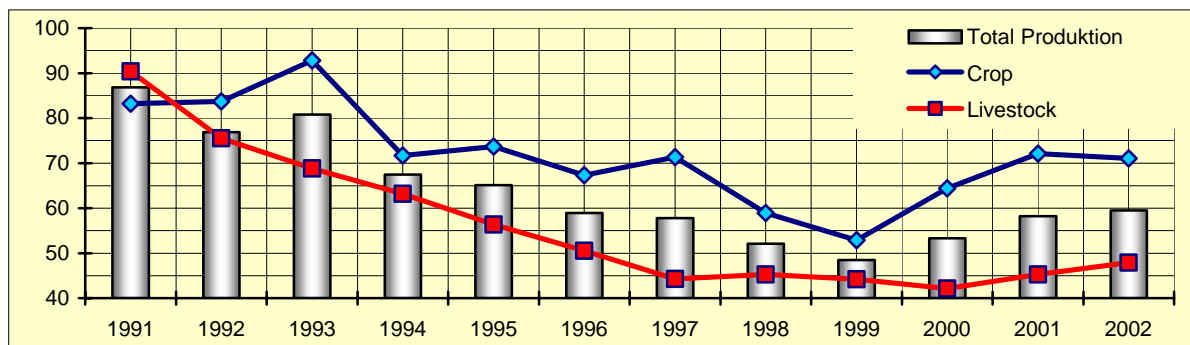
¹ This term will be used in this paper as synonym to private households in rural areas.

This study is based on results obtained from survey of ISH's members, conducted during several years in different regions of Zhytomyr Oblast of Ukraine. For the current study the results of interview of 90 ISH in 17 LSE, conducted in 2000 and 2002 with 217 surveyed ISH in 45 LSEs in 2004 were included into the paper. The results of all interviews were summarised including those that significantly deviated from the average to present both norms and extremes.

2 ECONOMIC BACKGROUND OF AGRICULTURE IN UKRAINE

The Ukrainian agriculture is currently in a phase of economic growth, but this is unclear whether this growth sustains in the long run. The contrast between the agricultural potential of large-scale enterprises (LSE) and their present desolate state remains to be very striking. During 1990-1999 the accumulated decline of the agricultural output equalled to 51%, followed by light growth in the recent years (Figure 1). In spite of the growth, over 53% of the agricultural large scale enterprises remained unprofitable in 2002 (State Statistical Committee of Ukraine, 2003).

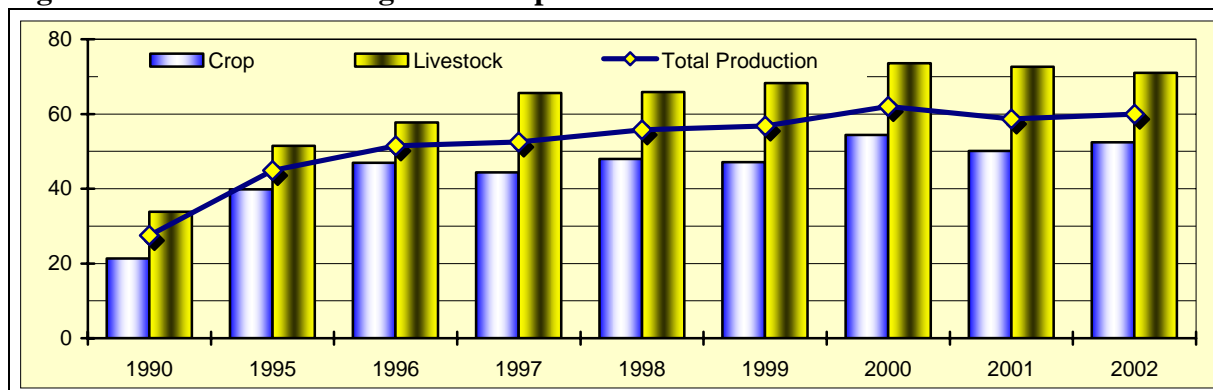
Figure 1: Ukrainian Agricultural Production, 1990 = 100%



Source: The State Committee of Statistics of Ukraine, 2003.

At the same time, the role of the ISH in the agricultural production increased substantially. The general economic crises in agriculture encouraged the growth of the ISH and they became the most important producers of the agricultural output in Ukraine. Although the ISH's share in the total agricultural output did not change significantly in the absolute terms, their relative share increased notably, mainly because of pure performance of the LSE (see Figure 2).

