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## SIMON BRAND MEMORIAL ADDRESS

### THE TRANSITION OF EASTERN EUROPEAN AGRICULTURE: THE CHALLENGE FOR AGRICULTURAL ECONOMISTS

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#### 1. INTRODUCTION

In his Journal of Economic Perspectives 1996 "Distinguished Lecture on Economics in Government: Big Bills Left on the Sidewalk: Why Some Nations are Rich, and Others Poor", Mancur Olson (1996, p. 19) has demonstrated that "the large difference in per capita income across countries cannot be explained by differences in access to the world stock of productive knowledge or to its capital markets, by differences in the ratio of population to land or natural resources or by differences in the quality of marketable human capital or personal culture". He adds that "neither the old nor the new growth theory leads us to expect either the observed overall relationship between the levels or rates of growth of per capita incomes or the way this relationship has changed as the absolute gap in per capita incomes has increased over time" (p. 21). Olson, therefore, comes to the conclusion that "the only remaining explanations of the international differences in the wealth of nations are mainly due to differences in the quality of their institutions and economic policies" (p. 19).

If we need any empirical evidence for Olson's conclusion, the collapse of the Soviet Union and its satellites has convincingly demonstrated the basic truth of Olson's perception. Having radically abolished the capitalist institutions and replaced them by a system transferring individual to collective decision making in order to find the way towards an affluent society not fettered by any scarcity of resources, that experiment ended in a political, economic, and social disaster. Now the problem urgently to be solved refers to the reconstruction of these economies, most of them blessed with rich natural and human resources by an establishment of "good institutions and policies" enabling the organization such as households, firms, and farms to allocate and use of these resources most efficiently. Because these institutions also have been "socialized", the reconstruction of these economies requires not only liberalization of output markets and privatization of input markets but furthermore the restructuring of institutions and of many of these organizations as well. Economists are, therefore, challenged to design "good institutions" to be built and "good policies" to be pursued as well as organizations which only can be reached if economic organizations are capable to transform available resources efficiently and competitive into goods and services demanded within the give framework of institutional arrangements and policies: Institutions and policies are constituting "the rules of the game", in which organizations are the "players" as Douglas North has defined.

Of course, the empirical relevance of Olson's conclusions is not restricted to the (former) socialist countries. They are also relevant for many non-socialist countries as well although in those countries the design of prevail-

ing institutions and economic policies pursued might not be misconceived in such a degree as has been in socialist countries. In this respect, however, almost all non-socialist countries have failed in designing "good institutions" and "good policies" especially as far as agriculture is concerned. By protecting domestic agriculture in more developed countries and by discriminating that sector in developing countries as well as by most inadequate structural (land) reforms, agriculture in many of these countries has been prevented to organize farm production efficiently and thus in its proper contribution to economic development and growth. In fact, agricultural policies as pursued in almost all countries has to be seen as the most convincing evidence of Olson's conclusions.

Olson did not provide us with an answer to the question, how "good institutions and policies" as well as organizations have to look like in order to achieve economic growth and stability. Nor did he, of course, answer that question with regard to agriculture. However, these questions have to be answered if the transformation of former socialist countries will finally result in an efficient and competitive organization of their economies. Because agriculture in these countries still is important in terms of its share in national income and employment very often near twenty percent, the transformation of agriculture to its efficient organization is most significant and, hence, the answer to that question, how an efficient organization of agriculture can be achieved by adequate institutional arrangements and farm policy measures. Therefore, I will not so much discuss the problem of institutional changes such as liberalization and privatization of agriculture, but restrict my attention to the problem of the restructuring of agriculture towards efficient and competitive organizations, simply because institutions and policies not only in the former socialist countries have to be reformed in a way which stimulates the formation of efficient organizations and promotes an efficient and competitive economic performance by these organizations. The trouble, however, is that neither the present organization of agriculture in most Western countries is seen as a model for the restructuring of agriculture in socialist countries, simply because agriculture in most Western countries is very often seen as inefficient and incompetitive *vis-à-vis* industry as well as internationally and, very often, even interregionally.

Such an assessment is as old as industry in these countries is and seems to be confirmed by many theoretical and empirical analyses and findings such as the systematic backlog of value added and income per farm worker as value added and income per worker outside agriculture (OECD, 1987:58), the very reason why tax payers and consumers spent so much money in order to support, protect and preserve domestic agriculture.



Therefore, former socialist countries would be badly advised just to overtake farm policies and institutions as applied in capitalist countries simply because it would be a waste of resources urgently needed for the reconstruction of their economies. Most agricultural economists agree to such a perception as at least most statements and advises for instance by the World Bank indicate. However, agricultural economists have to answer the questions how an efficient and competitive organization of agriculture looks like, how such an agriculture should be organized, by whom and by what institutions and policy measures.

