



Differences in Quality of Life and Profitability on Small and Large Farms (1730–1930): A Statistical Approach*

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The competitiveness and productivity of large landholdings and small estates and the incomes or welfare of the people living on such estates have long been an important issue in the Hungarian historiography – and in everyday politics too. Based on the statistical evaluation of serial sources from the 18th, 19th and early 20th centuries we give a thorough analysis on the productivity of smallholdings and large estates, which showed a remarkable a spatio-temporal diversity contrary to the statements in the literature focusing on case studies or social aspects of the problems. The size of the investigated area (Kingdom of Hungary versus Hungary after 1920), as well as land-use colored the palette further. Statistical analysis also proved that socio-economic features on large landholdings were not so unfavorable as depicted by literature. There was a remarkable diversity within the large-estates regarding productivity too, and while in the 19th century their income/ha values were better, than the income on small estates, this gap partly disappeared between 1910 and 1935.

Keywords: Productivity, incomes, large estates, smallholdings, tenant peasantry, Kingdom of Hungary, 18th–20th centuries

Introduction

The competitiveness and productivity of large landholdings and small estates and the incomes or welfare of the people living on such estates have long been an important issue in the Hungarian historiography, and indeed this issue remains controversial today. That matter at hand is not simply an economic or social question. Rather, it is one of the means through which the various political regimes after 1848 sought to legitimate their rule and policies. Neither is this issue negligible from the point of view of contemporary regional research and territorial planning. In his discussion of peripheralization at the time of the regime change in the early 1990s Endre Miklóssy identified the preponderance of large estates, rural

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overpopulation, and the marginalization of livestock farming as three of the four main historical factors contributing to the alleged backwardness of the region today.¹ Thus, the question can also be raised from the perspective of conditions today, or in other words, one could ask which former type of farm (allodial estates or farms dominated by plots) and social class (villages of former tenants with plots or villages inhabited by the landless, who after 1848 were mostly daily-wage agrarian laborers) are associated with areas which today are peripheral. The latter, the connection between the territorial pattern of social classes, and areas that are peripheral today, is not examined in the present paper.

In the interwar period, a political debate broke out on the issue of the comparative productivity of large versus small estates. Miklós Móricz (brother of the family writer Zsigmond Móricz) contended that large estates were more productive, but these estates were also associated with poorer living conditions for the populations living on them (and he supposed a causal relationship between the two).² Jenő Czettler pointed out the advantages of the large estates from the perspective of productivity—in the interwar period, because large estates had 20 percent better grain yields and 30 percent better yields for potatoes than small estates.³ Mihály Kerék refuted this. He contended that livestock production on smallholdings (which most statistics do not measure) compensated for the advantages of large holdings in grain production⁴ (and net cadastral land income)⁵

1 Miklóssy, “A területi elmaradottság,” 881–89.

2 Large estates had higher birth rates and lower death rates than the villages dominated by small estates, but population increases were not high due to significant emigration (reaching 40 percent of the natural population increase, whereas in the small estates emigration accounted for an estimated 25 percent of the population increase), despite the fact that population density was the lowest on the large estates. Miklós Móricz interprets this as an indication that the large estate were less sustainable, although it is more likely that fewer people were needed to run a large estate efficiently. Móricz, “Nagybirtok,” 293–309.

3 Czettler, “Földbirtok-politika,” Table 51.

4 According to a statistical assessment of 232 small farms, Kerék argues that although large farms produced more grains (an average of +2 quintals of grain per acre and +800 liters of milk per cow compared to smallholding), the small farms had much larger numbers of livestock, which means that while the large farms had a gross income of 135–167 pengő per acre, the small farms have gross incomes of 170–190 pengő per acre. In addition, the Hungarian smallholders marketed more products (as a percentage of their products) than Balkan smallholders (which were self-sustaining economies according to Chayanov), up to 60–70 percent (compared to 25–35 percent), similarly to the large estates. It is therefore not surprising that the share of contributions made by smallholders to total marketed goods was also high. The net income was thus between 57 and 64 pengő on the small farms compared to 31–35 pengő on the large landholdings. Kerék, *A magyar földkérdés*, 361–64.

5 Net cadastral land income is calculated in Hungarian statistics as the difference between incomes and costs, so it is similar to the term profit.

per acre. A table comparing the Balkan countries in the volume by Zagorov, Végh and Bilimovich, which was published after World War II, shows that in Hungary and Romania (as opposed to Greece, which also had a polarized estate structure) the yields of large estates were 20–30 percent higher than the yields of small estates in terms of grain production.⁶ However, Tibor Tóth's research on the Interwar period, which is limited to the Transdanubian region, shows that the yields were better on smallholdings, although the return rates were somewhat slower.⁷ The issue is not a specific Hungarian problem. According to Yanaki Mollov, Bulgarian smallholdings had better yields *per hectare* than the large estates in the interwar period.⁸ However, this is not the case if *per capita* values are calculated (labor force), and small farms were much more vulnerable to climate variability and changes in the external economic situation (including price volatility, which became an acute crisis after 1929).

The profitability of a given estate type may well have depended on many factors, including type of land use, land quality, location of the sample area, and the availability of technological advances, all of which are examined in the present study. Even the proclivities of political regimes (i.e. legal measures) may have been helpful in many cases (for instance in the case of Ottoman Macedonia in the nineteenth century or in dualist Hungary). However, there are also examples when state intervention was not beneficial (for instance the permanent agrarian crisis in Serbia and Bulgaria after 1870, which was due to the maintenance of smallholder peasant democracy). Productivity and profitability also varied over time. There are many ways to measure these changes, but they do not always produce the same results.

If our results show that productivity measured according to harvest yield per acre was better on large estates then we need to consider the possible reasons for this, which include the following: (a) plot size, parcel size, parcel numbers, (b) technological development, (c) land use and product structure of the smallholdings and large estates, (d) whether the nobility managed to acquire better quality lands after 1848, or (e) whether the landed gentry, losing their tax exemption after 1848, attempted to manipulate the cadastral land survey during the registry period (1851–1865), when land income became the basis for land tax (1865), thus reducing their land tax by claiming that their lands were of poor quality. Klára Mérey, Pál Sándor, and Lajos Für have given concrete examples of how large landowners acquired fallow land after 1848 that had formerly been

6 Zagorov et al., *The Agricultural Economy*, 15–22, and 50.

7 Tóth, *A Dunántúli kisüzemek*, 29.

8 Mollov and Kondov, *Dobrodostta*. According to our recent surveys, this did not stand for the 1860s.

used by the peasants.⁹ They have also shown, furthermore, that these lands were often of better quality than the plots remaining in peasants' hands.¹⁰ Scott M. Eddie, however, argues that this was not a general trend in 1850–1870. His sophisticated cliometric studies using country-scale data support the hypothesis that large estates (more precisely, the estates owned by the aristocracy) were subject to a more favorable tax classification than might have been expected in only one county out of the 52 studied (see the case of Viharsarok, also analyzed here).¹¹ The peasant estate was also sometimes placed in a higher “golden crown” category because it had a higher proportion of ploughland, even if the soil quality was actually worse because peasants were forced to cultivate more arable lands regardless of quality (see the case of Békés County in the discussion below).¹² On the other hand, the proportion of land taken up by pastures and forests was sometimes higher on large estates, and because of their generally lower income per acre, the average cadastral income per hectare on the whole large estate was also lower compared to the peasant farms, which were primarily ploughland. (The Draskovich family's estates in southern Baranya offer an example of lands with a higher proportion of pastures and forests, while the Benyovszky family's estates in the same area were primarily ploughlands).¹³

Productivity in the 18th Century

In the discussion below, I offer an overview of the issue by providing a summary of research done between 2018 and 2023. According to the census of 1728, which survived in 11 counties (2,200 settlements),¹⁴ the declared (and this word is important) seed yield (measured in proportion to seeds sown)¹⁵ on serf plots was not more than 1:2 in 25 percent of the settlements (500 settlements), and a seed yield of 1:4 or more was measured in only 20 percent of the settlements.

9 Für, *A csákvári uradalom*, 33–139; Sándor, *Birtokrendezési periratok*, 94–95; Orosz, *A jobbágyvilág megszünése*, 125; Egyed, *Falu, város, civilizáció*, 134–35; Sándor, “A XIX. századi parasztbirtok,” 1968, 94–117, and Sándor, “A XIX. századi parasztbirtok,” 1964, 36–81.

10 T. Mérey, *A somogyi parasztság*, 248; Orosz, *A jobbágyvilág megszünése*, 133.

11 Eddie, *Ami “köz tudott”, az igaz is?*, 83.

12 See Demeter et al., “Földminőség.”

13 See Demeter and Koloh, “Birtokstruktúra és jövedelmezőség.”

14 MNL OL. Központi Statisztikai Hivatal [Archives of the Central Statistical Bureau]. Iratgyűjtemények (volt F iratgyűjtemény) (1701–1996), XXXII-23-j-12, 31–85.

15 In the eighteenth century, instead of yields expressed in quintals, grain yield was given as a ratio to seeds sown. Thus, all quantified data expressed here in kg, q, or tons are calculated and estimated.