Gradually, the agricultural production has shifted from the public into the private sector. During 2000-2004 the number of cows and pigs in large-scale enterprises significantly declined (pigs by 47% and cows by 36%), while in the ISH their number grew (by 51% and by 9% respectively). At the same time, in spite of the general decrease of poultry, the reduction in the ISH was not that strong as in the large agricultural enterprises (45% in LSEs in compare to 16% in ISH).

Figure 2: Share of ISH in agricultural production

Source: The State Committee of Statistics of Ukraine, 2003.

The main reason for the increasing development of the ISH is the necessity to secure the food consumption of households. Moreover, the ISH allow to earn an additional income (in most cases, the ISH are the only income source) and to improve the living standards of the rural population. Currently, the ISH are also an important and growing supplier of agricultural products to the sales markets.

3 DEVELOPMENT AND SUSTAINABILITY OF INDIVIDUAL SUBSIDIARY HOLDINGS IN THE UKRAINE

The ISH are an important part of the economic activity in the rural areas. Due to insufficient or even non-payment of wages in the large-scale enterprises, the ISH remain one of the main income sources in cash. The efficiency of the ISH strongly depends on the ways they receive inputs for their households. The further analysis will show that the main sources of inputs are ISH own production and inputs from large agricultural enterprises, that are either free of charge or distributed at lower prices, what were underlined in other studies (Striewe et al. 2001).

3.1 Sample characteristics

The data on labour endowment and labour used within the ISH is shown in next tables. Over the last four years the number and age of interviewed ISH members increased in average from 2,8 members at the age of 44 years to 3,3 members in age of 47 years. It is noteworthy, that the share of ISH's members over 45 years increased substantially from 57 to 85% by male and from 57 to 75% by female in 2000 and 2004 respectively, i.e. the ISH are getting older (see Table 1). Another dangerous tendency is that the people's share in the age between 18 and 40 years within the sample in average of 15 per cent noticeably low, that could lead to demographic problems in the future (absence of labour force in the rural areas).

Table 1: Size and age structure of ISH

	Number of members			Age					
	2000	2002	2004	Male			Female		
				2000	2002	2004	2000	2002	2004
Average	2,8	3,1	3,3	44	42	48	44	43	46
Share over 45 years, %				57	59	85	57	60	75

Source: own presentation.

During 2000-2004, they spent in the summer mainly from 6 to 8 working hours (6,8 hours per day on average) in their ISH and from 3 to 6 working hours (3,9 hours per day in average) in winter with growing tendency. This is more than a half of an average working day in a large-scale enterprise. In addition, the ISH work on average 1-3 times a week over time to sell their products (see Table 2).

Table 2: Distribution ISH's working hours between seasons

	ISH's working hours share, % per day					
	2000		2002		2004	
	Winter	Summer	Winter	Summer	Winter	Summer
1 Hour	2,2	1,0	1,8	0,0	2	6
2 Hours	4,4	1,0	1,8	0,0	8	7
3 Hours	26,7	0,0	24,6	3,5	21	10
4 Hours	20,0	0,0	19,3	5,3	15	9
5 Hours	22,2	16,6	19,3	7,0	19	8
6 Hours	18,9	32,2	21,0	14,0	23	11
7 Hours	4,4	27,7	7,0	35,1	8	25
8 Hours	1,1	21,1	5,3	35,1	4	22
Ø Hours	4,4	6,4	4,7	6,8	4,8	6,8

Source: own presentation.

The unemployment in rural areas explains this huge part of working time, which has been spent for working in the ISH, selling products and purchasing inputs. In Ukraine the opportunity costs of labour in rural areas are considerably low due to the high unemployment and lack of non-agriculture alternatives. Normally, employees of the large-scale enterprises are paid for 8 working hours per day, but usually they do not spend the whole time at their permanent work place. Due to wage hold-ups and opportunities not to invest the whole time to the LSE, because of lack of independent management control, the members of households are highly motivated to invest a big portion of their working time into their own ISH.

In general, the private households do not have much farm machinery and equipment. Capital input of ISH is low, but had an increasing trend in 2000-2004: for cars from 30 to 35%, tractors from 1 to 9%, horse carriage from 30 to 34%. The share of the ISH, having their own machinery, remains still low,

nevertheless increased in average from 38% in 2000 to 44% in 2004, that points out to a declining dependency of the ISH members on employment in large-scale enterprises. Due to a low capital endowment, the labour productivity of ISH is less than the average of Zhytomyr Oblast and Ukrainian's LSE (see Table 3).

