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The Costs of Equal Land Distribution

Peter Berck * Amnon Levy †

*University of California, Berkeley
†Ben Gurion University of the Negev

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Peter Berck and Amnon Levy

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The authors are, respectively, associate professor of agricultural and resource economics at the University of California, Berkeley, and lecturer, Department of Economics, at the Ben Gurion University of the Negev.

THE COSTS OF EQUAL LAND DISTRIBUTION:
THE CASE OF THE ISRAELI MOSHAVIM*

Governments distribute or redistribute land to meet many goals including maximizing agricultural production and changing the distribution of income. Although preferentially distributing land to those with farming experience or relevant education increases output, it does not guarantee a desirable distribution of income. In such cases governments must weigh efficiency relative to equity in choosing policy options. Quantification of the trade-offs involved is thus essential for policy design. The United States faced this dilemma in the homestead and reclamation laws by allowing all citizens to obtain a limited amount of land. Early studies (Goldschmidt) showed that, where the resultant small farm was the rule, there were more social services, stores, etc. Later studies by Hall and LeVeen and Sonka and Heady confirmed that smaller farms did meet social goals at modest cost in terms of output loss. The intent of the more recent Chilean land reform was to give limited amounts of land to those with characteristics that made their economic success likely. Schultz believed the Chilean reform could have increased both output and equality, but see Jarvis for the actual outcome.

This study compares the production and distribution consequences of two hypothetical land-allocation rules to the equal land allocation rule actually used on the Israeli moshav. A moshav (plural, moshavim) is a cooperative village consisting of small, equal-sized family farms bound together by mutual aid and sharing of agricultural, financial, and marketing services. Although the government had many goals in establishing moshavim (some of them overtly political), the primary purpose seemed to be to make possible a reasonable standard of living for immigrants. Alternate land distribution policies may have greater output but possible adverse distributional consequences.

The next section presents a production function for Israeli family farms (organized either privately or in moshavim) that is dependent on farm and farmer characteristics such as nativity, schooling, and form of organization. It discusses how changes in the characteristics affect value added.

The third section evaluates the consequences for total income and income distribution of allocating land to achieve (1) maximum value added, (2) maximum value added without discrimination based on nativity-ethnicity, and (3) equal land allocation.

The last section presents the conclusions and relates this work to the growth before and after redistribution debate.

Production Function for Israeli Family Farms

Both physical inputs and managerial ability, a function of individual characteristics, determine farm output. This section estimates a production function based on these two types of inputs. First, the data are described; then a functional form is chosen and estimated; and, finally, the empirical production function is discussed.

Data

The Farm Income Research Institute provided a sample of 426 family farms in Israel for the year 1974-75. Table 1 presents definitions of the variables consisting of material inputs and outputs, four types of farmer characteristics (schooling, nativity-ethnicity, experience, and age), and settlement characteristics.

That land, labor, and other material inputs are determinants of output is well established. Similarly, schooling--the enhancement of human capital--should affect output. Settlement characteristics could affect output through

TABLE 1

Definitions of Variables

Variable	
	Material Input and Output
y	Value added on farm [1,000 Israeli pounds (IL)]
x_1	Farmland (cultivated dunams)
x_2	Farm labor (man-days per year)
x_3	Farm real capital (replacement value)
x_4	Annual endowment of irrigation water (cubic meters used on farm)
	Farmer Characteristics
	Schooling
D_{1s}	1 if the *s*th level was attained; 0 otherwise
D_{11}	Elementary
D_{12}	Secondary (agricultural)
D_{13}	Secondary (general)
D_{14}	College
	Nativity-Ethnicity
D_{2k}	1 if belonging to the *k*th category; 0 otherwise
D_{21}	Israeli-born, Oriental parents (Asian, African)
D_{22}	Israeli-born, Occidental parents (European and American)
D_{23}	European or American born
D_{24}	Asian or African born
FFE	Experience of farm operator (number of years of farm holding by present farming family)
AG	Farmer's age
	Settlement Characteristics
D_{3m}	1 if belonging to the *m*th category; 0 otherwise
D_{31}	Young moshav not supported by the Jewish agency
D_{32}	Young moshav supported by the Jewish agency
D_{33}	Private

their effects on risk sharing; crop choice; and, even, motivation. Nativity and ethnicity, while not directly contributing to an explanation of output, are proxies for access to credit; to quality of schooling; and, possibly, even to overt discrimination. These inputs were all incorporated in a production function.