In fact, agricultural economists are far away from being able to agree in their reactions to these questions. The history of our profession is really a history of controversies and discussions on these issues, reflected not only by the well-known debates on the "Agrarian Question" and on the problem "Industrial versus Agricultural State" or even on specific farm policy issues, but also reflected in the most confusing and contradictory explanations of the reasons for the prevailing inefficiencies and incompetiveness of agriculture by agricultural economists<sup>1</sup>. Of course, agricultural economists agree in explaining that optimal farm sizes are a or the precondition for a most efficient and competitive agriculture. But by looking to the structure of agriculture, nothing seems to be more different than optimal farm sizes as defined and designed by economists and the farm structure to be observed empirically<sup>2</sup>.

My perception to all this is that as far as agriculture is concerned, economists really did ask the wrong questions or, at least, did provide wrong answers to the right question, resulting, however, in the same confusion. In my view, the real question to be answered refers not to optimal farm sizes but to the problem of optimal organization of agriculture. And in my view by answering that question and by defining optimal organizations of agriculture we will come to quite different conclusions to conventionally ones as far as an efficient and competitive agriculture and institutions and policies adequate to such an agriculture are concerned, thus, enabling economists to advice governments how to design such institutions and policies, the core of the challenges confronting agricultural economists in most countries of the world not only former socialist countries in search for economically efficient institutions and farm policies. This, in short, may be the main subject of this lecture. First, I will try to explain the difference between optimal farm size and optimal organization of resource use in agriculture. Next, by referring to the differences in the farm structure of West- and East-Germany, I will demonstrate and explain the relevance of the distinction mentioned before. Finally, the implications of that distinction will be discussed.

## 2. OPTIMAL FARM SIZE VERSUS OPTIMAL FARM ORGANIZATION

Let me first explain why optimal farm sizes as defined by agricultural economists are quite a different thing than what I have called but not yet defined as optimal organizations of farms, why that distinction is so important not only for the problem of restructuring agriculture in former socialist countries and why this distinction might be the core of the challenge agricultural economists are facing. In his outstanding analysis of the "The Rise and Fall of Collectivized Agriculture" Frederic

Pryor (1992:6) is explaining that "although Marxist-Leninist doctrines about the organization of agriculture may leave much to be desired, discussion in the West about the optimal organization of agriculture is certainly not much advanced ... Enormous attention has been focused on 'saving the family farm', but many more organizational issues need to be discussed ... In contrast to the analysis of the organization of industry, no formal academic field studying the organization of agriculture exists; no scholarly journal devoted to the topic fill the shelves of libraries; and no standard analytic methods are available to resolve disputes in policy issues".

In his remarkable Journal of Economic Literature article, "Changing Economic Perspectives on the Farm Problem", Bruce Gardner (1992) relying on the official statistics according to which "farm income" per capita and per household in the United States has approached and most often exceeded "non-farm" income per capita and household since the 1970s (p. 79), explains that "overall, the accumulation of evidence ... has been damaging to the perception of a farm problem in a way that systematic econometric work has not" (p. 84). He continues in saying that "it appears more accurate to say that data relatively unblended with theory have proved helpful, even decisive; while the more sophisticated integration of theory and data in applied production economics ... have proven indecisive, and have even been misleading" (p. 96).

Although Gardner offers no explanation, why the "more sophisticated integration of theory and data in applied production economics ... has been misleading", it is quite obvious that the contradiction between economic (micro-)theory of the farm as a firm and the reality of farming to be observed has its main source in a misconceived identification of optimal farm sizes with optimal farm organization not only by Marxist but also by Western economists relying so intensively on neo-classical economic theory and applying that theory to agriculture. In fact, as we will see, the contradiction between economic theory as applied to agriculture and the governing principles of the organization of farms as well as the debate of the sources and cures of the "farm problem" among economists has accompanied the history of agricultural policy and the misleading interpretation of and application of conventional economic concepts to that policies as well as the attempts to transform or reform agriculture to a more efficient and competitive one, attempts among which collectivization of agriculture by Communist governments referring to Marxist theory of concentration has been the most disastrous but by no way the sole one. Insofar, Nicholas Georgescu-Roegen (1960:4) was clearly correct in explaining that "probably the greatest error of Marx was his failure to recognise the simple fact that agriculture and industry obey different laws". He was also correct in prophesying that "no other theoretical aberration has been refused by historical development as promptly and categorically as the Marxist law of concentration in agriculture" already in 1960 at a time when many economists were deeply impressed by Stalin's adventure and "success" of collectivized agriculture in order to accelerate economic development of the Soviet Union, seen so often as a most successful solution not only to the permanent farm problem facing "capitalist" economies but much more to the problem of generating and promoting economic development. However, Georgescu-Roegen most likely would add today that not only Marx failed to "recognize



the fact that agriculture and industry obey different laws", but that also Western agricultural economists failed in applying uncritically the pure neo-classical theory in explaining the optimal organization of agriculture. Because the organization of agricultural production in reality is so different, they most often concluded that free markets are incompetent to achieve efficient resource allocation in agriculture, which only can be achieved by government interventions either in agricultural factor markets or by compensating farmers income disparities *vis-à-vis* non-agriculture<sup>3</sup>. Because such policies results in large dead weight losses, agricultural economists very often favouring "structural" policies in one form or the other whose dead weight losses, however, never have been measured, but in my view are often as large as social welfare losses of price and income support.