(If the output is calculated in *cubulus* before sowing and harvesting and paying the tithe and state tax, a grain output of 1 to 4 was close to 800 kg/ha). The average yield of 1:3 was exceeded in Heves, Nógrád, Tolna, Sopron, and Szabolcs Counties. The lower-than-average value in Bihar and Szepes Counties, which are mountainous and forested, is not surprising, while the below average yield of Pest County is more surprising (animal husbandry still dominated the central plains in the eighteenth century due to the devastation caused in 1541–1699 during the Ottoman era). The declared yields of the municipalities of Somogy, Zala, and Vas Counties were also below 3:1. As 10 of the 11 counties are located in present-day Hungary (which is mostly lowlands), data from counties for which the sources do not provide these figures probably would not meaningfully raise this 1:3 average.¹⁶ As the landlords and the Church each took 10 percent of the harvest and 33 percent of the harvest had to be spared as seed for the next year, this 1:3 ratio allowed peasants to keep only 47 percent of their harvest, and part of this had to be used to pay taxes to the state. Thus, in the end, not more than 30 percent remained for peasant consumption. Supposing that 200 kg of grain are required for one adult and 150 for one child every year as a minimum, this makes total human consumption for a family 1,000–1,200 kg¹⁷ (without animals). This cannot be more than 33 percent of the total grain produced, ranging from 3,000 to 3,500 kg (otherwise the taxes cannot be paid). Calculating with a general output ratio of 1:3, this means that 1,000–1,200 kg of seed had to be set aside to be sown for the next year. Land size was calculated in *cubulus*, which indicates the volume of seed, 92 kg¹⁸ for a Hungarian acre (1 cadastral acre equals with 5,570 sq m, 1 Hungarian acre is 4,200 sq m). Thus, 11 to 12 acres (4.5 to 5 ha) had to be sown to produce this amount of grain at an output ratio of 1:3 in order to secure the subsistence of a family. In the case of an output ratio of 1:5, the seed set aside for the next year was 20 percent of the total harvest, taxes paid to the landlord and the Church came to a total of 40 percent, leaving 60 percent for the peasant to use to feed his family and pay the royal taxes. This left him with more than 40 to 45 percent of his harvest after taxation. Thus, even a smaller

16 See Demeter and Horváth, “Sopron vármegye.”

17 Glósz's calculations are very similar. From a different basis he gives five *pozsonyi mérő* (*pm*) for an adult person without animals, which is 225 kg. In case of animals fed from arable land this goes up to nine *pm*. (Glósz, “Területi hiány és felesleg”; Glósz, “A gabonakereskedelem feltételrendszere”; Glósz, “A birtokviszonyok.”)

18 This is only valid from the late 18th century according to Schwartner's description. See Bogdán, *Magyarországi űr-, térfogat-, súly és darabmértékek*, 303–4.

plot under 10 acres could sustain a similar family of six according to the figures used above.

To obtain more land, peasants could change the field-system and increase the ratio of cultivated lands from the usual 50 percent (the remainder 50% was used as fallow or grazeland) in the two-field system to 67 percent by applying three-field system (using one third of the plot for autumn crops, one third for spring crops and one third as fallow in a rotational system). They could also rent land from the landlords. This three-field system was often used in hilly regions in 1728 to compensate for lower soil quality.¹⁹ Applying the three-field system in the 18th century was not necessarily the sign of modernization or relative welfare (crop surplus), as plots using three-field system were not more productive, than lands under two-field system. It was rather a response to challenges caused by relative land shortages.

In 1728, the larger plots (*sessio*) had proportionally smaller yields per acre than the smaller units of land. In the lands with poorer yields, the plots tended to be larger, both in absolute terms (*sessio* size) and measured per capita. Had this not been the case, the population would have been compelled to move. (More than 60 percent of tenant peasants worked lands that were less than half a plot. This is a clear indication of the progressive fragmentation of the lands.) In his research on the Székely Land in the early eighteenth century,²⁰ Dezső Garda has shown that there was no significant difference in the grain yield of the *armalist* noblemen (nobles without peasants), the tenant peasants, and the landless cottars. The yields fluctuated around nine of ten *kealangya*.²¹ The differences between social groups were more pronounced in terms of livestock (1.9 and 3.7 cattle per family for cottars and members of the petty nobility, respectively). Most of the large estates were basically engaged in livestock farming in the first decades of the eighteenth century, either because of the general demand in

19 In our opinion (see Demeter and Horváth, “Sopron vármegye”), three-field system were usually applied where intensive farming was needed because of the lack or low quality of arable land. In general, seed yields were also higher for plots using the two-field system. The implementation of three-field system was to compensate for this by extending the arable area from 50 percent to two-third of the ploughland, by reducing the fallow land. In regions using three-field system the ratio of peasants with half plots or less was also high, referring to relative shortages in arable land. The data also indicate that manure was not widespread on lands of better quality and higher yield in 1728. Wheat grain yields were only 1:2.5 in villages in which manure was used, but were close to 1:3 in villages in which manure was not used. The villages in which manure was used presumably relied more on livestock farming than on crop production.

20 Garda, *Főnépek, lófők, gyalogkatonák*, 138–50.

21 The term refers essentially to a haystack, though the term does not indicate a precise shape or quantity.

Europe or because of labor shortages. Before the unification of peasant duties in 1767, the number of days spent on in *corvée* (compulsory work on a landlord's manor) or the geographical location of the manor may be a guide to the nature of the large estates (*allodia*). Vast landholdings that made little use of *corvée* or allowed tenant farmers to free themselves of this obligation by making payments instead were more likely to be livestock farms (as these required less labor force thus were unable to exploit *corvée* efficiently), while near the larger cities (Vienna, Buda) grain production began to spread, and this required a workforce. This also suggests that the grain farming methods used on large estates may not have been very efficient in the beginning of the eighteenth century.

As eighteenth-century cadastral census data survived along the valley of the Tisza River, they can be used to quantify the share of tenant peasant plots compared to large estates, as well as to compare the yields on peasant plots and large manors at the end of the eighteenth century (Figs. 1 and 2). In contrast to Jászság and Nagyunság, the Tisza floodplain (and the Hevesi plain) was dominated by manorial ploughlands in 1786. This had not changed even in 1865, when water regulations were introduced and cadastral surveys were made to document the boundaries of estates and tenant plots.²² In the Central Tisza floodplain, both in regional comparison and also on the smallholdings, the grain yield per acre was lower than in Nagyunság and the plains of south Heves, for instance, and more land was owned by the lords and more crops were appropriated by the nobility (Table 1), whereas the amount of land per one agricultural inhabitant (including the cottars) was the smallest.²³ On the other hand, at the end of the eighteenth century, there was hardly any measurable difference between the yield per acre of small and large landholdings according to the surviving cadastral data. In terms of the total area of large holdings and plots, there were hardly any settlements on the Central Tisza floodplain, in the Békés loess and Nagyunság, and in South Heves which did not reach the limit of self-

22 Demeter et al., *Kisatlasz*, 175 (Map 129). According to calculations based on the raw data of the 1897 Farmers' Inventory (*Gazdacímár 1897*), the share of arable land on large estates was above the national average in the floodplain counties, but on small farms it was even higher.

23 In Nagyunság and Csongrád Counties in the south, even the small amount of tenant ploughlands resulted in a large grain output per acre, and the landlord expropriated only a quarter of this. In the Tisza floodplain, more than half of the total harvested cereals went to the landlord, as was the case, for instance, in Heves, but the extent of the ploughlands was much greater in the latter. Thus, although the total per capita cereal yield in the Central Tisza region was higher than in the Kiskunság and Jászság, in the latter regions the proportion of grain expropriated by the landlords were only around 10 percent.

sufficiency (nine *pm*²⁴/person or five *pm* without animals) calculated by Glósz, with the exception of the region of Kiskunság (Danube-Tisza Interfluve, and in this area there was still heavy emphasis on animal husbandry on the large, empty quicksand plains) and Dévaványa in the moorland of Sárrét. Here, therefore, self-sufficiency had to be achieved either through animal husbandry or other forms of work (cottage industry, migrant labor). However, if we deduct the production of large estates from the total regional production, the situation was not good elsewhere either. Along the Tisza River (in contrast to the settlements of the Nagy-kunság or southern Heves), the yield was often barely 5 *pm* per person for peasant plots, if landless cottars are included and the yields of large holdings are not added (Table 3). Thus, the landless cottars²⁵ were forced to work either on the large estates or in animal husbandry (either as owners or herders) in the late eighteenth century. As long as there was enough common grazeland (this was the case until the beginning of great water regulation works in the late 1840s), the livelihood of this stratum was assured. However, the expansion of the large estates (and private land in general) over the commons and the expansion of ploughing on the large estates at the time of the river regulations²⁶ eliminated their livelihood and also provided the large estates with a cheap labor force that was no longer self-sufficient and thus could be easily exploited. This class was the biggest loser of the water regulations works and the new laws on land property after 1848. (The former common lands fell into the hand of landlords after 1848, who, prompted by the European grain hunger after the great crisis in 1847, began the transformation of even lower quality lands to arable land. These lands were profitable until grain prices collapsed after 1873).

According to Glósz, one or two sown cadastral acres were usually enough for one person to subsist, and since the amount of arable land per tenant peasant in most of the floodplains reached ten to twelve acres in the beginning of the nineteenth century, families of five to six people were able to live off the land at the time. By 1910, however, even with the increase of cultivated lands due to water regulation, only an average of six sown acres was available per family, which could only be sufficient for a family of this size if yields doubled (to twelve *pm*/acre, or about one ton/ha).

24 *Pozsonyi mérő*. Hereinafter referred as *pm*. Two *pm* equals to one *cubulus*, thus one *pm* is approximately 45 kg.

25 MNL OL. A39 A Magyar Kancelláriai Levéltár [Archives of the Hungarian Chancery]. Acta Generalia (1770–1848), 3688/1786.