Model

We model the production process as a monotone transformation of a fixed-proportion production function in the physical inputs, the transformation depending upon the farmer's managerial ability. This production function has an elasticity of substitution between physical inputs of zero where Sadan and Weintraub's earlier estimation assumed the elasticity of substitution was one. The problem with their specification is that it yields the empirical result that the marginal product of land is nil--a result unacceptable on *a priori* grounds. Our form also differs from the earlier work in that we treat the level of schooling as a set of discrete accomplishments--completing agricultural high school is different from completing academic high school--while the earlier authors treat schooling as the number of years completed. There are other minor differences as well.

In terms of the variables in Table 1, the production function is

(1) $$Y_j = \prod_{m=1}^{3} e^{a_{0m} D_{3m}} \left\{ \min[c_1 x_{1j}, c_2 x_{2j}, c_3 x_{3j}, c_4 x_{4j}] \right\}^{h_j} e^{u_j},$$

where h_j is the *j*th farmer's managerial ability, a linear combination of the farmer's characteristics,

$$(2) \qquad h_j = b_0 + \sum_{s=1}^{4} b_{1s} D_{1sj} + \sum_{k=1}^{4} b_{2k} D_{2kj} + b_3 \, FFE_j + b_4 \, AG_j + v_j .$$

The disturbance term, u_j, comes from the stochastic nature of climate and contains the effects of excluded variables such as the quality of physical inputs; and v_j are latent individual effects.

For purposes of estimation, ability was measured as deviation from the ability of Oriental immigrants with elementary schooling. Thus, b_0 is the ability of that group; and $\tilde{b}_{21}$, $\tilde{b}_{22}$, and $\tilde{b}_{23}$ are deviations from this level. For example, $\tilde{b}_{21} = b_{21} - b_0$.

Profit maximization implies

$$(3) \qquad c_1 \, x_{1j} = c_2 \, x_{2j} = c_3 \, x_{3j} = c_4 \, x_{4j};$$

so, the agricultural production function can be concentrated in a single physical input. Taking the log of equation (1), normalizing c_{2j} to 1, and substituting equation (2) for h_j in equation (1) gives the equation for estimation,

$$(4) \qquad \ln y_j = \sum_{m=1}^{3} a_{0m} D_{3mj} + \left[b_0 + \sum_{s=2}^{4} b_{1s} D_{1sj} + \sum_{k=1}^{3} \tilde{b}_{2k} D_{2kj} + b_3 \, FFE_j + b_4 \, AG_j \right] \ln x_{2j} + w_j ,$$

where

$$(5) \qquad w_j = v_j \ln x_{2j} + u_j .$$

Ordinary least-squares regression provides consistent (if not efficient) estimates of this equation if the explanatory variables are not correlated with the error term. (Hausman and Taylor provide a test for such correlation and a method to correct it, but their methods require cross-section time series data which are not available for Israeli family farms.)

Ordinary least-squares estimations and their t values are shown in Table 2. Comparisons of the effects of varying nativity, ethnicity, and schooling are summarized in Table 3. Comparisons among the first three regression parameters (a_{01}, a_{02}, and a_{03}) in Section A of Table 3 show that young moshavim unsupported by the Jewish Agency are more efficient than are other organizational types. In terms of farmers' income, *ceteris paribus*, the farmers on the unsupported moshavim earn 35 percent more than do their counterparts in supported moshavim or private farms. The degrees of collectivism, maturity, and aging of the settlements and the motivation of their members are possible explanation for these differences.

The value of schooling is contained in the next four parameters (see Table 2). Graduation from agricultural high school (b_{12}) increases annual income by 30 percent (significant at 5 percent level), and graduation from general high school (b_{13}) increases income by 13 percent (significant at 20 percent level). However, the two types of high school are not significantly different from one another (see Table 3, Section B). College education increases income by 18 percent (but there is no statistical significance, probably because of the small number of farmers with this level of schooling). Pre-high school managerial ability is significant and large, a not surprising result given the level of governmental intervention and advice available in the Israeli agricultural sector. In other social circumstances,

TABLE 2

Ordinary Least-Squares Estimates of Agricultural Production Function for 426 Family Farms in Israel