What, now, makes the difference between the "laws obeying agriculture and industry" according to Georgescu-Roegen or, in our terms, between "optimal" farm sizes as defined by economists based on the neo-classical theory of the farm as a firm on the one hand and the "optimal" organization of farms on the other hand? In answering that question, let us have a short look on the development and present state of the farm structure in Germany, just for having a base for our argumentation as follows which as far as West Germany is concerned, is not too much different from the farm structure in other industrialized (Western) countries, so that we can take *pars pro toto* to a large extent<sup>4</sup>.

These statistical data concerning the farm structure in West and East Germany will be presented in the following paragraph. They demonstrate the well known fact that farms are not only different with respect to their sizes but also different with respect to their organization such as family farms and hired labour farms as well as farms organized by farm families as part-time or full-time farms. By referring to the neo-classical theory of optimal sizes of farms as firms producing farm instead of industrial goods, neither the prevailing differences in farm sizes nor the prevailing differences in the organization of farms can be explained. However, because the farm sizes systematically are related to the relevant organization of these farms, we have to explain why farms are different with respect to their organization resulting in different farm sizes instead of an explanation of the differences between optimal and real farm sizes. By asking that question concerning the optimal organization of farms, we, therefore have not to compare different farm sizes but to compare the efficiency of different forms of organization or, more precisely, the differences in the costs of organizing farm production differently. Such an explanation will be provided on the basis of the information on the farm structure in Germany to be presented as follows.

### 3. COME CHARACTERISTICS OF GERMANY'S FARM STRUCTURE

Let me, therefore, mention only a few but most illustrating characteristics of Germany's farm structure and its changes which happened since the Monetary Reform of 1948 introducing the principles of the "Social Market Economy" by Ludwig Erhard to West Germany: Since that time, the number of farms has declined by more than two-thirds from 1.65 to 0.52 million and the labour input (measured in full-time works) even much more,

namely from 3.74 to 0.57 million resulting in a steady increase in the average farm size from 8.1 to 22.3 hectares but employing 2.27 labour units per farm in 1949 and only 1.1 in 1995. Only 12 percent of labour input have been non-family (hired) farm workers<sup>5</sup>. In this respect, the perceptions of Marx and Engels already pronounced in their Communist Manifesto of 1848, that agriculture in capitalist societies is subject to concentration as is industry may be seen as correct, however, their perception that peasant agriculture is doomed to ruin due to their incompetitiveness to huge hired labour farms exploiting large scale economies (and hired labour, of course) certainly is completely wrong<sup>6</sup>.

Looking for some organizational, economic and social characteristics of West German agriculture the following ones have to be mentioned. First, almost 99 percent of farms are still organized as family farms, an increasing share of which is organized as part-time farms, rising from 50.3 percent in 1979 to about 57 percent of all farms at the time being using 19 respectively 25 percent of agricultural land. In this respect, it has to be considered that family labour supply in terms of working hours for farm, non-farm and household production is about 5 566 hours per year in full-time farm households and 5 123 hours in part-time farm households. In farm households mentioned first, the farm operator and his spouse and, as far as present, the successor of the farm operator are doing, of course, the main farm work, whereas in part-time farm households, the farm operators spend about 1 500 hours for off-farm and 820 hours for farm work and his spouse 720 working hours for farm and 1 385 hours for household work<sup>7</sup>. As far as income achieved is concerned, official statistics reveal that gross income of part-time farm households is quite similar or above gross income of full-time farm households. However, gross and net income of full-time farm households is above income of (non-farm) households of workers, employees and civil servants and has increased since statistically registered (1972) almost as much<sup>8</sup>. This, however, was not so much the consequence of a rise in farm income which only has increased by about 70 percent between 1972 and 1994, whereas off-farm labour income of these farm households increased by 285 percent and transfer income by 155 percent, so that the share of farm income decreased from about 63 to 45 percent<sup>9</sup>.