Table 3: ISH, Oblast Zhytomyr and Ukrainian LSE labour productivity

Legal form	Labour productivity, in UAH per worker				
	2000	2002	2004	In 2000 prices	
				2002	2004
ISH	3337	5931	5066	3536	3223
LSEs	Oblast Zhytomyr	3797	6151	-	-
	Ukraine	4171	6681	-	-

Note: calculated as (Gross Income – Production Costs)/ number of farm and household's labour force.

Source: own presentations, Sabluk et al., 2001, Statistical Yearbook of Ukraine, 2003; own calculations.

Large-scale enterprises concentrate themselves mainly on products using economy of scale such as cereals and sun seeds and have therefore higher labour productivity. ISH otherwise specialize themselves on labour intensive products.

The capacities (available places) for cattle in households in 2000 and 2002 were used almost completely – over 90% and overused in 2004. On the other hand, only 46-86% of the available capacities for pigs were occupied. That leads to the conclusion that the ISH still have the opportunity to increase the pork production in short-term under a favourable price situation (see Table 4).

Table 4: Available capacity for livestock in household

	2000		2002		2004		Occupied in % to available		
	availabl	occupied	available	occupied	available	occupied	2000	2002	2004
Cattle, Ø	1,8	1,7	2,9	2,6	2,2	2,3	94	90	104
Pigs, Ø	2,8	2,4	3,7	1,7	3,6	2,1	86	46	58

Source: own presentation.

Current data of yields gained in the ISH and the large agricultural enterprises in Zhytomyr Oblast is shown in the Table 5.

This Table shows that the average yields of the ISH are much higher than in the large-scale enterprises. One of the possible explanations is that (1) the ISH use cheap inputs (especially, compound feed) from the large agricultural enterprises, decreasing production opportunities of large agricultural enterprises, (2) livestock products such as milk, milk products, eggs, pork, and beef, are an important income source due to the sale on market.

Table 5: Crop and livestock productivity indicators in ISH and large agricultural enterprises of Zhytomyr Oblast

	Average			Average of large agricultural enterprises for Oblast Zhytomyr, 2002
	2000	2002	2004	
Milk yield, kg per cow	3488	3842	3998	2542
Cattle's weight gain, gram per	390	512	510	304
Pig's weight gain, gram per day	421	371	385	167
Egg yield	242	204	223	246
Crop yield: Grain, 100 kg	21	29	23	22
Potatoes, 100 kg	89	80	136	112
Sugar beet, 100 kg	260	357	381	184
Vegetables, 100 kg	200	279	240	148

Source: own presentation, Statistical Yearbook of Ukraine, 2003.

As the increase of yields directly improves the households' welfare, ISH have high motivation in managing their household properly, which may be not entirely true for the large collective farms. (3) ISH seem to specialise on production systems, which do not exploit the economy of scale. These systems are labour intensive and cannot easily be mechanised. This also can be proved on the example of grain production where the economy of scale can be gained through mechanisation and thus, the gap between ISH and LSE is smaller.

Additionally, it is interesting to consider the main sources of the inputs and their prices (calculated as the actual wage-in-kind² from the large agricultural enterprises) (see Tables 6 and 7).

The main input sources are marked bold in Table 6. Table clarifies that the main input sources of the ISH are own production. These inputs are free of charge and due to the self-production the opportunity costs of the ISH are lower as if they would buy them from enterprises or in the market. The second source are the large agricultural enterprises themselves, especially compound feed – 76, 93, 51% (of the total input purchase), feed grain – 78, 92, 64%, other feed – 60, 80, 53%, insemination services – 88, 98, 94% and veterinary services – 76, 91, 85% in 2000, 2002, 20004 respectively. These inputs are purchased not at the market price but at the production costs level. Some of inputs from this source were acquired as a wage-in-kind or free of charge (stolen) from the large agricultural enterprises. Vegetable and grass seeds and young pigs, as well as fuel, are purchased mainly on the markets or from intermediaries for cash: there are no alternative sources for these input yet.

² The most interviewed households did not receive the wages in cash for many months. The only type of payment they received was so-called "wage-in-kind".