Parameter variable	Description of variables	Estimated value of the parameter	t Value
	Effect of settlement organization		
a_{01}	Young moshav not supported by the Jewish Agency	0.027373	0.213672
a_{02}	Young moshav supported by the Jewish Agency	-0.270057	2.097282
a_{03}	Private	-0.281825	1.996410
	Sources of managerial ability		
b_0	Initial managerial ability (pre-high school)	0.611734	13.475308
b_{12}	Agricultural high school	0.045710	2.078580
b_{13}	General high school	0.021525	1.421018
b_{14}	College	0.029022	0.528072
b_3	Family farming experience	0.001493	1.988445
$\tilde{b}_{21}$	Israeli-born Oriental	0.036649	1.252635
$\tilde{b}_{22}$	Israeli-born Occidental	0.059321	2.954988
$\tilde{b}_{23}$	Occidental immigrant	0.042986	2.538898
b_4	Farmer's age	0.000388	0.677517

TABLE 3

F Test of Contrasts among the Effects of Different Levels of Factors on Farming Performance

$$H_0 : \psi_i - \psi_j = 0$$

Type of contrast		Value of contrast	Rate of change in production[a]	Value of F test statistic F[b]	H_0 rejected[c]
			percent		
A. Differences in performance among types of settlement organization					
A.1 $a_{01} - a_{02}$		0.297430	34.6	10.154	yes
A.2 $a_{01} - a_{03}$		0.309198	36.2	7.920	yes
A.3 $a_{02} - a_{03}$		-0.011768	1.2	0.014	no
B. Differences in performance among agricultural high school graduates and general high school graduates					
B.1 $b_{12} - b_{13}$		0.024185	14.9	1.402	no
C. Differences in performance among nativity-ethnicity groups					
C.1 $\tilde{b}_{21}$	Within ethnic groups	0.036649	23.4	1.253[d]	no
C.2 $\tilde{b}_{22} - \tilde{b}_{23}$		0.016335	9.8	0.792	no
C.3 $\tilde{b}_{23}$	Between ethnic groups	0.042986	28.0	2.539[d]	yes
C.4 $\tilde{b}_{22} - \tilde{b}_{21}$		0.022672	13.9	0.614	no

(Continued on next page.)

TABLE 3--continued.

a/ The formula used is

$$100 \frac{Y(\hat{\psi}_i \mid \bar{x}_2) - Y(\hat{\psi}_j \mid \bar{x}_2)}{Y(\hat{\psi}_j \mid \bar{x}_2)}$$

where Y is the production function given in equations (1) and (2), $\hat{\psi}_i$ and $\hat{\psi}_j$ are the estimated values of the parameters in contrast, and $\bar{x}_2$ is the sample average value of labor (311.5).

b/

$$\hat{F}(\psi_i - \psi_j) = \frac{(\hat{\psi}_i - \hat{\psi}_j)^2}{\text{var}\ (\hat{\psi}_i) - 2\ \text{cov}\ (\hat{\psi}_i, \hat{\psi}_j) + \text{var}\ (\hat{\psi}_j)}.$$

c/ H_0 is rejected at the 5 percent level of significance. The contrasts between groups A.1, A.2, and C.3 are also significant at the 1 percent level.

d/ Figures represent t values; t tests were performed for the corresponding contrasts.

the effects of additional education would be stronger than those found for the Israeli family farms. Parameters $\tilde{b}_{21}$, $\tilde{b}_{22}$, and $\tilde{b}_{23}$ (see Table 2) reflect differences in motivation, quality of schools, and distribution of opportunities between nativity and ethnic groups. Contrasts C.1 and C.2 (from Table 3) show for ethnic groups that native farmers produce more than do immigrants; this is particularly true among Orientals where the native born produce 23 percent more than do the immigrants. Contrasts C.3 and C.4 show that opportunities are more uniform between ethnic groups for natives than for the immigrant farmers. The difference between the Occidental farmers' predicted income and that of their counterparts of Oriental descent has been dramatically decreased, from 28 percent in the immigrant group to 14 percent in the Israeli-born group.

Other findings from Table 2 include a positive effect of both experience and age, b_3 and b_4, respectively. For each year of age, the farmer's income increases 86/100 of a percent; and for each year of experience, 22/100 of a percent (not statistically significant).