Now, looking to East Germany (the former German Democratic Republic) it has to be reminded that due to the collectivization of agriculture in the early 1960s in 1989 farm land of 6.2 million hectares (as compared to 11.7 million hectares in West Germany) has been used by about 8,600 farm of which 3 500 have been "private agriculture" (5.4 percent of farm land) whereas 4,530 have been so called "co-operative farms" with an average size of 1,120 hectares and 580 state farms with an average size of 800 hectares. In 1995 the number of farms has increased to 30,248, 45.1 percent of which are smaller than ten hectares and mainly part-time farms, whereas 27 259 (90.1 percent) new family farms had an average size of 86 hectares and further 2,902 farms (decreasing in number and size) are organised as co-operatives, joint stock companies etc. with an average size of 1,092 hectares. Agriculture in East Germany differs, as you may know, so much to West Germany's even six years after the unification and the most interesting question, of course, is, whether West German agriculture will approach East German farm structure or



whether the reverse will happen. Most (German) agricultural economists are convinced that the first answer will be correct<sup>10</sup>.

Now, what are these figures teaching in terms of the problem of optimal farm size contra optimal organization of farms? I think the following has to be explained:

First, in comparing these figures on farm sizes in West and East Germany at the time being with various simulations of optimal farm sizes as made by agricultural economists<sup>11</sup> clearly show that farms in West Germany must be seen as much too small in order to achieve efficient factor use whereas larger farms in East Germany are seen as optimal or near optimal. This, of course, is reflected in official statistics such as comparing the farm value added per farm worker to value added per worker in industry or by the method applied by the German government in accordance with the German Agricultural Law of 1955 annually published in the government's Agricultural Report (*Agrarbericht der Bundesregierung*) as far as farms in West Germany are concerned. That law requires that income parity of agriculture has to be measured by rating production factors used in farm production and supplied by the farm family of full-time farms by their non-farm prices (industrial wages for family labour, market interest rates for capital), the sum of which is compared with actual factor income achieved by these farms. Agricultural Reports permanently show that on average all full-time farms in West Germany achieve only about 42 percent of income which is assumed to be achieved by comparative allocation of family resources to the non-farm sector of the economy<sup>12</sup>.

Of course, by applying the same method in estimating "income disparity of agriculture *vis-à-vis* non-agriculture" seen by the government as a sound method in order to estimate the "profitability of factor use in agriculture as compared to industry" (as the Agricultural Report 1996, p. 56, is claiming) to part-time farms would lead to the conclusion that part-time farming is much more inefficient as even full-time farming, so that most agricultural economists see part-time farming as a "hobby" but not as a sound business to make money.

Therefore, the question has to be asked, why part-time farming exists to even an increasing extent and especially are to be observed at locations where no full-time farms are prevailing and enabling part-time farmers to compete with full-time farms for land and labour by taking into account that part-time farms are much smaller as full-time farms and by remembering what economists have to say on optimal farm sizes. The explanation is rather simple, however, can only theoretically be justified by applying the theory of the farm household instead of the traditional (neo-classic) theory of the farm as a firm. By applying that farm household theory, however, four modifications of the "pure" farm household theory as presented in textbooks have to be made, reflecting the imperfections of labour markets prevailing in all countries, but being important for agriculture as well and whose implications for the resource allocation will be discussed next.

First, labour time in industry is restricted by law or by contracts between labour unions and employers' associations. With a view to agriculture, these labour time restrictions imply that (family) farm labour in search for

non-farm employment only can work outside the farm sector as long as these institutional labour time restrictions render. However, labour time supplied by most farm workers exceeds rationed demand for labour time (per worker), the very reason why labour time is restricted institutionally. I have explained before that in Germany operators of part-time farms on average spend about 1,500 working hours for off-farm employment and about 800 hours per year for farming. This means that working time offered exceed to a large extent working time demanded per person outside agriculture, which in fact was restricted in Germany to 1,898 hours in 1985 and only 1,500 hours in 1995. Thus, labour time offered and exceeding rationed off-farm labour time, only can be allocated by farm family members to farming, however, subject to opportunity costs almost zero simply because there are almost no other opportunities to allocate also that "surplus" labour time outside the farm. Therefore, labour time restrictions for off-farm employment resulting in low opportunity costs are the very reason for the livelihood and relative growth of part-time farming, and, hence the very reason why part-time farming is organized efficiently and competitive to full-time farming because rather low opportunity costs of labour allocated by part-time farm households to farming mean lower production costs as compared to full-time farms. Opportunity costs of family labour used in full-time farms are higher because at least the farm operator and his successor are in most cases able to work off-farm as the operators of part-time farms and their successors are, in fact, doing. Of course, they prefer to manage their farms full-time because farm income achieved is higher as compared to non-farm income achieved by off-farm work<sup>13</sup>. It follows, in other words, that comparing farms according to their sizes allows no conclusion with respect to the profitability and efficiency of their factor allocation as long as their specific form of organization is not taken into account.

