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The recent consumer dissatisfaction with food supplies in the Soviet Union and Eastern Europe points out both the success and the failure of the last two decades' agricultural policies. On the successful side, output has risen more than 40 percent between 1960 and 1978, with the highest success in Hungary, where grain production grew by more than 80 percent.¹ On the other side, these achievements took place only with rapidly rising costs, which increased more than 50 percent during the same period.² This resulted in a familiar price-cost squeeze and the socialist governments have subsidized agricultural prices to cover costs. Thus the consumers want more food than can be provided only by increasing the subsidies and their fiscal burden.

The politics during economic development often give rise to this policy dilemma, between increasing food subsidies or increasing food prices, which has been called a conflict between the politics of distribution and the politics of production.³ The distribution politics mandate low food prices for urban consumers: the production politics, high wages as an incentive for farm workers.⁴ The agricultural subsidies accommodate both political groups but become increasingly burdensome as output increases, and they generate a search for lower costs. Anomalously, for a socialist economy, the search has led to the pricing of agricultural land.

One incentive for the examination of land value is the declining ratio of arable land per capita, i.e., less land must feed more people. In Poland, for example, the arable land per person in 1970 was only 80 percent of its level in 1955.⁵ This does not mean that the land per agricultural worker also was falling, for indeed it has risen in Eastern Europe because new mechanical technology allows a worker to farm more land; Poland is the only exception.⁶

Another incentive for the study of socialist land value is the complex of functions that a land price serves. While a land price reflects land scarcity, it serves other special purposes in a market economy. First of all, it is an asset value and a means of transfer or exchange of the asset.⁷ Largely for Marxist reasons (often associated with the politics of distribution), socialism abolished or diminished the asset-owning class, truncated its wealth entitlements, and limited its earnings to those from labor. Land ownership was nationalized only in the Soviet Union, but in the other East European countries the difference is more nominal than real.⁸ Even in Poland, where the ownership of agricultural land is ostensibly "private," a transfer is effectively limited to inheritance. If there is no direct heir, the ownership reverts to the state.⁹

Nevertheless, a socialist ownership of agricultural land created an allocation problem that has been previously explored only for capitalism. It separated ownership from control.¹⁰ It abolished the landowner as a decision-maker and replaced him with a planner. The planner in socialist agriculture faces complex choices involving the land, such as investment (and its financing), an optimum farm size, and the allocation of land between uses: between cropland and housing, between corn and cotton. A private owner would decide by implicitly maximizing land rent and his decision would be economically efficient because the land would be allocated to its highest valued use.¹¹ The socialist owner has no such easy criterion because the land rent was abolished with the land price.¹² The purpose of the current valuation schemes is to restore the land rent, but only for allocation decisions.

One step toward a socialist land price occurred with the recognition that land of higher quality creates a rent for its user, with the consequence that equal farm workers may receive unequal incomes depending only on the quality of the soil. A scholar in the Ukraine has estimated that the difference in income that was unrelated to work effort rose as high as 100 percent.¹³ In resolving this problem, the land rent was not made explicit nor was it attached to the land, but was deducted from the money prices paid to farmers for government purchases. Prices were differentiated by procurement zones, a practice of the Soviet Union and Eastern Europe.¹⁴ The land rent implicit in gross crop revenues is difficult to calculate exactly; too high a rent extraction inadvertently taxes labor effort but too low rent creates a subsidy and distribution inequities. Over time, the number of prices and zones has proliferated and the differentials have become greater.¹⁵

Nonetheless, the zonal pricing of crops reflects the politics more of distribution than of production. It gives farmers income, but no new incentives to use good land for a more valuable crop. All land still seems free, so that the price of the good land is the same as for all others. More important in a planned economy, the planner sees no differences in land value either and freely shifts productive farmland out of agriculture to factories, urban housing, airports, and hydroelectric dams. Soviet economists have estimated that irrational use of land in the location of buildings loses one billion rubles annually, at least 0.5 percent of the Net Material Product.¹⁶ In fairness, this problem is not only that the socialist planner is pro-industry. Since the good farmland includes public investments (roads and such) that also are valuable in industry and housing, it often is converted to urban use in private markets when the less fertile land with new roads would have been equally useful for housing and spared agricultural production as well.¹⁷