For each of the eleven nativity, ethnic, and school-level groups in the sample (see Table 1), Table 4 presents the number of participants and managerial ability (total input elasticity of value added). The elasticities varied from 0.65 to 0.76. The next section describes how these differences affect the distribution of income and the potential for higher output.

Evaluation of Three Land-Distribution Policies

Land can be distributed among settlers equally, as is now the case on Israeli moshavim, or it could be distributed to maximize the value added to the settlement. The cost of maximizing value added is an increased inequality of

TABLE 4

Number of Participants (n_i) and Estimated Managerial Ability ($\hat{h}_i$) by School Level and Nativity-Ethnicity[a/]

Number of participants and estimated managerial ability	School level: Elementary school	Agricultural high school	General high school	College
		Oriental immigrants		
n_i	166	b/		
$\hat{h}_i$	0.652646			
		Israeli-born Orientals		
n_i	7	7	7	
$\hat{h}_i$	0.689295	0.735005	0.710820	
		Israeli-born Occidentals		
n_i	16	14	53	3
$\hat{h}_i$	0.711967	0.757677	0.733492	0.762514
		Occidental immigrants		
n_i	42	20	91	
$\hat{h}_i$	0.695632	0.741342	0.717157	

a/ Value from equation (2) with all other variables evaluated at sample mean.

b/ Blanks indicate zero or negligible.

income and, most particularly, a decrease in the income of those with the least skills. Using predictions of value added from the production function in the last section, this section describes the distribution of income and the total income that results from three land-allocation policies: land allocated equally among all households, land allocated to maximize total value added, and land allocated to maximize total value added without explicit consideration of nativity or ethnicity. First, this section describes the land-allocation problem; then it presents the results of the simulations; and, finally, it evaluates the resultant inequalities with Gini coefficients, Theil's Information Theory Index, and Lorenz curves.

The simulations allocate land in efficient settlements to settlers similar to those of the estimation sample. A total of 22,495 dunams of land, the amount farmed by the sample settlers, is divided among 426 hypothetical settlers who have the same average, variance, and covariance of characteristics as do the sample settlers. Table 4 describes these simulation participants. The first number in each cell is the number in the nativity-ethnicity and schooling group, n_i; the second number is the estimated managerial ability, $\hat{h}_i$, of that group. For the simulation, all land is assumed to be in efficient settlements, which are young moshavim not supported by the Jewish agency.

In order to perform these simulations, the estimated agricultural production function is concentrated in land. Since the production function has fixed proportions, its conversion from concentrated in labor to concentrated in land is done by substituting $x_2 = cx_1$ into the estimated agricultural production function, equation (4). The constant of proportionality, c, is the ratio of the sample average values of labor and land, 5.9.

When land is allocated equally, each farmer receives 52.8 dunams; the total value added is IL 24,076,000. The first entry in each cell in Table 5 gives the per household value added by nativity, ethnicity, and schooling for this allocation of land.

When land is allocated to maximize value added (the efficient solution) the allocation for each group is different. To find this allocation, choose the amount of land each nativity-ethnicity-schooling group receives, $x_{1\,1} \ldots x_{1\,11}$, to maximize total value added,

$$(6) \qquad \sum_{i=1}^{11} n_i \, e^{\hat{a}_{01}} (c\, x_{1i})^{\hat{h}_i},$$

subject to the constraint

$$(7) \qquad \sum_{i=1}^{11} n_i \, x_{1i} = 22{,}495 \text{ dunams.}$$

The first-order conditions for this maximum imply

$$(8) \qquad x^*_{1i} = \left[\frac{R^*}{e^{\hat{a}_{01}} \, \hat{h}_i \, c^{\hat{h}_i}} \right]^{\frac{1}{\hat{h}_i - 1}}$$

for all i = 1, . . ., 11. The variable, R, is the Lagrange multiplier, the shadow rent of land. The solution was found by iterating over R until the land constraint was just satisfied. The second entry in each cell of Table 5 gives the per household value added by group for this efficient land allocation.