26 See Demeter and Koloh, “Birtokstruktúra és jövedelmezőség,” 25–76.

It is also important to underline that the yields of the arable land of the landlords in the Central Tisza floodplain were not good, and water regulation resulted in the further expansion of these low-quality ploughlands.²⁷

Table 1. Differences in grain productivity of Hungarian lands based on the specific variables extracted from the data of the first cadastral survey in the 1780s

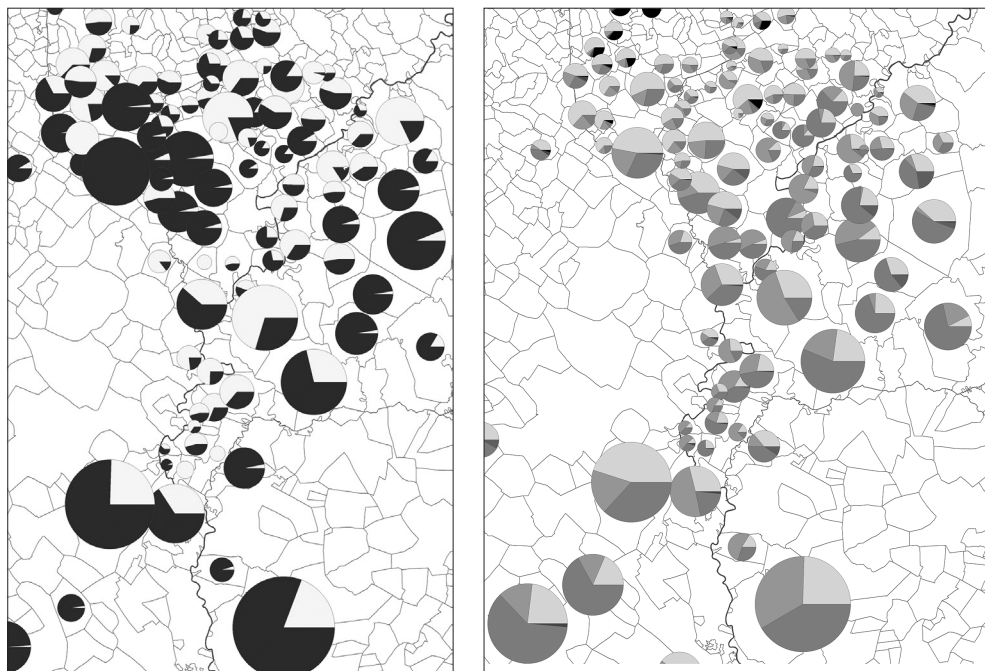
Landscape-type (1786, settlement number in brackets)	Ploughland as a proportion of the total %	Meadow and pasture as a proportion of the total %	Share of manorial ploughland (and yields) %	Ploughland, total (acre/person)	Peasant plot acre/person	Total grain output/person (in <i>pm</i>)	Yield of manorial land (<i>pm</i> /acre) ²⁸	Yield of peasant plots (<i>pm</i> /acre)	Yield for one peasant (inc. cottars) <i>pm</i> /person
Western Hungary: Győr, Moson, Sopron (71) ²⁹	30.43	60.19	41.50	1.88	1.05	13.15	7.04	7.02	8.48
South Heves (32)	48.16	43.82	52.98	2.35	1.13	17.68	7.48	7.28	7.74
Tisza floodplain (31)	<i>20.42</i>	<i>78.19</i>	<i>58.89</i>	<i>1.81</i>	<i>0.77</i>	<i>12.57</i>	<i>7.16</i>	<i>7.27</i>	<i>5.10</i>
Hills of North Heves (39)	34.24	25.89	52.15	2.03	0.77	12.02	5.88	5.96	6.28
Nagykunság plains (12)	24.52	71.04	28.36	1.87	1.34	17.17	9.16	<i>8.76</i>	12.01
Csongrád County (3)	24.74	74.11	23.56	1.77	1.62	15.37	9.55	<i>8.67</i>	11.88
Jászszág (11)	49.34	47.27	3.61	3.40	1.85	10.87	5.40	5.42	10.48
Kiskunság sand dunes (8)	30.40	67.80	10.63	4.15	1.88	10.08	4.85	5.17	9.35
Altogether (216)	30.73	61.46	37.72	2.15	1.18	13.71	6.90	6.86	7.95

Source: Calculations based on raw data published by Dávid, “Magyarország első kataszteri felmérése” and Rózsa’s recent explorations, Rózsa, “Az ártéri gazdálkodás mérlege.”

27 Considering arable land, small farms were more productive in Ormánság, while in Békés and Csanád Counties large farms were more productive in terms of income per acre.

28 From this, we deduct the seed. One Hungarian acre = one *cubulus* = two *pozsonyi mérő* of seed (125 l = 92 kg) = 4,200 sq m. This gives an estimate of the seed output, which is 2:7 in Moson and 2:9 in Nagy-kunság as a ratio of seed yield to seeds sown.

29 Control area.



Figures 1–2. The size and proportion of manorial arable land (light grey) in the surviving material of the 1786 cadastral census (based on Dávid, “Magyarország első kataszteri felmérése” and Rózsa’s recent explorations, Rózsa, “Az ártéri gazdálkodás mérlege.” / Regional differences in the land use of total cultivated land in 1786 based on the cadastral census (light grey for ploughland, medium grey for meadow and pasture, dark for garden and forest).

There was hardly any arable land in the settlements of the Tisza floodplain, which were characterized by small administrative areas and large (manorial) estates with high share of the available arable land.

Productivity of Smallholdings and Large Estates from the 1860s to 1910

The significance of the data series published in 1865 during the first surviving cadastral survey³⁰ is that it is available for the whole country (except Transylvania and the large towns). To a limited extent it also makes it possible to calculate the net cadastral incomes³¹ of large and small estates, since the number of settlements where *only* smallholdings or *only* large estates were recorded (the data for so-called *puszta*, or “plainland farmsteads,” which had only one or two owners, were

30 *Magyarország művelési ágak szerinti terjedelme és földjövödelme*, 1865.

31 We still do not have data on settlement level yield (in tons) between 1865 and 1910. Instead, net cadastral income was measured in 1865 in forints, which was the basis of the land tax. However, this indicator reveals nothing concerning expenditures or gross incomes.

recorded separately) was statistically relevant. (Where both large estates and smallholdings were present, we cannot calculate their incomes separately.) From Table 2, it is clear that in the 1860s (after the abolition of *corvée*), the large holdings were more productive (in terms of harvest yield per acre) than smallholdings. Smallholdings had harvests per acre that were only 66 percent of the harvests (measured per acre) of the large estates.

Table 2. Differences between the profitability of small farms and large holdings in Hungary in 1865 (net cadastral income, excluding the production of livestock)

Indicator	Small farms (sample)	Large landholdings (sample)	Large estates with some small farm	Country total and average**
Number of holdings	126,758 out of 2,010,000	187 out of 23,685	138*+235	2,034,630
Total utilised area (acre)	1,380,000	409,000	131,487	33,510,620
Net cadastral income (forint)	3,610,000	1,944,000	599,600	98,056,000
Average size of holding (acre)	10.9	2190	1000	16.5
Average net income per holding (forint)	28.5	10,395	4500*	48.2
Net income per 1 acre (forint)	2.6	4.7	4.6	2.9
Proportion of area used	92	80	95	91
Study sample	6.2% of farms, 4.1% of land, 3.7% of income	1.1% of farms, 1.3% of land, 2% of income	0.4% of land, 0.6% of income	100

* Counting only large estates.

** Excluding Transylvania and Croatia and some large cities (e.g. Debrecen).

Were the differences in income between small and large estates due to technological differences, or were they rather due to the fact that after the reforms in 1848, the nobility acquired land of better quality?³² Followers of prominent twentieth-century Hungarian historian Gyula Szekfű argue, on the basis of parcel names, that the large landowners established their estates on land cleared and cultivated in the nineteenth century and not on parcels obtained from peasants. This land therefore cannot have been of a terribly high quality and cannot have yielded impressive harvests or large incomes (and therefore there was no need for the landowners to manipulate the data). The results given

32 Eddie, *Ami "köz tudott", az igaz is?*

above, however, seem to contradict Szekfű's idea, though only partially. Surprisingly, if we approach the data series in a different way, in 1865, smallholdings were overrepresented in settlements with a high net cadastral land income of over six forints³³ per acre (323,000 holdings, or 15 percent of the smallholdings, compared to 2,635 large holdings, or 10 percent of the large estates).³⁴ This seem to support Szekfű's thesis (according to which the land quality of the large holdings was generally poor). However, since the distribution of landholdings within a settlement (and therefore the difference in their soil quality) is not known, these data are not conclusive.³⁵ At the other extreme, for the settlements with a low net income of one or two forints per acre (below average), we counted 6,630 large estates and 466,000 small farms in total, which is 28 percent and 23 percent, respectively. Here, large estates are overrepresented, but this is also due to large forest estates with poor yields (this is immediately clear if one plots the large estates on the map).

In other words, the dominant land use of the estate types has a strong influence on the incomes/acre expressed in money. Despite the low group average in the sample in Table 2, smallholdings were not characterized by uniformly low productivity. In Baranya in 1910, for example, smallholdings did not yield worse net cadastral incomes per acre than the larger holdings, because the smallholdings had a higher proportion of arable land, which had higher net cadastral incomes than forests, meadows, and pastures, and this increased the weighted average of the net income per plot.

The notion that, after the 1875 tax reform, when cadastral net income became the tax base, the tax system favored large estates and the taxes placed on smallholdings were higher in absolute terms is untenable. In 1910 (the investigation was reduced to the recent territory of Hungary due to the availability of data), the direct tax³⁶ *per capita* in settlements dominated by large estates was 20 kronen (30 K for the large estates of aristocrats), and in settlements dominated by small estates it was 15 K (in the national territory of Hungary today).

33 One forint = two kronen (two crowns or two golden crowns) = ca. two French francs.

34 Our 1865 (and 1910) data only give the value of crop production. They do not reveal anything concerning livestock production. The figure of six forints was well above the national average.

35 For net income per acre above six forints, smallholdings included settlements such as Ruszt and Kismarton/Eisenstadt (no large holdings were recorded in either place, so there were no such settlements skewing the average upwards), which certainly owe their inclusion in the group to their special agricultural crops (wines, grape) and not to cereals.

36 That included land tax based on net cadastral income, taxes on houses, industrial taxes, and profit taxes paid by enterprises.