Second, labour time offered by farms households is, of course, not a homogenous good as most simulation models of optimal farm sizes and cost-accounting of farm assume, due to the fact that family members (as is the case also for all non-farm families) differ with respect to their individual capability to work at and off the farm due to differences mainly with respect to age, gender, education and formal training as well as experiences (learning by doing and training on the job). Therefore, opportunity costs differ very much between various members of the (farm) families, the very reason for the division of labour to be observed within households, as already Jacob Mincer (1962) and Gary S. Becker (1981) have analysed. Intra-household division of labour, of course, is also to be observed in farm households as the economics of part-time farming just mentioned confirm: Off-farm work is done almost exclusively by the farm operator<sup>14</sup>, whereas farm and household work is done by his spouse and other household members (beside farm work done by the operator outside his off-farm work). For full-time farms division of labour within the household guided by relative opportunity costs means that only opportunity costs of the farm operator and his successor are as high as off-farm wages in industry as already explained, whereas opportunity costs of labour offered by other family members are rather low and even below wages of hired farm labour<sup>15</sup>. But even opportunity costs of farm operators are almost zero, if they are elder than 45 or 50 years. The reason for this has to be seen in the fact that elder workers and, hence, elder



farm family members especially if they are untrained for any off-farm work have a rather restricted chance to find a full-time job outside agriculture as is reflected by statistics revealing that the majority of unemployed persons are untrained, elder and female tones in all countries, and reflected by the empirical fact that the average age of farm operators exceeds to a large extent average age of non-farm workers<sup>16</sup>.

#### 4. IMPLICATIONS

What are now the implications for the organization of agriculture? The most important implication is the fact that agriculture is in most (Western) countries organized by farm households and not by large hired labour farms or, by the way, by producer co-operatives as, at least only by definition, has been the case in socialist agriculture, due to rather low opportunity costs of family labour (on the average) as compared not only to wages in industry but also to farm wages. Now, in these terms, the fact already mentioned, that farm sizes as measured by the size of farm land used are steadily increasing but labour input per farm is declining in economically advancing countries as has been demonstrated before, can also easily be explained: Contrary to industry, in agriculture the substitution of family by hired labour which might be expected especially with regard to part-time farms as well as the employment of hired workers in addition to family labour as might be expected with regard to full-time farms can neither be observed to a greater extent in advanced nor in developing countries<sup>17</sup> because of rather restricted economies of scale and scope in agriculture on the one hand, and rather low opportunity costs of farm family labour as compared to hired farm labour wages and high transaction costs of monitoring and supervising hired farm labour on the other hand. By the way, these are the very reasons why the growth of capitalist hired labour farms as predicted and still observed for England by Marx turned to their decline in number and size almost after Marx died in 1883: At that time, hired farm labour wages started to rise similar to industrial wages due to increasing labour productivity and an intensified competition of industry for farm labour (which, of course, was not in line with Marxist view of capitalist development). Rising hired labour wages at the end of the 19th century in capitalist countries depressed very much the economic situation of large hired labour farms restricting their competitiveness versus peasant agriculture or, as has been presumed at that time, versus agriculture in "colonial countries" as the developing countries then have been called<sup>18</sup>. As you perhaps may know, in Europe that decline of international competitiveness caused a passionate debate among agricultural economists and politicians not only on the problem of farm labour but also on the question whether economic policy should be directed towards further industrialization or towards preserving a competitive agriculture seen as necessary for a sufficient food supply in industrialized countries<sup>19</sup>. That debate on the question "Industrial contra Agrarian State" following the debate on the "Agrarian Question" concerning the competitiveness of peasant versus capitalist agriculture, of course, stimulated by the prophecy of Marxists that peasant agriculture will be replaced by huge capitalist farming systems, resulted, as you know, in the political decision in favour of protecting and supporting agriculture by state interventions which until today are applied based on the perception that agriculture is neither competitive *vis-à-vis* industry nor *vis-à-vis* agriculture of developing

countries: In other words, the question whether industry of agriculture should be promoted has been answered by a policy in favour of both, industry and agriculture or, as it has been called, the "Agrarian Industrialized State". Agricultural economists, as has to be added, in search for an explanation of agriculture's inefficiencies in factor allocation and, hence, its incompetitiveness *vis-à-vis* industry and foreign agriculture and offering an impressive collection of such explanations<sup>20</sup> did not play a role in the discussion of both topics which has to be seen as convincing. Again, Gardner (1992:96) is correct in saying that "while during the post-war periods the farm problem disappeared, the interventions (by farm policies) did not, and indeed increased" and that "the final policy issue, explaining why observed interventions occur, has been treated to quite interesting and promising scholarly investigations. But while the results of theoretically informed story telling has been suggestive, econometric verification or rejection of hypotheses is scarce" (p. 97).

A further interpretation of what is going on in agriculture, when economic development starts to affect labour wages in agriculture as has been the case in Western Europe and North America at the turn to the 20<sup>th</sup> century might be added. Rising wages for farm labour will lead to an ongoing substitution of hired labour by labour saving capital inputs much more than substituting family labour. Thus, the share of hired labour of total labour input in agriculture is declining and former hired labour farms are replaced or transformed to family farms. The very reason for these changes in the organization of farms have been mentioned before, namely the rise of hired labour wages *vis-à-vis* the opportunity costs of family labour. These changes will happen also in developing countries where wages of farm workers are still rather low.