TABLE 5

Per Family Farm Value Added by Nativity, Ethnicity, and School Level

Land allocation	Elementary school	Agricultural high school	General high school	College
	School level (Israeli pounds (IL))			
		Oriental immigrants		
Equal	43,576[a/]			
Efficient	19,493[b/]			
Efficient non-discriminatory	23,702[c/]			
		Israeli-born Orientals		
Equal	53,782	69,922	60,857	
Efficient	37,453	110,055	59,558	
Efficient non-discriminatory	28,269	146,445	76,608	
		Israeli-born Occidentals		
Equal	61,259	79,642	69,317	81,885
Efficient	61,171	219,399	105,553	258,658
Efficient non-discriminatory	31,525	170,651	87,901	269,508
		Occidental immigrants		
Equal	55,775	72,513	63,111	
Efficient	42,632	131,812	69,228	
Efficient non-discriminatory	29,144	152,842	79,610	

a/ Value added per family in equal land allocation.

b/ Value added per family in efficient land allocation.

c/ Value added per family in efficient nondiscriminatory land allocation.

Finally, when land is allocated efficiently without discrimination overtly based upon nativity or ethnicity, there is, again, a wide divergence in value added among participants. These values were calculated by the same method as was the efficient land allocation except that all participants with the same schooling were constrained to have the same land allocation. The bottom row of Table 5 gives the value added for this allocation method.

The gains from allocating land efficiently, with or without overt discrimination based upon nativity and ethnicity, are quite small. The value-added maximizing allocation gives 7.3 percent more output than does equal allocation. Prohibiting discrimination causes a loss of only 1.05 percent, so a maximizing allocation without overt discrimination produces 6.25 percent more output than does equal land allocation.

These modest gains in production come at the expense of greatly increased inequality measured by Gini coefficients, Lorenz curves, Theil's Information Theory Index, or the Rawl's criteria. Starting with the Rawl's criteria, Table 6 shows that the least well-off participants, Oriental immigrants with elementary schooling only, would lose more than two-thirds of their land if allocation were efficient. Prohibiting overt discrimination would not help much; because elementary schooling is so highly correlated with Oriental immigrant status, farmers would then lose 60 percent of their land. The result of either of these value-added maximizing land allocations (See Table 5) is that the poorest group would lose about half of its income. Since value-added maximizing land allocations impoverish the poorest, they fail the Rawl's criteria.

The Lorenz curves (Figure 1) show that smaller percentages of all farmers receive larger shares of the total income in the more efficient land allocations. For example, with equal allocation of land, the top 10 percent of the