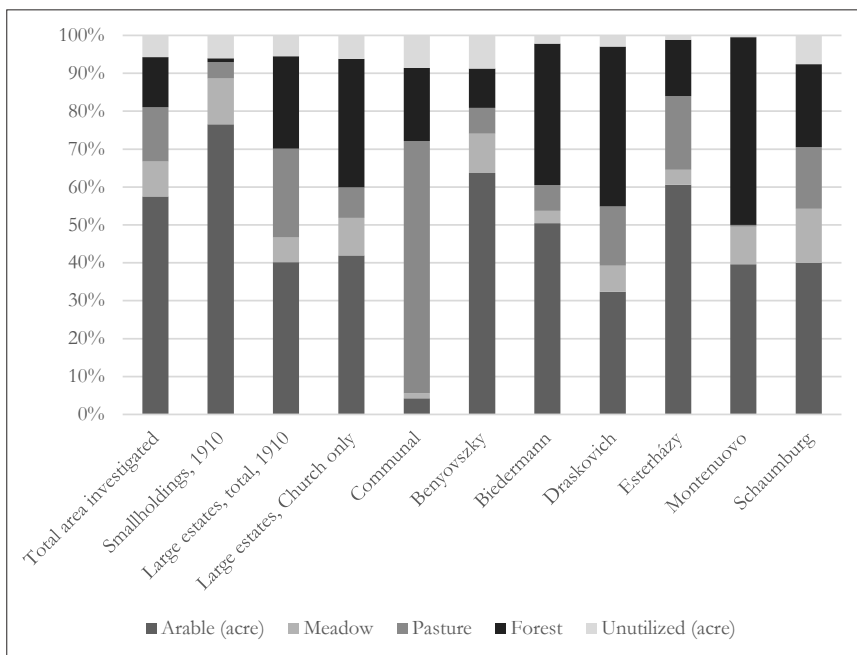


Figure 3. The differences in land use depending on estate types in two districts of Baranya County in 1910 (Demeter and Koloh, “Birtokstruktúra és jövedelmezőség”)

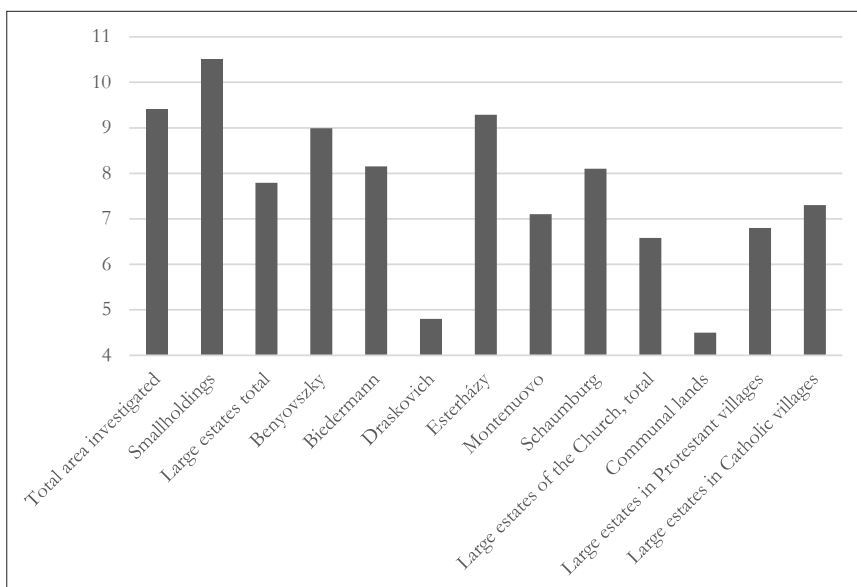


Figure 4. Net land income per cadastral acre in kronen (K) in different subsets of two districts of Baranya County (Ormánság and Hegyhát), 1910 (Demeter and Koloh, “Birtokstruktúra és jövedelmezőség.”)

Table 3. The difference between the net cadastral income per acre of a large estate (over 100 cadastral acres) and the total settlement average and its relationship to the land use-types on the former Harruckern estate 1857–1865 (selected cases)

Landholder	Location (settlement)	Arable in acre	Meadow and garden in acre	Vineyard in "kapás"	Pasture in acre	Large estates in total (in acre)	Net cadastral income, in forint	Net cadastral income per acre on large estates in forint	Net cadastral income per acre on total area of the settlement in forint	Share of arable land on large estates in %
Count György Apponyi	Orosháza Kis-Csáková	633	1		680	1,316	6,125	4.65	5.49	48.10
Count György Apponyi	Csaba	3,353	1,020	20	1,166	5,561	32,099	5.77	6.25	60.29
György Bajzáth	Szenetornya	608	64		63	736	5,802	7.88		82.61
<i>Dániel Bakai</i>	<i>the peripheries of Csaba</i>	61	43	1	6	113	608	5.38	6.25	53.98
<i>József Bartók</i> <i>(aharai és harrückei)</i>	<i>the peripheries of Csaba</i>	76	12		46	135	807	5.98	6.25	56.30
Count László Barthyányi	Csákovápuszta, Csaba, Kondoros	3,912	10		255	4,178	34,205	8.19	6.25	93.63
Baumgarten brothers	Orosháza	1,216	144		582	1,942	11,074	5.70	5.49	62.62
<i>István Belizsey</i>	<i>the peripheries of Csaba</i>	334	3			338	2867	8.48	6.25	98.82
<i>József Belizsey</i>	<i>Csaba határában</i>	103				103	622	6.04	6.25	100.00
<i>Rudolf Belizsey</i>		214			6	220	1,850	8.41		97.27
<i>József Bernrieder</i> <i>(Páks)</i>	Orosháza	327	12			340	2,853	8.39	5.49	96.18
...										

Differences in Quality of Life and Profitability on Small and Large Farms (1730–1930)

Landholder	Location (settlement)	Arable in acre	Meadow and garden in acre	Vineyard in "kapás"	Pasture in acre	Large estates in total (in acre)	Net cadastral income, in forint	Net cadastral income per acre on large estates in forint	Net cadastral income per acre on total area of the settlement in forint	Share of arable land on large estates in %
Antal Wenckheim		1,456	337		28	1,822	10,286	5.65	6.25	79.91
Baron Béla Wenckheim	Csaba	1,103				1,103	6,624	6.01	6.25	100.00
<i>Mrs. József Wenckheim</i>	<i>Csorvás</i>	<i>435</i>				<i>435</i>	<i>2,602</i>	<i>5.98</i>	<i>5.71</i>	<i>100.00</i>
<i>Károly Wenckheim</i>	<i>Csorvás</i>	<i>310</i>				<i>310</i>	<i>1,861</i>	<i>6.00</i>	<i>5.71</i>	<i>100.00</i>
<i>Rudolf Wenckheim</i>	<i>Csorvás</i>	<i>489</i>				<i>489</i>	<i>2,938</i>	<i>6.01</i>	<i>5.71</i>	<i>100.00</i>
<i>Baron Viktor Wenckheim</i>	<i>Csorvás</i>	<i>163</i>				<i>163</i>	<i>979</i>	<i>6.01</i>	<i>5.71</i>	<i>100.00</i>
Móric and Albert Wodianer	Gyoma	2,599	4,201	3	3,141	9,945	27,647	2.78	3.42	26.13
Móric and Albert Wodianer	Csorvás	723				723	4338	6.00	5.71	100.00

Estates between 100–500 cadastral acres are given in italics. The highlighted background indicated large estates with net incomes higher than the overall municipal average and estates where the share of arable land was above 80 percent. See footnote 40 for source information.

The same is true if we use *per acre* values instead of *per capita*. The average tax for settlements without large estates was 6.5 K per acre, and the average tax for settlements dominated by estates owned by the petty nobility was the same, whereas for villages dominated by aristocratic estates it was 7.3–8 K per acre. Since direct taxes also included land tax alongside a household tax and corporate and industrial taxes, the tax values are also indicative of income conditions. Thus, the hypothesis that large estates paid less tax per acre because the nobility used its political influence to manipulate taxation to underestimate the value of their land in the golden crown system is not tenable in general either. In fact, they did not pay less, as proved above, and Eddie's aforementioned thesis (that large estates in general did not enjoy more favorable tax rates between 1850 and 1870) seems persuasive.³⁷

Mariann Nagy also concludes that the higher the share of smallholdings in a county, the lower the net cadastral income ($r = -0.39$).³⁸ Our own country-level (within the state boundaries of Hungary after 1920), settlement-scale study confirms that in the villages dominated by large holdings, net cadastral income *per capita* (27.8 vs. 21 K) and, to a lesser extent, net cadastral income *per acre* (10.5 vs. 8.6 K) were also higher in 1910 than in settlements dominated by smallholdings. However, by 1935 the difference had almost disappeared. Thus, this phenomenon showed significant dynamics within two generations!

For the mid-nineteenth century, another case study gave new information concerning the productivity of large and small estates. In 1857, several censuses of the former Harruckern estates (today Békés County in southwestern Hungary) were recorded,³⁹ and here the net income per acre (in forints) can be calculated for more than 80 large estates. Since we also know which settlements these large estates were located in, their net incomes could be compared with the average land incomes of the total municipality (which includes small farms) in 1865. The resulting picture is rather chaotic, because the net cadastral income per acre of large farms varied between five and nine forints/acre, and in some cases the net

37 Eddie, *Ami "köztudott", az igaz is?*, 75–88.

38 Nagy, *A magyar mezőgazdaság*, 36.

39 MNL BéML IV. Megyei törvényhatóságok, szabad királyi városok és törvényhatósági jogú városok B. 156. A Csabai Cs. Kir. Vegyes Szolgabíróság iratai 1133/1857. Birtokosok kimutatása községenként 1857-ben; MNL BéML V. Mezővárosok, rendezett tanácsú városok, községek. B.202. Szarvas mezőváros iratai 635/1857. List of landowners with more than 100 acres; MNL BéML V. Községek B. 317. Gyoma nagyközség (1872-ig mezőváros) iratai b. Közigazgatási iratok 823/1857. List of landowners with more than 100 acres; MNL BéML V. Városok B. 302. Document of Békéscsaba nagyközség iratai b. Tanács-ülési jegyzőkönyvek 582/1857. List of landowners with more than 100 acres.

cadastral income per acre of large landholdings was lower than the overall municipal average. Since this was not owing to differences in the sizes of large farms, we also examined the role of land use. Interestingly, large farms were more profitable than small farms if the share of ploughlands exceeded 75 percent of the area of large farms. (This implicitly also means that the large estates might have had better soil quality, at least for grain production, since it was the large estates that offered a viable way of expanding arable land up to 90 percent of the whole). When the share of ploughlands was between 60 and 70 percent, the net income per hectare of the large farms was equal to the average net income of the municipality, and below this percentage value, the small farms were more profitable (Table 3). Large farms were therefore more competitive in the case of monocultural farming.