Table 6: Changes in the structure of input sources, in %³

	Market			Agricultural enterprise			Middleman			Private individuals			Own production				
	2000	2002	2004	2000	2002	2004	2000	2002	2004	2000	2002	2004	2000	2002	2004		
Fattening calf			10	15	14	22					13		13	70	81	52	
Young pigs	54	28	56	35	37	19						14			22	20	
Growers															96	99	95
Potato seeds															99	98	98
Grain seeds				47	20	22									52	73	63
Vegetable seeds	76	86	97												18	14	
Grass seeds	50	24	65	23	35										27	42	32
Fertiliser				41		11									59	92	78
Plant protection	48	91	79							20					50		
Fuel	10				11		75	89	94								
Compound feed	20		39	76	93	51											
Feed grain	18		26	78	92	64											
Other feed	12		25	60	80	53					24		18		20		
Insemination				88	98	94											
Veterinary				76	91	85											

Source: own presentation.

Table 7 shows that the average prices for compound feed, feed grain, milk and meat offered by the large-scale enterprises are much lower than the market prices. That can be considered as a form of cross-subsidisation from the LAE. In our special case, the market prices are the proxy of farm-gate prices. The real average *ISH purchase prices/market prices ratio* should be lower, as shown in the Table 6. This observation offers two conclusions: first, relatively high livestock productivity in the ISH in comparison to the large agricultural enterprises as a consequence of low feeding costs (comp. Table 5), and secondly, the high dependency of the ISH members on the employment in the large agricultural enterprises. Overpricing of sugar, butter, and vegetable oil is explained by the ‘institutional force’ for most households: either to accept more expensive products as a wage-in-kind payment or to receive no wages at all. By using barter as a means of commercial transactions, the large agricultural enterprises receive processed products from processing plants as an exchange for production inputs (sugar beat, milk, sunflower seeds) and transfer these products to their employees, devaluating their real wages.

Table 7: ISH purchase prices, in % of the market prices

	2000	2002	2004	2000	2002	2004	2000	2002	2004
	min			max			average		

³ Presented figures are the prise value (price x quantity), aggregated for all households. For all input sources (except “own production”) the real purchasing prices were used. For “own production” market prices were used. Rates under 10% mark were ignored.

Grain	0,1	2	1	200	175	200	80	114	90
Compound feed	0,01	0,1	0,1	75	150	200	31	10	30
Milk	66	67	50	144	115	134	107	94	78
Meat	66	40	62	133	120	105	93	60	80
Vegetable oil	82		125	91		133	87		129
Butter	34	95	-	120	116	-	110	108	-
Sugar	67	50	81	167	125	150	114	93	104

Source: own presentation.

3.2 Gross margins of Individual Subsidiary Holdings in Ukraine

Table 8 presents data about costs and revenue. We can't calculate the rate of farm profitability for ISH applying the methodology commonly used in Ukraine ($Profit*100/Total\ Costs$), because of the absence of some data such as labour input costs, own consumption of the ISH and the depreciation. Instead only revenues from sales and variables costs were compared in order to test the hypothetical response of ISH on the price rise and to define, based on current economic conditions, whether the ISH could represent an alternative production form to the large agricultural enterprises. Therefore, we assume that the amount of own-consumed products (which are not sold on markets) is higher than zero. Secondly, figures presented in this table should be interpreted very carefully, because productions and sales date could be biased by the household's owners. Also all other income sources were not involved into revenue calculation. Total costs include all in the ISH used variable inputs independent from their origin.

Table 8: Production costs versus revenues from sales

	2000	2002	2004
1 Total revenues form sales, UAH	228581	126875	767346
per household	2540	2226	3536
2 Total costs of inputs, UAH	82822	57800	706238
per household	920	1014	3255
3 Costs of inputs at market prices, UAH	253588	90800	956729
per household	2817	1592	4409
4 Costs of inputs /revenues from sales*100, %	36	45	92
5 Costs of inputs at market prices /revenue from sales*100, %	111	72	125

Source: own presentation.

To calculate the figures presented in Table 8, the production inputs used by the ISH were valued twice: at the actual purchasing prices and at the average market prices. In our study we consider only the constant market prices, because the continuously changing prices could induce an adjusting reaction of the ISH, which is hardly to predict.

Differences between sale revenues and production costs are shown in Table 8. The data used in this table stress that in all years where ISH are purchasing from

LSE the sales value outperforms the production costs. It was also the case in 2002, where input costs at market prices were below sales revenue (line 4). Otherwise, the costs of inputs at market prices exceed the revenues from sales in 2000 and 2004 by 11 and 25 per cent respectively.

Reasons for this development could be found in increased input prices. The difference between costs at market and purchase prices becomes smaller (lines 4 and 5). It means that substantial part of resources (except compound feed) was purchased by ISH at market prices.

But not all of the households demonstrate a low level of cost/revenue relation. To prove this statement the cost/revenue rate was calculated (see Table 9).