Treating land as "free" fails to acknowledge its value and scarcity as a factor of production. The omission is by no means rare; e.g., input-output tables include only the factors of labor and capital. The omission of land is most misleading in the analysis of agriculture where land looms so large and irreplaceable an input. At the macroeconomic level, some prices have been suggested to account for land's imputed share of income. Abram Bergson, in estimating the Soviet national income at factor cost, entered land at the same share of farm earnings as the United States in 1946.¹⁸ More recently, some Soviet authors have calculated a similar number and their result is surprisingly close to that of Bergson. Bergson estimated that 32 percent of farm earnings could be attributed to land in the Soviet Union; Onishchenko estimated that the share in the Ukraine was 27 percent.¹⁹ These aggregate estimates are useful in macroeconomic analysis, but do not assist at all the evaluations to be made at the microeconomic level where land is allocated to a use.

Establishing a microeconomic land value is an extraordinary undertaking because the number of uses and users (actual and potential) surely is infinite and the characteristics that give value to the land are undoubtedly numerous. Understandably, some simplifications were introduced. In all of Eastern Europe, the first step was an inventory and a registration of land users and their holdings.²⁰ Aerial surveys provided some considerable technical assistance in this process. The urban and industrial zones were separated from the agricultural areas. Ordinarily this work was directed by geographers and it is analogous to a land title system where the ownership is private, as in any economic system the measurement and legal description of land is indispensable to agricultural modernization and development.²¹

The land registration system was a part of a more extensive cadastral survey, which add a soil-climate analysis and then an economic valuation.²² The soil-climate taxonomy of agricultural zones is complex, as an example from the Soviet cadastral survey will illustrate.²³ First, the agricultural land is assigned to a "belt" based on temperature and separated into cold, temperate, or warm. Then it is assigned to one of fourteen "zones" based on the balance of temperature and water, and the prevailing soil type, such as the "forest steppe" zone. From this are defined 44 "provinces," with sub-zones based on microclimate (e.g., for early, middle, or late maturing of crops) and sub-provinces based on relief (level, valley, mountainous). (Five mountainous "oblasts" are a separate category.) This taxonomy numbers about 350 categories and establishes the agricultural zone-pricing scheme mentioned above, It is now more or less complete.

This complex taxonomy has been simplified and synthesized into technical values measured in units (ball), usually with a range of zero to 100 but occasionally with an open range. Although a central administration instruction imposes some common requirements, each administrative sub-unit devises its own qualitative scale and they vary widely.²⁴ The ball measures often are used in research projects that require a land quality variable, e.g., in an analysis of conditions for establishing an industrial complex.²⁵ This complex qualitative evaluation system (bonitirovka) is neither recent nor socialist, but several centuries old. Its antecedents are the land tax assessments of earlier empires.²⁶

Perhaps because of these suspect antecedents, the bonitirovka measures have not been used as a land price in money terms. The economic evaluation of agricultural land has relied little on this vast technical study and the cadastral taxonomy but more on the variants of yield (output per hectare).

Using yield as an economic indicator requires troublesome decisions as to "which crop," "whose yield," and "what price of crop." While the administrators again show considerable local option and diversity, most have chosen their major crop to value their land: food grain for people (a "wheat" unit) or feed grain for animals (an "oat" unit). Most use the yield of an average producer as a numeraire, but a few have valued land by the yield of an experimental farm or a hybrid seed producer.²⁷ The price to value the yield (and to compare the wheat land value with the oat) presents a difficult choice because all agricultural prices reflect inversely the rent of the land that they are to value.

This circularity has encouraged a number of proposals for alternate land values, and three schools of thought will show their diversity.²⁸ One school would value land by its revenues per hectare, but this procedure draws the same criticism as before, because the revenues depend on the zonal prices that extract land rent. A second school would value land inversely by its cost per hectare for a given yield, with the justification that the land's value is its ability to save other inputs, especially labor. Since "cost" in the Soviet economy has several definitions, this measure has several complicated versions; there also is disagreement as to whether land itself is a cost. Finally, some propose that agricultural land should be valued by the cost of its replacement, as in the clearing of forest, the restoration of open mines, and the like.

This last, the replacement concept of agricultural land value, has the virtues of simplicity and reason. The idea was first proposed by G. P. Wibberley for the United Kingdom and later migrated to Eastern Europe.²⁹ Wibberley, concerned about Britain's vanishing food supply as cities sprawled over the best agricultural land, argued that the market and the city planners valued this land inappropriately. He proposed a new land value based on the concept of "food replacement," a simplified derived demand.