Leaving aside land quality and land use as factors and focusing only on the size of the landholdings, in the 42 settlements analyzed in Békés, Csongrád, and Csanád Counties, the large landholdings had 25 percent higher net incomes per acre than the small landholdings in 1865 (Table 4), confirming the result of our general survey for 1865 but contradicting the results of the investigation of the 80 large estates above (Table 3). However, as before, we were unable to quantify the role of animal husbandry, so we cannot estimate how it would modify the differences. Net cadastral income, as an indicator, allows us to determine neither where the income/expenditure ratio was better (i.e. which estate type was more efficient) nor where the expenditures were lower (i.e. which landholding size was less capital intensive), since no other indicator is available at the settlement level beside the “income minus expenditure value” (i.e. net cadastral income).⁴⁰

Table 4. Differences in net cadastral incomes of smallholdings and large estates (1865) on the area covered by the genetic soil map of Békés County (1858)

Dominant farm structure (by municipality)		Net cadastral income, forint/acre	Net income forint/estate owner	Average estate size (acre)
Mixed (25)	Avg.	4.30	135.0	31.40
Smallholdings dominate (5)	Avg.	4.24	61.1	14.44
Large estates dominate (12)	Avg.	5.43	29846.0	5494.31
Total number of settlements and “puszta” on map (42)	Avg.	4.45	8615.6	1933.97

40 Keleti, *A telekadó és kataszter*, 7–14.

Using a special source, however, it is possible to examine how land quality affected income and determine whether large estates were located on better land or not in these three counties. Table 4 above is based on the cadastral survey conscription published in 1865, which includes the precise, accurate number of large and small estates (but not their size separately) and the number of “puszta.” A genetic soil map of the area (the second oldest in Europe) from 1858 has also survived. By superimposing the administrative boundaries of 1865 (Figure 5) on the soil map using GIS-techniques, one can identify the dominant soil type per settlement, and the settlement level average values for net cadastral income per acre in 1865 can be compared to the soil types. Net cadastral income per acre and per holding was highest in the loess (Table 5), which also suggests that the loess was dominated by large estates, while in contrast, the sand or the saline solonetz soils (vertisols) were dominated by small estates in 1865. The net cadastral income per acre on smallholdings located on sands was good, while the incomes of small farms established on peat and solonetz soils was poor. Settlements with mixed saline-loess soils were also dominated by large estates, but with better income per acre values. In other words, the large estates were mostly located on better soils.

Table 5. Net cadastral income per acre and per holding (in forints) by soil type and average size of holdings by soil type in 1865

Soil type and settlement number		Net cadastral income forint/acre	Net cadastral income forint/estate	Average estate size
sand IV (1)	Avg.	5.49	97.38	17.74
peat (2)	Avg.	2.38	103.25	43.36
loess I (8)	Avg.	5.91	2,3076.77	3,903.40
salty/saline II (14)	Avg.	3.51	1,811.74	516.68
salty and peat (1)	Avg.	2.32	68.75	29.66
salty and bound clay (2)	Avg.	3.47	56.81	16.35
salty and loess (14)	Avg.	5.09	10,813.64	2,126.25
total (42)	Avg.	4.45	–	–

Source: Our calculations based on the 1858 soil map and income data published in 1865.

By comparing the productivity of small and large estates located on the *same* soil types (Table 6), one can highlight the “soil-neutral” efficiency of the farm type. The combined query of the incomes (1865)—soil (1858) database revealed that in the case of loess, the large estates were clearly more efficient, while in the

case of saline soils, the smallholdings were more efficient, obviously because the smallholder was forced to produce a minimum quantity even by investing extra work (and/or a larger workforce) to subsist, while the large farm was not under such pressure. In the case of settlements with mixed loess and saline soils, there was no significant difference between small and large farms.

Table 6. Differences in net cadastral income grouped by soil types and farm sizes (in forints, 1865)

Dominant soils (1858)	Farm size (type, settlement number, avg. estate size)	Net cadastral income forint/acre	Net cadastral income forint/estate
sand	MIXED estate structure (1)	5.49	97.38
peat	MIXED estate structure (2)	2.38	103.25
loess	DOMINANCE OF SMALLHOLDINGS (2) (79), cadastral acres	4.67	370.32
	DOMINANCE OF LARGE ESTATES (6) (4848 cadastral acres)	6.32	30,645.59
	TOTAL (8)	5.91	23,076.77
saline	MIXED estate structure (12)	3.52	90.46
	DOMINANCE OF SMALLHOLDINGS (1) (4 cadastral acres)	4.06	36.79
	DOMINANCE OF LARGE ESTATES (1)	2.74	24,242
	TOTAL (14)	3.51	1,811.74
saline and soot	(1)	2.32	68.75
saline and clay	MIXED estate structure (1)	<i>3.38</i>	95.65
	SMALLHOLDING DOMINANCE (1)	<i>3.57</i>	17.97
	TOTAL (2)	3.47	56.81
saline and loess	MIXED estate structure (6)	5.53	183.82
	SMALL FARMS DOMINANCE (3) (18 kh)	4.52	83.67
	LARGE ESTATES (5) (6122 kh)	4.90	30,007.40
	TOTAL (14)	5,09	10,813

Source: Our calculations based on the 1858 soil map and income data published in 1865.

How did landowners manage to acquire good quality land? In order to answer this question, we superimposed the soil map from 1858 on the Harruckern map of land use in the 1780s, which also contained aggregated landuse and population data at the settlement level (unfortunately, it did not include yields). Our research has shown that around 1780, most of the land far away from rivers and covered with loess was used as pasture (Tables 7 and 8), which, as public

property (communal land, which meant that both the landlord and the peasants had the right to use it), fell into the hands of the manor according to the laws of 1848. These areas, converted into ploughland as a result of the land-use change induced by grain hunger in Europe, which generated high prices, showed extremely high yields and high incomes in the mid-nineteenth century due to decades of fertilization and fallowing.

Water regulation works began here around 1865, so the statistics cited reflect the incomes of the pre-regulation situation, when plots on saline soils and peat were more exposed to water. This implicitly also meant that the water regulation work of 1865 generated a temporary ameliorating situation for the smallholders (although peat that has lost water is easily damaged by wind and compaction caused by trampling, so the improvements are only temporary). In contrast to the situation along the Körös River, in the Central Tisza region at the end of the eighteenth century the floodplains of the rivers were dominated not by small farms but by large estates and communal-public lands used as pastures and meadows for grazing. This all became manorial land after 1848. So, water regulation along the Tisza River favored large estates.

Table 7. Differences in land use types on different soils (%) and farm types in 1865

Soil type (I-V: soil quality)		Smallholding /large holding ratio	Arable (%)	Meadow (%)	Pasture (%)	Woodland (%)	Vineyard (%)	Reed (%)	Uncultivated (%)
sand IV	1	<i>138.17</i>	65.84	4.33	25.16	0.00	1.54	0.00	3.13
peat III	2	32.72	18.06	29.74	16.28	10.64	0.21	7.99	17.09
loess I	8	17.39	60.37	19.04	17.02	0.39	0.16	0.00	3.01
saline II	14	73.40	44.02	16.13	28.95	2.92	1.22	1.03	5.73
saline and sooty peat	1	<i>175.50</i>	34.91	29.17	21.47	0.47	0.84	2.31	10.83
saline and clay, V	2	<i>141.83</i>	37.98	12.40	31.62	3.86	3.17	0.42	10.55
saline and loess	14	52.28	59.89	9.44	23.21	0.94	0.64	0.78	5.10
Total	42	<i>61.32</i>	<i>51.20</i>	<i>14.96</i>	<i>24.02</i>	<i>2.06</i>	<i>0.87</i>	<i>1.06</i>	<i>5.83</i>

Source: Our calculations based on the 1858 soil map and the income data published in 1865 (area and income of Hungary by cultivation). The dominant land use pattern(s) have been highlighted by bold letters.

Table 8. The land use and quality of the land (in 1858) that functioned as *praedium* (non-urbarial, non-peasant plots) in 1790

Praedium	Soil quality 1858	Soil genetic type, 1858	Arable, %	Meadow, %	Pasture, %	Forests, %
Kígyósapáti pr. ⁴¹	2	saline	0.00	4.76	95.24	0.00
Nagykondoros pr.	1	loess	0.00	0.00	100.00	0.00
Nagy Csákó	1	loess	0.00	0.00	100.00	0.00
Kis Csákó	1	loess	0.00	0.00	100.00	0.00
Csorvás dominale ⁴²	1	loess	0.00	0.00	100.00	0.00
Csorvás comm.	1	loess	0.00	0.00	100.00	0.00
Eperjes pr.	1	loess	0.00	0.00	100.00	0.00
Szénás pr.	2	saline	0.00	0.00	100.00	0.00
Kis Kamut pr.	1	loess	100.00	0.00	0.00	0.00
Szt. Miklós pr.			100.00	0.00	0.00	0.00
Csejti Pr.	2	saline	0.00	0.00	100.00	0.00
Bélmegyer pr.	2	saline	0.00	55.03	40.46	4.51
Gerla pr.	3	peat	0.00	44.48	44.48	11.04
Ölyved pr.	3	peat	0.00	73.61	24.51	1.88
Királyhegyes pr.		loess	0.00	12.27	87.73	0.00
Apáca pr.	1	loess	0.00	0.00	100.00	0.00
Támás pr.	2	saline	0.00	40.20	24.87	34.93
Kis Péli pr.	5	clayey	0.00	24.97	75.03	0.00

The relationship between soil conditions and net cadastral land income can also be examined in 1910, since the genetic soil type can be considered a conservative property (at least for a span of 50 years), and the municipal net cadastral income is also available from 1883 and 1910 and even sorted even by type of land use. So, net income is available for different products (Table 9), which was not true of the survey done in 1865. The difference between loess-soils and clayey or salty solonetz soil is still remarkable, and estate size on loess remained extremely high in 1910.

41 Pr. refers to *praedium*, in this case that is economically exploited area without settlement (community) on it (Hungarian *puszta*).