Third, you may insist, of course, that all what has been said on optimal organization of agriculture until now, may easily be expressed in terms of neo-classical micro-theory although not necessarily of the farm as a firm but certainly of farming organized by farm households. However, as already Pryor (1992, p. 6) has explained by saying that "enormous attention has been focused (by agricultural economists) on 'saving the family farm' (without explaining why family farms have really to be 'saved' as might be added), but many more agricultural issues need to be discussed .. for example, the horizontal linkages between farms or vertical linkages between farms and either upstream or downstream enterprises in the chain of production". An answer to these questions only can be found, as already Pryor has assumed by applying the perceptions of the theory of industrial organization as has been developed since Ronald Coase's famous article of 1937 on "The Nature of the Firm", damaging and replacing the neo-classical theory of the firm (as applied until today to agriculture) since the time when Coase has been rediscovered and his conceptions have been operationalized mainly by Oliver Williamson (1985)<sup>21</sup>. As you know, the main message of Coase refers to the fact the economic agents act in a world of incomplete information and information has its price as other inputs have. Therefore, economic organizations are organised efficiently if not only inputs are transformed to goods and services for markets or as intermediary inputs or complementary outputs to be used at lowest possible production costs per unit including the least "transaction" costs of organizing production and the



demand of input as well as the supply of outputs as such. This, in fact, is the simple reason why most of the methods used by agricultural economists in order to find out optimal farm sizes achieving the lowest average costs of producing farm goods or to compare to different farm sizes with respect to absolute or relative differences in these costs of production which are legions, have failed so often, and have especially failed in explaining structural change in agriculture in terms of comparative costs advantage of different farm sizes and production systems. Insofar, we have to agree to Ahearn, Whittaker and El-Osta (1993, p. 107) explaining that "it is a commonly held belief that economies of size exist in U.S. agricultural production and that they have been a significant factor, perhaps the most significant factor, in explaining our current agricultural structure. More specifically, the view is that the most economically efficient size of farms will prosper and other farms will tend to exit or gravitate to that farm size .... We commonly consider the causal relationship between costs (of farm production) and structure to be one-way-costs affect structure, but is important to realize that it may be a two-way relationship since factors other than production technology affect structure. That is, factors which affect structure, other than production costs, can inhibit farms from moving to economically efficient sizes". In this respect, these authors (p. 111) rely especially on the fact that "the majority of U.S. farms are organized in the traditional mode of a single farm operator or a single farm operator household associated with a closely-held farm business making allocation decisions regarding the resources they control in order to maximise the welfare of the household. The relevant unit is the farm-firm household unit. For this reason, the lowest cost producer, say of corn, will not necessarily be the most economically efficient farm firm-household unit and not even the most economically efficient farm firm. Moreover, with respect to growth in farm size, and hence structural change in agriculture, the critical factor is how profitable the farm firm is relative to the off-farm activities of the farm firm-household unit". These explanations may be seen to be in line with what we have said before with respect to opportunity cost implications of part-time versus full-time farming although Ahearn, Whittaker and El-Osta are basing their analyses on the "Farm Costs and Return Surveys" annually estimated by USDA, in which the "costs of labor and management" are "based on the state of U.S. average wage rates for hired farm workers and of hired farm managers". Even these authors admit that "in some ways, the most problematic of these costs is unpaid labor and management" (p. 114). Therefore, these authors as well as most agricultural economists dealing with economies of scale and optimal farm sizes have let open an explanation why most farms in the United States (and elsewhere) do not use hired farm labour in order to substitute or complement family labour which both should be efficient due to economies of scale on the one hand and opportunity costs of family labour being identical with hired labour wages on the other hand as is so often assumed to be exploited by optimal farm sizes.

However, the explanation has to be seen not only in the fact already mentioned that opportunity costs of family labour are to a large extent below wages of hired farm workers as is most but not alone relevant for part-time farming. Long before Ronald Coase has published his Nobelprize honoured article on "The Nature of the Firm" (1937) and even long before industrial economists have