Food replacement, Wibberley argued, could come from several sources, each giving a different value to the land lost to urban sprawl. First, the land itself could be replaced, and Wibberley calculated value from the cost of reclaiming land from the sea, from forests, from abandoned mineral works (gravel pits and open mines). The third school listed above uses such a measure for valuing the land lost to large water projects. These lands are all new to agricultural production and at the extensive margin of production. Wibberley calculated as well the food replacement cost of the more intensive use of existing farmland by the addition of purchased inputs. G. Szabo has used such a concept in his valuation of farmland in Hungary by fertilizer cost.³⁰ Finally, Wibberley calculated the food replacement cost of new producers on heretofore uncounted land: household production in domestic gardens and imported food from abroad. Corresponding equivalents from Eastern Europe have not been published but surely exist implicitly.

In the broader context of the whole economy, agricultural land has value not only for its fertility and other natural characteristics ("Ricardian" land rent) but also for its location ("von Thunen" land rent). Focusing only on the fertility of individual farms omits the locational rent, and the land prices discussed above include none. This omission is significant because location value often is half of land value in a market economy.³¹ A major reason is the cost of transportation, and identical product from two locations will differ in net value at market when one requires less transport than the other.³² One method of valuing location is to attribute this difference in product value to the location portion of a land price.³³ Although one Soviet study has drawn this inference, it attributes the differential value to labor, not land, and studies only a few farms.³⁴

Location rent and Ricardian rent will coincide when people (reasonably) locate themselves near the fertile land.³⁵ Further, Martin Katzman has shown that the agricultural land near a population center is more fertile because more is invested in it.³⁶ In part, this occurs because the land is closer to the manufactured inputs for farming that are made in urban factories. Taken together, these imply that the location value of agricultural land is correlated with the density of population. In a simple test of this hypothesis, a Soviet land value based on Ricardian methods was correlated with population density.³⁷ The two were positively correlated (+0.52). When evaluated at the means, they implied an elasticity of land value with respect to population density of about three. Thus the omission of location rent from the land prices is not serious as it appears.

Although agricultural land prices have been established in both the Soviet Union and East Europe, they have been used primarily in East Europe. The primary use is to compensate farms for land withdrawn from production. Probably the first actually to require payment for the land taken out of agriculture was the German Democratic Republic in January 1968.³⁸ The average price then was 5000 marks per hectare (about 2.5 acres). It was discounted by 25 percent if the new user built roads or other public facilities. In Poland, the average price of arable land is 15,000 zlotys with differentials for fertility classes.³⁹ Romania has no land prices but the government imposes a "fine" of 5,000-50,000 lei (depending on land quality) if agricultural land is diminished in quantity or quality.⁴⁰ The Soviet Land Code (1968) established a similar obligation to pay but I am told that it seldom is imposed.⁴¹ Although these price schemes influence the allocation of agricultural land between sectors, they do not necessarily guide planning within agriculture. Some Eastern European countries have introduced a direct land rent for this purpose.

In the German Democratic Republic, the maximum land rent is 300 marks per hectare per year; the minimum rent is actually a subsidy up to 150 marks per hectare per year.⁴² In Poland, there is a land tax resembling a rent that depends on soil fertility (6 classes) and land use. Other East European countries charge only an indirect land rent. Czechoslovakia imposes an income tax on production value that exceeds 1500 kroner per hectare. Bulgaria also imposes an income tax. The contribution to allocative efficiency of these user charges is probably minuscule since a choice of land use in response to price often is not possible.

A decade ago, an American geographer wrote of the Soviet Union: "Wanted: An Effective Land Use Policy..."⁴³ This need remains indispensable for expanding East Europe's food supply, and the agricultural land prices were established to meet that need. Their future and success are unknown. The prices are artificial and rather like the shadow prices used for public sector decisions in a market economy. One practitioner believes that shadow prices cannot be implemented in a socialist economy because it has no market to approximate, and his pessimism bodes ill for the future of these prices.⁴⁴ The prices also seem so far to be more like a tax than an allocative tool, in part because output plans cannot respond to the land prices. This is an empirical question that awaits testing. The socialist scholars themselves dispute whether the constructed land values should be a part of the farm's assets or simply a tool for planning.⁴⁵ The prices weigh in the politics of distribution but their weight in the politics of production is unmeasured.

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