42 Part of the settlement was owned by the landlord, the other part belonged to the community.



Figure 5. Overlay of the 1858 Békés-Csanád soil map with post-1886 settlement boundaries

Table 9. Differences in the net cadastral income per acre and per holding of settlements on different soil types, and the relationship between average holding size and soil type in 1910

Soil quality (settlements)	Total net cadastral income, 1865 K*/acre	Total net cadastral income, 1910 K/acre	Net cadastral income of woods K/acre	Net cadastral income of grape K/acre	Net cadastral income of ploughlands K/acre	Net cadastral income of pastures K/acre	Net cadastral income of meadows K/kat. hold	Average net cadastral income per one estate	Average estate size (acre)
clayey V (3)		12.41	3.80	16.87	14.26	2.85	6.16	243.49	18
sand IV (3)	11 (1)	20.56	8.47	23.17	20.61	9.21	12.04	128.93	6
peat III (4)	5 (2)	11.83	7.27	15.17	13.30	5.03	11.13	203.13	17
peat and saline (4)	4.5 (1)	10.06	8.44	13.34	11.44	3.10	7.21	<i>133.14</i>	<i>13,5</i>
loess (3/4)	12 (8)	16.85	5.44	21.34	17.33	7.25	8.29	5,828.85	295
loess and saline (2)	10 (14)	19.19	9.63	22.82	22.17	7.95	9.40	329.68	19
saline II (21)	7 (14)	11.95	6.16	18.85	13.50	4.35	6.20	315.00	24
saline and loess I and II (14)	10 (14)	23.26	6.26	17.51	18.15	4.96	7.56	<i>161.16</i>	<i>9,5</i>
Total: 85	<i>9 (42)</i>	<i>16.09</i>	<i>6.25</i>	<i>19.23</i>	<i>16.10</i>	<i>5.74</i>	<i>7.68</i>	<i>2,405.99</i>	<i>125</i>

* Calculated from forints. One forint = two kronen. Numbers in brackets indicate the number of settlements involved in the investigation in 1865. The sets of settlements in 1865 and 1910 are not identical, so any conclusions concerning changes in incomes should be handled with care.

Source: Our calculations based on the 1858 soil map and Arad / Békés / Csanád vármegye adóközségeinek területe és kataszteri tisztajövedelme.

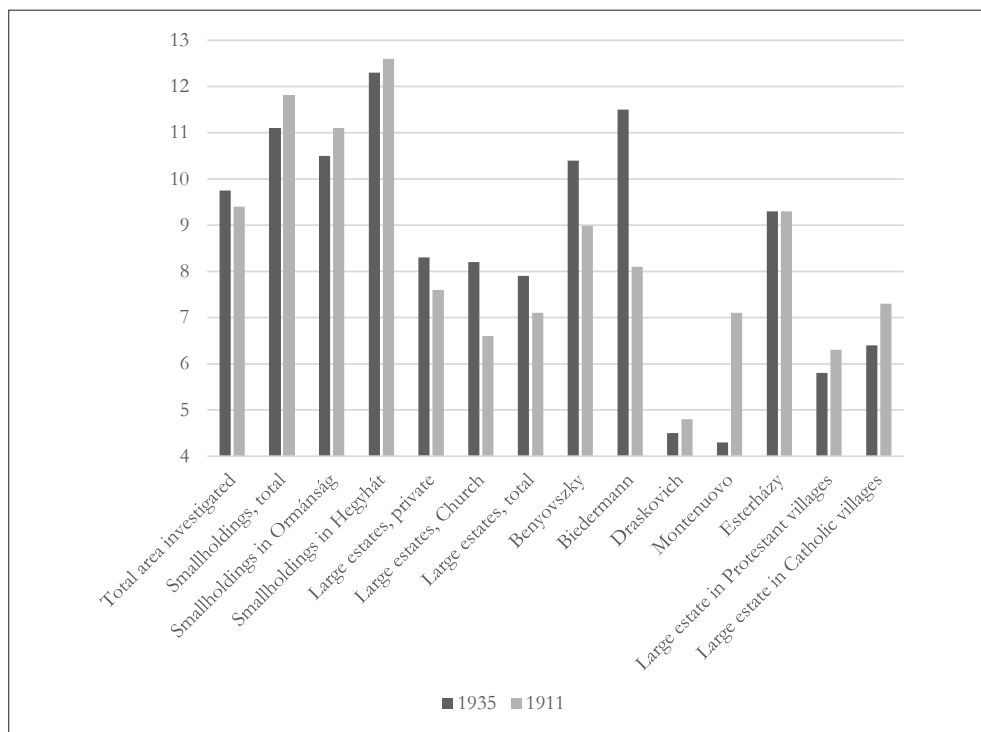


Figure 6. Differences in the net cadastral incomes of small and large estates of different types in 1935, expressed in golden crowns. (Demeter and Koloh, “Birtokstruktúra és jövedelmezőség.”)

By 1935, the positive trends in the net cadastral income of smallholdings in the Pécs region (southern Hungary) mentioned earlier (Figure 4) had also changed. The net cadastral income per acre of small estates fell from almost twelve crowns in 1911 to less than eleven crowns, while that of large estates rose to over eight crowns, and on the Biedermann and Benyovszky estates, the net income per cultivated acre of land jumped from eight or nine golden crowns⁴³ before World War I (Figure 6) to ten or eleven. This confirms that we have a spatially and temporally fluctuating phenomenon, which also depended on market volume, soil quality, and land use, in addition to technology and crop culture.

43 Whereas golden crown and kronen before 1910 meant almost the same, the new Hungarian currency after World War I, the pengő, had a different exchange rate. Therefore we use values expressed in golden crowns (real price instead of nominal price represented by pengő) in order to make them comparable with the prewar kronen (crowns) and to eliminate the effect of inflation.

Socio-Economic Characteristics of Estate Types (1890s–1930s)

The question of profitability is therefore not settled by the series of studies summarized above. Income alone, however, does not necessarily offer a precise means with which to classify a settlement (or the type of enterprise that predominates) as developed or underdeveloped, since the concept of welfare includes a variety of other dimensions (health, environment, cultural indicators, etc.). And as a large part of the income generated in settlements that were dominated by large estates did not fall into the hands of the agrarian producers, this indicator is therefore inappropriate for comparisons of welfare. If we want to check or reproduce Miklós Móricz's local-scale research for the whole country and investigate further the contradictory picture of large estates as either "oppressive" or "modern and profitable," other social, economic and demographic factors must be taken into account in addition to cadastral income (which is more an indicator of farming quality than of livelihood).

The GISa Hungarorum database⁴⁴ allows the reconstruction of the socio-economic-demographic conditions of the settlements dominated either by large estates or small farms for 1910. Since various indicators of development are also available (the Human Development Index, HDI at settlement level from 1910 calculated by Zsolt Szilágyi),⁴⁵ it is also possible to determine whether there was a correlation between general development levels and farm type in 1910. For this purpose, we extracted a list of large farms from the compendium compiled by Gyula Hantos (1926)⁴⁶ and the Farmers' Inventory (1897). The former provides statistical data on large estate types within the post-1920 boundaries of Hungary. The latter makes the entire area of the historical country available for analysis from an earlier period, but using different criteria and classifications of large estates. The Farmers' Inventory from 1935 provides further possibilities. First, it is possible to group the settlements according to the share of the large estates as a proportion of the total area of the given settlements, and second, it is possible to examine the difference in net cadastral incomes per acre between large estates and small farms in the 1920s, but only for the post-Trianon area of the state.⁴⁷

44 For the census data of 1910 in excel sheets, see: www.gistory.hu.

45 Szilágyi, *Az ismeretlen Alföld*.

46 Hantos, *Magyarország nagybirtok-térképe*.

47 In a separate study, the socio-economic-demographic indicators of villages in 1910 that were dominated by former tenants versus landless cottars are analyzed to examine the extent to which they differed from one another 60 years after the abolition of serfdom.

Based on Hantos' dataset from the 1920s (the postwar territory of Hungary) and the socio-economic indicators from the census of 1910, it was possible to distinguish aristocratic, non-aristocratic noble, ecclesiastic, etc. large estate types (above 100 acres), and one can also draw a distinction between large estates consisting mostly of arable land and large estates large estates consisting mostly of non-arable land. Using the socio-economic indicators from 1910, the several conclusions can be drawn, each of which I discuss below.

Natural reproduction rate (measured according to the proportion of the population under six years of age) was 1–2 percent higher on almost all types of large holdings than in the settlements dominated by smallholdings.⁴⁸ The situation was reversed for the population aged 60 and over, with a higher proportion on smallholdings (eight percent versus nine percent). The proportion of elderly people was lower on large farms dominated by arable land, indicating a larger workforce (i.e. people belonging to the work force were usually younger). In 1910, literacy rates on large estates of the noble, feudal, aristocratic, and non-feudal types were one to two percent lower than on small estates. This constitutes a significant change from circumstances in 1880, when literacy rates in the settlements dominated by smallholdings were markedly lower compared to the values in large-estate dominated settlements. Indeed, over the course of those three decades, literacy rates in settlements dominated by smallholdings increased by five percent points. Almost all large estates had 50 percent higher per capita net cadastral income than settlements dominated by smallholders (which is not surprising). The reason for this difference in per capita income clearly lies in the differences in cadastral income per acre, which was significantly higher on the large estates (10.6 vs. 8.6 kronen) than in settlements dominated by smallholdings. Since the amount of land per agricultural earner (including day laborers) was also higher on large estates, the difference in income per earner could be more than 50 percent on most large estates compared to small estates (except for Church and state-owned large estates, where the difference was smaller). The net cadastral income per acre was higher even on the large holdings that were dominated by pasture than it was on the smallholdings.

Death rates were also higher on large estates, as were birth rates. Migration gains were clearly more significant on large estates, with values up to two to

48 Differences were checked with a two sample t-tests. Hereafter, unless otherwise indicated, differences are defined as significant at $p=0.05$ significance level, which means that there is only a five percent probability of that the measured difference is insignificant (contrary to our assumption).

three times higher (Church and state-owned estates were the least preferred),⁴⁹ and in 1910, migration still provided a means with which to address rural overpopulation. On large estates, the death rate from measles, dysentery, and whooping cough was lower.

In terms of distance from the railways, large estates were usually closer than small estates, and the proportion of smallholders compelled to work as day laborers was also higher on large estates (not surprisingly). The quality of housing, on the other hand, was uniformly worse on large estates. In this light, it is particularly noteworthy that mortality from diseases influenced by housing conditions (such as tuberculosis and the commonly prevalent diseases mentioned above) was still lower on these estates. This was probably due to better access to health services in settlements dominated by large estates. The proportion of deceased who had received some medical treatment was also higher on large landholdings.