TABLE 6

Land Allocated by Nativity, Ethnicity, and School Level

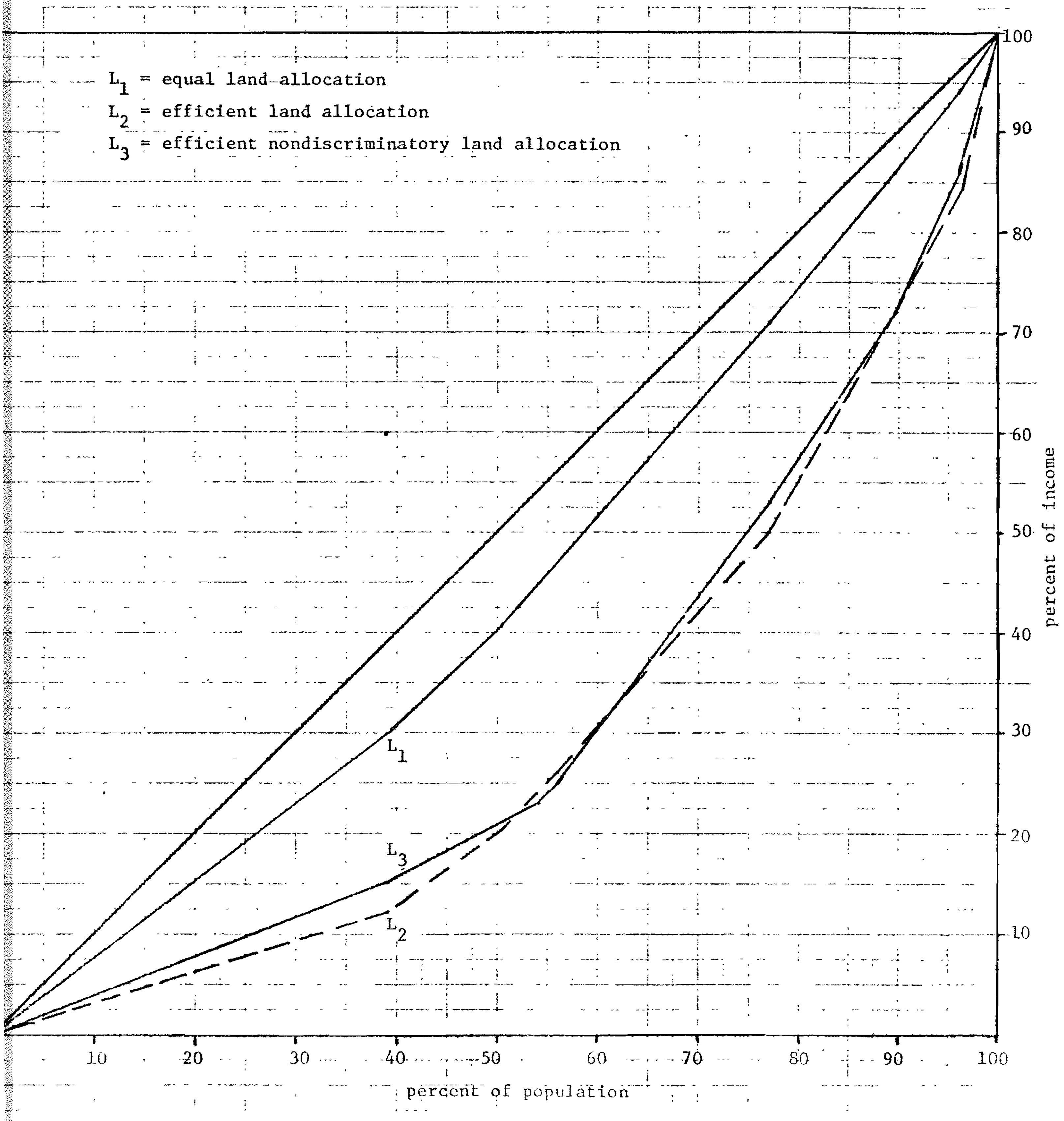
Land allocation	School level: Elementary school	Agricultural high school	General high school	College
	dunams			
		Oriental immigrants		
Equal	52.8a/			
Efficient	15.39b/			
Efficient non-discriminatory	20.77c/			
		Israel-born Orientals		
Equal	52.8	52.8	52.8	
Efficient	31.24	97.87	51.22	
Efficient non-discriminatory	20.77	144.37	72.99	
		Israeli-born Occidentals		
Equal	52.8	52.8	52.8	
Efficient	52.69	201.13	93.67	238.63
Efficient non-discriminatory	20.77	144.37	72.99	252.07
		Occidental immigrants		
Equal	52.8	52.8	52.8	
Efficient	35.88	118.23	60.07	
Efficient non-discriminatory	20.77	144.37	72.99	

a/ Farm size in equal land allocation.

b/ Farm size in efficient allocation.

c/ Farm size in efficient nondiscriminatory allocation.

Figure 1. Cumulative Income Distribution



population receives 13 percent of the income; with efficient land allocation, that same group receives 27 percent of income--a much higher percentage and, since total income has increased, an even larger absolute amount.

Similarly, the Gini coefficient of income inequality under uniform land allocation is 0.113; under production-efficient land allocation with and without discrimination based on nativity-ethnicity it is 0.401 and 0.376, respectively. Again, efficient distribution of land significantly increases inequality among farmers.

Finally, Theil's information theory index of income inequality was computed for each case. This measure of inequality decomposes the total inequality into the components attributable to ethnicity, i, nativity, j; and schooling, k:

$$
\begin{aligned}
I_{ijk} = {} & \sum_{i=1}^{2} y_i \log \frac{y_i}{n_i} + \sum_{j=1}^{2} y_j \log \frac{y_j}{n_j} + \sum_{k=1}^{4} y_k \log \frac{y_k}{n_k} \\
(9) \qquad & + \left[\sum_{i=1}^{2} \sum_{j=1}^{2} \sum_{k=1}^{4} y_{ijk} \log \frac{y_{ijk}}{n_{ijk}} - \sum_{i=1}^{2} y_i \log \frac{y_i}{n_i} \right. \\
& \left. - \sum_{j=1}^{2} y_j \log \frac{y_j}{n_j} - \sum_{k=1}^{4} y_k \log \frac{y_k}{n_k} \right],
\end{aligned}
$$