operationalized his conceptions, some agricultural economists being very often involved in the debate on the famous but still unsolved "Agrarian Question" such as Eduard David (1902), Friedrich Aereboe (1923, 1928), Siegfried von Ciriacy-Wantrup (1932), John Brewster (1950) Nicholas Georgescu-Roegen (1960) and Theodore W. Schultz (1953) have heavily relied on the problem of supervising and monitoring as well as hiring and training of hired farm workers, a problem as is today known as the principal-agent-problem and has been rediscovered, as far as farm worker are concerned, 1985 by Robert Pollak (1985). Pollak in relying on the fact that "the family farm ... is the dominant form of agricultural organization in the United States and most developed and developing countries" concludes that "the family farm can be regarded as an organizational solution to the difficulty of monitoring and supervising workers (and we have to add the difficulties of hiring and training those workers), who for technological reasons cannot be gathered together in a single location" (p. 591). He further explains that "family and nonfamily labour might be imperfect substitutes" because of "two reasons: the incentive and monitoring advantage of family organization and the idiosyncratic information and knowledge of local conditions that family members are likely possess" (p. 592). Almost literally identical perceptions may be found e.g. in Aereboe's books explaining that "the most important difference between industrial and agricultural labour work has to be seen in the fact that in agriculture workers are required to change permanently their location and their output depends very much on prevailing weather conditions", whereas "workers in industry have not to change their working places", therefore, they can be "rewarded according to quantity and quality of their individual performance" (Aereboe, 1928, p. 168, 1923, p. 544). He stresses furthermore the fact, that "the monitoring and incentive advantage" of family *vis-à-vis* hired labour is most relevant in animal production requiring much more "carefulness, attention, experiences, and dexterity" only provided by farm family members. Thus family managed farms are economically superior especially in animal production as is reflected by the fact that animal production in most countries is concentrated in more or less small family farms as well as by the fact that it has been mainly animal production which collapsed in the former socialist countries when their transformation started. It might be added that, therefore, family farms relying on animal production successfully survived the rise of hired labour wages and the decline of grain prices at the end of the nineteenth century damaging the competitiveness of large hired labour farms as explained before, mainly because the demand for animal products and their prices increased due to rising consumer income. As a consequence at that time, animal production in agriculture turned from a necessary, but unprofitable evil needed to preserve the fertility of farm land to a most profitable branch of production by small farms.

Whereas factors mentioned before have to be seen with respect to the competitiveness of agriculture *vis-à-vis* industry as has been discussed so passionately in the debate on the "Agrarian Question" (and is still discussed among economists at the time being) as well as with regard to the competitiveness of agriculture in developed versus agriculture in less developed countries, subject to the debate on the question "Industrial versus Agrarian State" another dimension of the "farm problem" is alarming agricultural economists and policy makers.



That dimensions refers to interregional competitiveness of agriculture in less contra more naturally and economically favoured regions. Worsening agricultural terms of trade as well as rising wages, so the prevailing arguments, will result in a regional concentration of farm production in more favoured areas whereas in disfavoured regions farm production will be terminated resulting in devastating consequences for agriculture and regional economies. Therefore, agriculture has to be supported at least in those areas. In this respect, however, economists have to be reminded not only to the fact already mentioned that part-time farming has to be seen as an efficient form of adjustment to unfavourable regional conditions for agriculture, the simple explanation for the fact that part-time instead of full-time farming is dominating in those areas. Much more has an another most important difference between agriculture and industry to be stressed neglected very often, but not only by Marxist economists. That difference refers to the fact that farm production requires beside capital and labour, of course, land as input, whereas in industry land as a productive resource to be used is of no relevance at all. However, David Ricardo (1817), but much more Heinrich von Thünen (1826) have already explained the peculiar economic nature of farm land and its most important implications for the organization of agriculture by stressing the fact that land prices are determined by the marginal productivity of land (the land rent) as a residual and not by such factors determining the prices of capital and labour resulting in more or less "single" prices for these productive resources. This, of course, is the consequence that agriculture due to the almost unlimited assortment of animal and vegetable goods to be produced furthermore at different levels of land and labour intensity as well as of very different forms of organising farm production (provided, of course, that farmers are unrestricted in their ability to organize agriculture according to the prevailing economic and technical conditions) is capable to adjust the structure of outputs and inputs and the organization of farming to most different factor price ratios prevailing on different locations within a country as well as between countries. This is the simple but most important reason why agriculture looks so different all over the world, why agriculture is competitive where ever farm production is located and why agriculture cannot be organized by any central planning authority as socialist perceptions and disastrous experiments have attempted and why these experiments (not only by socialist governments) have completely failed in agriculture all over the world much more than in industry.

## 5. SOME LESSONS TO BE LEARNED

What are now the lessons to be learned by agricultural economists as well as farm policy makers? Returning to Mancur Olson's message according to which economic development and growth of nations depends much more on "good institutions and policies" and as we have added on "good organizations" than on the resource endowment of nations, we, hopefully, are perhaps better equipped to define and design "such good institutions, policies and organizations" in and for an efficient organization of agriculture not only in countries transforming socialist to non-socialist economies but also in market economies where farm policies are deeply misconceived by interventions in factor and product markets,

thus preventing its agriculture to be as efficient and competitive as agriculture may and will be due to the ability of their farmers. This, I would like to remind you, has been already explained by our colleague and friend J.A. Groenewald (1991:340) by explaining that "policy regarding farm size and structure of agriculture will have to be very flexible. Flexibility in farm size and structure developments has to be promoted, not controlled". Therefore, liberalization and privatization of agriculture in former socialist countries will not be sufficient if those countries are mainly adopting institutions and policies of western "capitalist" countries applied at the time being, but requires liberalization and privatization or more precisely the deregulation of agricultural policies as well as restructuring agricultural organizations in these countries as well. This, in essence, is the challenge agricultural economists are facing here and elsewhere.