Finally, the HDI value calculated by Zsolt Szilágyi⁵⁰ for 1910 was also clearly better in the settlements dominated by large estates and was higher than the national average (Table 10). However, from the perspective of today's development levels and patterns, there is no connection between the present status of a piece of agricultural land as part of a periphery or core and the locations of former large estates. This means that much has changed over the course of the past century. (High development values were recorded in 2016 on former large estates, where the abundance of arable land was moderate around 1920, i.e. 50-75 percent of the cultivated land).

Based on the 1897 Farmers' Inventory (which included landowners with estates over 100 cadastral hold), we can draw conclusions for the whole country, not just for the post-Trianon area. Of the 12,600 settlements, 5,576 had no large landholdings and their complex development index was much lower than that of the settlements with large landholdings in 1910 (except the group of large estates less than 15 percent of which was arable land, i.e. they were dominated by forests or pasture). There was hardly any difference in the proportion of the population under six years of age in each group, and the same is true for the population over 60 years of age, in contrast to the results of our investigation using Hantos'

49 This did not necessarily mean that work opportunities and living conditions on the large estates were better. Rather, it was simply not possible to create new plots for smallholders at the time except by breaking existing estates into smaller fragments. This made migration a viable macro-social strategy. The populations of large estates were recruited from poor areas (such as Göcsej, Matyófold, and Szabolcs).

50 Szilágyi, "Regional differences."

Table 10. Characteristics of the socio-economic-demographic conditions in the settlements dominated by large estates in the statistics compiled by Hantos in 1926 on large estates (group averages)

Group	Estate	Population under 6 years 1910, %	Population above 60 years 1910, %	over 60 years old / under 6 years old	Average birth rate, 1901-10	Average death rate, 1901-10	Average natural reproduction rate, 1901-10	Population increase rate, 1901-10	Average migration rate, 1901-10	Whooping cough, scarlet fever, measles as a % of total deaths, 1901-10	Tuberculosis as a % of total deaths, 1901-10
large estates of non-nobles	33	17.27	8.32	0.50	37.86	24.04	13.82	74.77	60.96	3.86	16.17
aristocrats	182	16.39	8.10	0.52	37.52	24.08	13.44	73.20	58.99	4.09	14.79
clerical	51	16.28	8.83	0.57	38.33	25.43	12.90	63.61	50.71	4.36	14.53
state (urban)	40	15.73	8.17	0.54	35.57	24.96	10.61	91.30	80.70	3.58	15.18
corporate	3	19.37	4.98	0.26	41.34	21.12	20.22	68.17	47.95	6.00	11.91
foundation	9	15.86	9.03	0.62	35.30	23.68	11.62	98.81	87.19	3.01	16.50
noble	13	16.22	8.00	0.59	38.76	25.16	13.60	111.91	96.11	2.61	15.07
hereditary	20	17.63	7.59	0.45	39.76	25.16	14.60	68.45	53.85	4.66	15.36
all large estates	351	16.46	8.20	0.53	37.60	24.44	13.16	75.80	62.16	4.02	14.99
all municipalities of the country after Trianon	3,392	15.74	9.03	0.62	35.78	23.63	12.15	44.64	31.82	4.74	16.25
settlements without large estates	3,042	15.65	9.13	0.63	35.56	23.53	12.03	41.03	28.31	4.82	16.39

Group	Settlement wealth per capita, 1908, K*	Direct tax per capita, 1909, K	Settlement income per capita, 1909, K	Earners from population, %, 1910	Industrial earners from all earners, 1910, %	Tertiary earner in %, 1910	Literate in 1910, %	Literate in 1880, %	Increase in literacy rate (1880-1910) %	Average size of population 1910
large estates of non-nobles	34.09	23.79	8.58	39.09	9.79	16.33	63.43	45.60	17.83	5,665.21
aristocratic	29.72	20.20	7.35	39.27	11.25	15.36	64.84	44.84	20.01	5,100.73
clerical	37.09	19.60	6.97	38.70	9.32	13.33	65.93	45.50	20.43	5,408.08
state (urban)	46.29	10.76	4.19	41.37	17.58	27.70	66.96	49.17	17.79	41,761.78
corporate	9.86	34.79	5.43	37.56	6.08	9.50	59.44	36.68	22.76	2,944.33
foundation	41.73	23.45	6.23	40.09	9.12	14.18	67.15	51.70	15.45	9,236.22
noble	46.74	19.95	8.36	38.00	10.07	12.38	64.09	43.41	20.68	4,462.31
hereditary	19.96	24.50	6.25	38.07	9.27	15.62	61.83	44.43	17.40	4,368.45
all large estates	33.30	19.82	6.98	39.30	11.30	16.39	64.92	45.53	19.39	9,398.59
all municipalities of the country after Trianon	25.31	16.06	6.44	40.82	10.18	13.61	65.67	42.47	23.21	2,362.15
settlements without large estates	24.38	15.63	6.37	40.98	10.05	13.28	65.74	42.10	23.64	1,549.47

* Kronen

Group	Smallholders compelled to day laborers %, 1910	Cadastral income / agr. earner (K, 1910)	Cadastral income/capita (K, 1910)	Cadastral income per acre (K, 1910)	Cadastral income per estate (K, 1910)	Average estate size (acre, 1910)	Average estate size per one agr. earner (acre, 1910)	Direct tax / cadastral income in 1910
large estates of non-nobles	64.32	146.00	32.76	12.78	467.44	31.81	11.64	0.73
aristocrats	62.01	125.54	28.70	10.47	1945.19	275.39	12.35	0.70
clerical	62.17	95.39	25.05	9.61	124.52	12.74	9.66	0.78
state (urban)	59.47	96.31	18.88	10.14	4776.94	247.35	10.37	0.57
corporate	43.98	258.43	32.44	11.11	5986.46	430.17	20.42	1.07

Group	Smallholders compelled to day laborers %, 1910	Cadastral income / agr. earner (K, 1910)	Cadastral income / capita (K, 1910)	Cadastral income per acre (K, 1910)	Cadastral income per estate (K, 1910)	Average estate size (acre, 1910)	Average estate size agr. earner (acre, 1910)	Direct tax / cadastral income in 1910
foundation	58.01	127.40	33.31	12.00	263.55	21.74	10.75	0.70
noble	63.16	106.85	30.42	9.92	158.80	16.85	11.02	0.66
hereditary	60.43	159.60	31.05	10.93	1222.40	91.68	14.60	0.79
all large estates	61.66	122.18	27.78	10.57	1757.26	186.64	11.77	0.71
all municipalities of the country after Trianon	62.98	77.69	21.75	8.82	239.51	28.61	9.85	0.74
settlements without large estates	63.12	72.53	21.04	8.62	64.30	10.37	9.62	0.74

Group	Deaths, receiving medical treatment (1=100%)	Share of persons involved in home industry to total population, 1910	Infant mortality measured to deaths, avg. of 1901–1910 (1=100%)	Houses of bad quality material in 1910 (1=100%)	HDI in 1910 (Szilágyi 2019)	Territorial development index in 2010- (Pénzes 2014)	Distance from nearest railway station (m, 1890)
large estates of non-nobles	0.86	0.002	0.33	0.64	0.42	0.524	14,226
aristocrats	0.76	0.002	0.34	0.54	0.41	0.548	9947
clerical	0.74	0.001	0.32	0.68	0.41	0.576	14,138
state (urban)	0.87	0.002	0.31	0.54	0.43	0.616	7891
corporate	0.76	0.003	0.39	0.51	0.44	0.479	18,282
foundation	0.88	0.002	0.31	0.70	0.42	0.531	9542
noble	0.73	0.001	0.36	0.81	0.40	0.544	8090
hereditary	0.81	0.002	0.35	0.57	0.43	0.518	12,291
all large estates	0.78	0.002	0.33	0.59	0.41	0.588	10,850
all municipalities of the country after Trianon	0.48	0.002	0.32	0.46	0.38	0.568	11,768
settlements without large estates	0.44	0.002	0.32	0.45	0.38		11,870

dataset for the “reduced” interwar area in 1926. However, literacy rates were significantly higher in settlements with large estates dominated by ploughland (the opposite was true for the post-1920 country study). The improvement in literacy rates between 1880 and 1910 showed no significant difference between estate types (this also differs from the result of the statistical evaluation of Hantos’ estate list for the post-1920 country), showing an overall improvement of 20 percent (compared to the 5 percent increase in literacy rates in settlements found in the territory of post-Trianon Hungary). The proportion of deceased persons who had received some form of medical treatment was higher on large estates than on small farms. The rate of illegitimate births was high in settlements dominated by forest holdings and was below the national average in settlements with large estates dominated by arable land. However, these two mentioned types of large holdings were the most unfavorable in terms of settlement level infant mortality in 1910.