where y_i is the income share of the population in ethnicity group i. Similarly, y_j and y_k are the income shares of the nativity and schooling groups, respectively. The income share of those in the intersection of the ith ethnicity group, the jth nativity group, and the kth schooling group is y_{ijk}. The percent of the population in the various groups is denoted by n_i, etc. The first term in the formula represents the income inequality index between Occidental and Oriental farmers; the second term is the inequality between Israeli-born and non-Israeli-born farmers; the third term is the inequality between farmers with different levels of schooling; and the remaining terms are interaction terms. The results of this decomposition model show that income inequality is highest between farmers with different levels of schooling and that income inequality in all classifications, as well as total inequality, is increased by a shift from a policy of uniform land allocation to a policy of production-efficient land allocation (see Table 7).

Conclusions

The losses from allocating land on moshavim equally are low; and, in terms of inequality, the costs of doing otherwise are high. The efficient land-allocation output, which is 7 percent higher than the output resulting from equal land allocation, comes only at the cost of halving the income of the poorest farmers. The less-drastic (and more socially acceptable) policy of allocating land according to schooling but not according to nativity or ethnicity still has modest output gains and impoverishment of the poorest. Thus, more efficient distribution of land among current landholders is not an attractive policy.

From the regression equation, closing the educational gap between new Oriental migrants and established Occidentals leads to a large increase in their total income and a decrease in their inequality. Table 5 shows that the value of a general high school education is about IL 7,000 per year while agricultural high school is worth IL 16,000. Thus, if the Oriental immigrants had a high school education, they would receive only slightly less than the other groups receive without high school education; and, if they received agricultural high school education, they would receive the same or more than other groups received without that education.

TABLE 7

Theil's Information Theory Index of Income Inequality for Three Land-Allocation Schemes

Index of income	Land allocation: Uniform	Efficient	Efficient without discrimination
Income inequality between Occidental and Oriental farmers	0.0065	0.0647	0.0445
Income inequality between Israeli-born and immigrant farmers	0.0028	0.0439	0.0216
Income inequality between farmers with different levels of schooling	0.0071	0.0992	0.1080
Interaction terms	-0.0075	-0.091	-0.0651
Total index (I_{ijk})a/	0.0089	0.1168	0.1090

a/ Where i = ethnicity, j = nativity, and k = schooling.

While the increased equality attendant on high school education for Oriental immigrants may be valuable to Israeli society, the cost is high and the benefits are uncertain. At a real interest rate of 5 percent and assuming that high school attendance precludes all other productive activity for four years, the present value of the general high school education is an IL 47,000 loss while the present value of an agricultural high school education is an IL 101,000 gain. On these purely financial grounds, education in agricultural high school is the preferred policy for raising incomes and creating greater income equality. However, as with all prescriptions for investment in human capital, there is the possibility that the actual education received in agricultural high school is not the cause of the differences in income. There is the danger that high school education is a signal for other attributes of human capital that cannot be taught in four years. More fundamental characteristics of human capital may determine ability, desire to finish high school, and success in farming. In the latter case, paying settlers to finish agricultural high school will do little or nothing to improve the distribution of income. On this matter, our data are silent: there are no immigrant, Oriental, agricultural high school graduates.

In this study we concluded that redistribution of land among the resident farmers would only slightly increase their income. However, if more land were available for better educated potential farmers, better educated people from other sectors of the economy might apply for and receive plots in moshavim. For example, the potential income of a college-educated Occidental native triples if land is allocated efficiently (with or without discrimination based on nativity-ethnicity). As there are only three such people in the sample, they have little effect on total income, sample composition held constant.

If, instead, one views these results as an offer curve for the farming sector, then one would expect that tripling the offer would make a substantial difference in the educational composition of the farm sector. Human capital would be drawn from other sectors of the economy, and production would increase.

In conclusion, distributing land equally before further growth and investment take place leads immediately to a more equal distribution of income than do the alternative efficient allocations. Over time, as the older generation of farmers retires and is replaced by their children--who, presumably, will enjoy the advantages of schooling and nativity--the differences in income among settlers will all but disappear. Thus, as Adelman hypothesized, equal distribution of land before growth has a small immediate cost and an even smaller present-value added cost. If it were possible to distribute human capital, as well, the costs would be even smaller and the equality greater.

Footnotes

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