## NOTES:

1. In this respect, Tweeten (1979, chapter 6) offers at least eight different theories explaining "low rates of return on farm resources", theories which still are repeated again and again in textbooks and official statements (OECD, 1995: 57). But in his most recent book, Tweeten (1989:129) states that "neither theory nor empirical evidence support the hypothesis that commercial farms are chronically predestined to earn low returns in farming in the absence of government interventions".
2. See beside many other publications on the pro and contra of the definition and measurement of "optimal farm sizes" as well as the struggle between optimal and real farm sizes fought by economists several articles in Hallam (Ed., 1993), especially the paper by Ahearn, Whittaker and El-Osta (pp. 107-149).
3. There are several methods used to demonstrate inefficiencies of resource use of agriculture and, hence, prevailing income disparities. In fact, they all have the same source of their miscount, whether by relying on productivity or farm income in agriculture as compared to non-agriculture, just by neglecting "farm" resources used, in fact, in off-farm or household production by farm households as this has been the case by national accounting (see Schmitt, 1989) or has been and still is the case by comparing productivity or income of farm resources to productivity and income hypothetically achieved if these resources would be used outside agriculture (see Schmitt, 1996c).
4. Of course, the German government and many economists are insisting that German agriculture is disadvantaged due to small factor endowments (mainly land) as compared to other memberstates of the European Union. See for that fallacy Schmitt and Gebauer (1987).
5. For an econometric analysis of factors affecting structural changes of West German agriculture see Schmitt and Andermann (1996a) and Andermann and Schmitt (1996b). For an explanation of the rather small hired farm labour input see Schmitt, Schulz-Greve and Lee (1996).



6. See for the history of Marxist perceptions of and the debate on the "Agrarian Question" Lehmann (1970) and Schmitt (1996b).
7. For a more detailed description and analysis of part-time farming in West Germany, see Schmitt (1996a).
8. See Burose (1994) and further analyses as quoted. That the rise of farm household income is a bit smaller than the rise of income of non-farm households is the logical consequence of the rising share of non-farm income of farm households.
9. In fact, the share of farm income of total income of all farm households has declined to about 30 percent, whereas in the United States that share is only 15 percent according to Ahearn, Perry and El-Osta (1993). As far as similar estimates of income of farm households are available, they demonstrate similar trends in the growth and structure as are observed in Germany and some other countries.
10. See for more details Schmitt (1993b).
11. See for instance Peter (1993), Balmann (1995), Zeddies (1992) König and Isermeyer (1996).
12. For more details and a critical assessment of the method applied and the results achieved, see Schmitt (1996c).
13. For a more detailed analysis, see Schmitt (1996a).
14. It seems to be surprising that only the farm operator of part-time farms but not his wife, even she is trained for off-farm jobs are working off-farm. The reason for this is, of course, that farming is incompatible with off-farm employment of both, the operator and his spouse. Therefore, off-farm employment of both must be more profitable than part-time farming. In that case farming will be given up. Two implications have to be mentioned: First, substitution of family by hired labour has to be seen as inefficient, otherwise part-time farm households where the operator and his wife are doing off-farm work by substituting family by hired farm labour should be presented in relevant statistics, which, in fact, is not the case. Second, with respect to the discussion whether family members are maximizing their utility individually or are acting co-operatively in order to maximize the utility of the whole family, it has to be concluded that the latter must be the case, otherwise many spouses would do off-farm work whether working full-time or part-time at their farms
15. For estimates of opportunity costs of family farm work, see Schmitt (1996a).
16. The share of farm operators elder than 45 years in 1993 has been 58 percent for full-time and 59 percent for part-time farmers as compared to 29.5 percent of workers outside agriculture. In the European Union that share of elder farm operators is much higher because in Germany the old age pension system for farmers requires that at an age of 65, farmers have to give up their farms in order to be eligible for old age pensions subsidized to a large extent by the government.
17. For developing countries see Hayami and Otsuka (1993).
18. See for an excellent analysis Koning (1994).
19. See for more details Dietzel (1923).
20. See note 1).
21. See for instance Tirole (1990) among the increasing number of textbooks on industrial organization. None of these textbooks, as far as I can see, analyses and discusses family-firms (not to mention family farms) although family firms (excluding household production by families as a "small firm" as Gary Becker already has defined) are most important in industry, trade and handicraft and although Pollak (1985, p. 591) has explained that "the family managed firm is a response to difficulty of supervising managers.

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