Table 9: ISH's cost/revenue ratio, in %

Cost/revenue ratio	ISH share					
	Costs of inputs			Costs of inputs at market prices		
	2000	2002	2004	2000	2002	2004
<100 %	84	89	65	39	72	52
> 100 < 200 %	16	7	24	33	19	21
≥ 200 %	0	4	11	29	9	27

Source: own presentation.

84% of ISH in 2000, 89% in 2002 and 65% in 2004 covered their production costs at actual purchasing prices. Thus, we can conclude that the ISH work exclusively efficient. But if the inputs, used in the ISH operations, are estimated at market prices the picture changes entirely. Almost two third of the ISH in 2000, one-third in 2002 and almost a half in 2004 did not cover their production costs. The initial “positive” picture proved to be illusory in all years.

This means, when purchasing their inputs on markets instead of taking them from LSE, only those ISH whose *cost/revenue ratio* < 100% could operate under market conditions. The other ISH entirely depend on the employment in large agricultural enterprises.

In the next step we will analyse whether ISH could be a sustainable productive alternative to large-scale enterprises in Ukraine. To fulfil this goal the sample of ISH, surveyed in 2004 was divided into four clusters using the algorithm, presented in the Table 10, column 2.

Table 10: ISH clusters, 2004

#	Clusters	Share, %	Average cost/revenue ratio		Average cost/revenue+income ratio	
			Real costs	Costs at market prices	Real costs	Costs at market prices

	1	2	3	4	5	6	7
1	Cost/revenue<100%		52	36	62	17	30
2	Cost/revenue+income<100%		25	228	324	37	56
3	“No sale” ISH		9	-	-	18	30
4	Cost/revenue+income>100%		14	317	410	145	177

Source: own presentation.

Figures of this Table show that for households in clusters #2 and #3 non-revenue income help them in fact to cover all production costs, but sale revenue is too insufficient for cluster #2 and absent for #3. That let us suppose that these households as well as of cluster #4 produce to a large extend for their own consumption. Households in cluster #1 could be considered as a competitive alternative to LSE. However taking into consideration an average ISH sale share, which declined from 36% in 2000 to 28% in 2004 as well as also declining shares of sale in total production this conclusion can be questioned (see Table 11).

Table 11: Marketing activities of ISH

	Share of ISH with sales, %			Share of sales in total production, %		
	2000	2002	2004	2002	2002	2004
Potato	62	25	61	18	17	34
Vegetables	11	0	5	40	0	42
Fruits	14	0	6	19	0	20
Milk	90	93	77	42	56	53
Beef	14	0	10	96	0	9
Pork	44	11	10	70	40	19
Eggs	49	7	13	51	63	5
Cattle	38	46	55	85	90	91
Pigs	6	16	13	68	41	47
Average	36	22	28	54	34	36

Source: own presentation.

The ISH were also asked about their willingness to establish own private enterprises. Only 19% of households showed a willingness to establish an enterprise and 63% refused to do so due to the follow reasons: lack of capital – 71%, lack of inputs – 55%, physical impossibility to do this because of the age – 46% followed by problems with production sale – 27%. The quintile of households is still uncertain

In the future, in case of increasing input prices, lower in-farm production of inputs (compounded feed, grain) and improvement of the control-management in large agricultural enterprises, boundary possibilities to extend their production, the output production in the ISH could significantly dwindle, although exact reactions of the ISH can be hardly forecasted. It may be expected, as far as there are no income alternatives and employ possibilities in

rural areas, the ISH will specialise on labour-intensive production like animal keeping and vegetable production.

4 CONCLUSIONS

The ISH are the most important source of agricultural products for the rural population. The large amount of working hours invested in the ISH points out the high hidden unemployment in large agricultural enterprises. The income of the households strongly depends on the income of the ISH. Currently, the ISH are the most important (and partially the only) source of cash income in rural areas.

The efficiency of ISH is very strongly affected by the ways of how and where they received their production inputs. The paper demonstrates that two major sources of the inputs for the ISH were (1) their own production and (2) the large agricultural enterprises, providing them either free of charge or distributing at lower prices. The willingness of ISH members to establish their own enterprises appears to be very low.

So, can the individual subsidiary holdings be a sustainable alternative to large-scale farms in Ukraine? The answer on this question should be rather no, than yes. Most important reasons for that are: the ISH are too small, too aged, in average inefficient and labour intensive. Although, their development possibilities will strong correlate with performance of large-scale enterprises and development of rural areas, especially labour markets.

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