Settlement wealth per capita was also high for large estates over 75 percent of which was arable land, as was the value of direct taxes. This was similar for “smaller” large estates under 500 acres. Municipal incomes per capita were similar in all categories, except for large estates over 75 percent of which was arable land, where we find an outlier value. Large estates over 75 percent of which was ploughland and those with over 1,000 acres had higher birth rates, while there was no difference in the death rates between estate types. However, migration rates were high towards settlements with large estates dominated by forest and grassland and estates that were over 1000 acres, while in settlements with large estates dominated by arable land the rate of population growth from migration was below the national average. The death rates from scarlet fever, measles, and whooping cough were particularly high in settlements with large holdings dominated by pasture and forests and on large holdings under 500 acres, exceeding the average measured for villages dominated by smallholdings. (Again, this contradicts the results of the earlier study on a narrower area, suggesting that the difference is not really due to the size of the estate but to other, natural geographic and cultural causes, as was true in the case of the contrast regarding literacy described above.) In the case of tuberculosis, however, there was no such remarkable difference. The share of industrial earners was significant on extremely large estates and large estates dominated by pasture, forest, and ploughland, two percentage points above the share measured in settlements dominated by small estates. Large estates dominated by ploughland and estates over 1,000 acres were four and a half kilometers closer to railway

Table 11. The socio-economic and demographic development conditions in 1910 in the settlements dominated by the large estates on the basis of the 1897 Farmers' Inventory compared with the situation in settlements dominated by small farms

Large estate	Case number (settlements)	Composite development indicator of Demeter, 1910	Population below 6 years, 1910 %	Population above 60 years, 1910, %	Literacy rate, 1910, %	Increase in literacy in %, 1880–1910	Settlement wealth per capita in K, 1909	Direct tax per capita in K, 1909
under 500 kh*	2,215	0.407	16.017	9.010	50.505	21.908	35.400	12.143
500–1000 kh	1,308	0.719	16.293	8.703	53.434	22.551	30.277	14.214
above 1000 kh	3,559	0.995	16.190	8.347	56.065	21.998	28.373	15.274
average of all large estates	7,082	0.760	16.155	8.620	53.840	22.072	30.922	14.099
average of all settlements	12,658	0.513	16.022	8.814	51.554	21.774	30.760	12.836
all settlements without large estates	5,576	0.20	15.85	9.06	48.65	21.40	30.55	11.23

* Cadastral acre = 5570 m².

Large estate	Birth rate, avg. of, 1901–1910	Death rate, avg. of, 1901–1910	Natural increase avg. of, 1901–1910	Total increase, avg. of, 1901–1910	Migration rate, avg. of, 1901–1910	Measles, scarlet fever, whooping cough as a % of total deaths, 1901–1910	Tuberculosis as a % of total deaths, 1901–1910
under 500 kh	36.167	24.512	11.655	35.733	23.711	7.045	13.800
500–1000 kh	36.811	24.262	12.549	35.840	23.521	6.742	14.186
above 1000 kh	37.121	24.635	12.487	52.561	39.432	5.757	14.758
average of all large estates	36.765	24.527	12.238	44.209	31.576	6.342	14.353
average of all settlements	36.193	24.496	11.697	39.473	27.664	6.552	14.243
all settlements without large estates	35.47	24.46	11.01	33.46	22.70	6.82	14.10

Differences in Quality of Life and Profitability on Small and Large Farms (1730–1930)

Large estate	Agrarian earners from all earners, %, 1910	Industrial earners, %, 1910	Acre per 1 agrarian inhabitant, 1910	Population dealing with home industry from total population (1=100%)	Decrease in distance from railway station, 1890-1910	Distance from railway station (m) 1890	Literacy rate in %, 1880	Net cadastral income/capita, 1910, K	Direct tax/net cadastral income, 1910	Net cadastral income on 1 cultivated acre, 1910, K
under 500 kh	80.28	8.54	4.675	0.003	7559.2	16358.1	28.596	14.87	1.043	5.927
500–1000 kh	78.17	9.13	4.720	0.003	6384.2	14662.1	30.883	18.40	0.992	7.210
above 1000 kh	73.16	11.35	5.059	0.003	6280.5	13494.4	34.068	20.16	0.967	7.774
average of all large estates	76.31	10.06	4.876	0.003	6699.6	14605.7	31.768	18.18	0.995	7.092
average of all settlements	78.06	9.32	5.051	0.003	7141.4	15689.2	29.782	15.73	1.096	6.230
all settlements without large estates	80.29	8.39	5.27	0.00	7702.6	17065.4	27.26	12.62	1.23	5.14

Large estate	Population dealing with home industry from total population (1=100%)	Decreased receiving medical treatment, 1910 (1=100%)	Illegitimate births, avg. of 1901-1910 (%)	Infant mortality from deaths, avg. of 1901-1910 (1=100%)	Average estate size in acre, 1910
under 500 kh	0.003	0.314	8.649	0.294	11.128
500–1000 kh	0.003	0.359	8.743	0.303	12.031
above 1000 kh	0.003	0.487	9.475	0.312	34.375
average of all large estates	0.003	0.409	9.081	0.305	23.013
average of all settlements	0.003	0.345	9.000	0.298	22.343
all settlements without large estate	0.00	0.26	8.90	0.29	21.49

stations than small estates (again excluding large estates dominated by forest and grassland).

The share of smallholders compelled to work as day laborers approached the high value typical for smallholding villages only in the type of large holdings that were predominantly pasture. This may have been due to the fact that on the large holdings that were predominantly ploughland and on extensive large holdings *landless* day laborers were often the majority of the work force. Net cadastral income per capita was more significant on large holdings than on smallholdings (except for the large estates dominated by pasture or forests), supporting the notion that large holdings were more productive (though this still does not include data on livestock). For large holdings of over 1,000 acres 75 percent of which were ploughland, net cadastral income per acre was also notably high.

The significance of the 1935 Farmers' Inventory for the present investigation (as well as the inventory from 1910, which we did not use here) is that it allows us to determine the productivity of small farms. By aggregating the total area and total income of large farms by settlement given in the inventory and subtracting these values from the total income and total area of settlements published by the Central Statistical Bureau in 1935 we can calculate the unpublished cadastral income data for smallholdings. In addition, it is also possible to create groups based on the proportion of large holdings (as a percent of area) per settlement and calculate the socioeconomic indicators for these subsets, within the post-1920 state boundaries.

The share of large landholdings as a percentage of total cultivated land in 1935 was analyzed in the following subgroups: above 60 percent, 40 percent-60 percent and 20 percent-40 percent. 1,970 settlements had large estates of over 500 acres (a share usually higher than 60 percent of the total cultivated land of the settlements), 500 settlements had large estate(s) between 100 and 500 acres, and 275 settlements had only large estate fragments under 100 acres (here the share of large estates was usually less than 20 percent of the total cultivated land). Some 600 settlements had no large holdings at all on their administrative area. To sum it up, in 1935, 56 percent of the settlements had a landholding of over 500 acres on their territory (Table 12).

Despite the fact that the 1910 value of the historical HDI calculated by Szilágyi did not show significant differences between the estate types, this does not exclude the possibility that some of its components (HDI is composed of literacy rate, life expectancy, GDP/capita) did so—offsetting each others' effects.

Table 12. The value of socio-economic-demographic indicators (1910's census) in the sub-groups of the large landholding population, based on the categorizations used in the Farmers' Inventory (*Gazdaiintár*) in 1935

Estate type by size in acre (settlement number in brackets)	Settlement size (population), 1910	Average death rate, 1901–1910 (1=100%)	Population under 6, 1910 (1=100%)	State tax per capita (1910, K)	Crude death rate, avg. of 1901–1910	Literacy rate in 1910 among population above 6 years, %	HDI 1910 (Szlágyi, Zsolt, 2019)	Composite development in 1910 (composed of the single variables used here)
under 500 acres (502)	900.664	0.024	0.160	7.177	23.283	78.275	0.382	1.214
above 500 acres (1969)	3267.898	0.024	0.147	13.012	24.045	77.125	0.387	1.379
fragment (275)	1103.306	0.022	0.161	7.092	23.464	78.143	0.380	1.104
<i>All settlements' value</i>	<i>2611.682</i>	<i>0.024</i>	<i>0.149</i>	<i>12.388</i>	<i>23.845</i>	<i>77.440</i>	<i>0.385</i>	<i>1.321</i>

Estate type by size in acre (settlement number in brackets)	Average cadastral income of large estates, 1935, aK*	Average cadastral income of large estates per acre, 1935, aK	Proportion of estates under 1 acre, 1935 (1=100%)	Proportion of estates over 100 acre, 1935 (1=100%)	Average size of all estates inc. large landholdings (kh)	Total cadastral income of ALL estates in 1935, aK	Total cadastral income of smallholdings in 1935, aK	Cadastral income of smallholdings per acre in 1935, aK
under 500 acres (502)	2058.86	7.169	0.232	0.422	1409.34	11305	9100	7.299
above 500 acres (1969)	18,926.28	6.643	0.262	0.600	5519.81	47914	27,483	6.184
fragment (275)	262.19	7.534	0.277	0.197	1237.12	11149	10,829	4.935
<i>All settlements' value</i>	<i>14,047.96</i>	<i>6.830</i>	<i>0.258</i>	<i>0.526</i>	<i>4317.04</i>	<i>37281</i>	<i>22,403</i>	<i>6.264</i>

* Golden crowns instead of pengő to make data comparable with that in 1910.

However, there were no differences in mortality rates, neither within the large estate types nor compared to the national average (mortality rates were used as proxies to life expectancy missing from 1910). The proportion of the population under six years of age was one percent higher on settlements with large estates compared to settlements with no estates over 100 acres kh, and 1 percent higher than the national average. The direct taxes per capita, which functioned as the basis of the local municipal surtax (and was used as a proxy to substitute missing settlement-level GDP data by Szilágyi, were high on large estates of over 500 kh (direct taxes still applied to incomes from tertiary and secondary sectors, in addition to agrarian land taxes).

However, compared to the previous examinations, there is a significant difference in net cadastral income per acre. The net cadastral incomes per acre on large estates were lowest for large holdings over 500 acres in 1935. At the same time, the net cadastral incomes of small farms were also low, somewhat lower than that of large holdings, but this situation was reversed for holdings between 100 and 500 acres. Here, the net cadastral income per acre on a large estate was higher than on large estates over 500 acres, but the net incomes of smallholdings were even greater. In contrast, the cadastral incomes per acre of the fragmented large estates exceeded that of the other categories of large estates and was also higher than cadastral incomes on smallholdings, since the net cadastral incomes of the small estates were lowest here, in this category, where there were hardly any large estates anyway. In other words, the presence of large landholdings seems to have had a positive effect on the net cadastral income per acre of small landholdings too.

If the values of single variables are aggregated in one composite development index, the most undeveloped settlements were those where only fragments of large estates were found (less than 100 acres in 1935), while settlements with large holdings over 500 acres showed development levels above the national average (1.37). This sheds new light on Móricz's investigations concerning the welfare of the people who lived and worked on large estates in the interwar period.

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B. 156 A Csabai Cs. Kir. Vegyes Szolgabíróság iratai [Papers of Csaba

B. 202 Szarvas mezőváros iratai

B. 302 Document of Békéscsaba nagyközség iratai

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