How to Achieve Efficient Land Use under Private Land Ownership - Overcoming a Global Obstacle Overlooked by Theodore W. Schultz and Albert O. Hirschman

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Abstract: This paper challenges Nobel laureate Schultz's assertion that investment in human capital counts much more than institutional changes and is the key to agricultural growth. It emphasizes that inefficient land use by able-bodied part-time/absent small farmers has become a global obstacle with both public and private land ownership, traditional and modern agriculture, low and high income economies, food under-self-sufficiency and overproduction, and developing and developed countries, albeit land property rights have been defined and sale/lease allowed, causing uneven regional development, and other problems. Nobel nominee Hirschman overlooks that it has hampered the linkages.

It has been overcome by China under public land ownership, but not under private one world-wide. Although a legislation to oblige landowners to cultivate land or lease it for farming is still implemented in Norway because of under-self-sufficiency, it ceased in the EU due to a fundamental dilemma: obliging landowners to do so would cause overproduction; otherwise, much land would be used inefficiently, then how to achieve economies of scale and compete with other countries? Without a solution, the EU turned to protectionism. This legislation has not been popularized to many other countries with under-self-sufficiency, because it obliges landowners to lease out all their land, so that part-time/absent landowners could not keep farming skills; and once lost off-farm jobs, would either have no access to the land rented out, or have to withdraw it, affecting the lessees.

The paper thus suggests dynamic solutions which may work at both under-self-sufficiency and overproduction stages under private land ownership.

I. Schultz's Assertion and the Role of Human Capital in Agricultural Growth

This Section is a supplement to the author's book (Zhou 2001) and paper presented in Taipei (Zhou 2002) which provide a first-time systematical and analytical criticism of Schultz's assertions (1) small farmers are rational; (2) low income countries saddled with traditional agriculture have not the problem of many farmers leaving agriculture for nonfarm jobs; (3) part-time farming is efficient; and (4) economies of scale do not exist in agriculture (Zhou 2001: 11, 26-9, 76, 131, 152, 218, 244, 265, 288, 344, 373, 382, 384, 429). The book has cited 763 references most of which serve as evidence against his assertions on Japan (Ch 4, the Japanese model), other rice-based economies under private land ownership in monsoon Asia (Ch 5: 184-88), China (Ch 6-7, the Chinese model), other rice-based economies under public land ownership in monsoon Asia (Ch 8), the USA (Ch 9-10, the American model), OECD and EU in general (Ch11: 397-8), CEECs-NIS (Ch11: 399-430), whereas the Taipei paper added proofs in West Asia, Africa and Latin America (Zhou 2002: 5-8). Readers are suggested to read them to know the context, as the length limit does not allow this paper to repeat them. Here, the focus is on Schultz's another assertion (5) investment in human capital counts much more than institutional changes and is the key to agricultural growth.

Schultz ([1964] 1983: 136, 176, 186) raises the concept of human capital - 'Capital goods are always treated as produced means of production. But in general the concept of capital goods is restricted to material factors, thus excluding the *skills and other capabilities of man* that are augmented by investment in *human capital*', and emphasize the importance of investments in human capital which 'are of several forms; schooling, on-the-job training, and investments in health rank high', 'schooling is the largest and most easily comprehended of the components of human capital'. But, although Schultz admits ([1964] 1983: 22) that 'It would be a mistake to infer . . . that the efficient *allocation* of land in farming and investments in *structures* that became a part of the land do not count', he stresses ([1964] 1983: 22-3) that 'It would be correct to infer, however, . . . that improvements in the quality of the material factors employed in farming and in the capacities of farm people count *much more* than land.' He further explains ([1964] 1983: 176), 'The central argument of this study has set the stage for human capital as a major source of economic growth from agriculture. It runs as follows: The economic basis of the slow growth of a penny economy is *not* to be found generally in observable inefficiencies in the way the traditional agricultural factors of production are *allocated'*. 'The *key* to growth is in acquiring and using effectively some

modern factors of production', 'these modern factors are often concealed by economists under an expository contrivance called "technological change"'. Thus he believes that investment in material capital and human capital in farming (within technological changes) counts *much more* than allocative efficiency of land (within institutional changes), and investment in human capital is the key to agricultural growth.

The author does not deny the importance of investment in human capital and, broadly speaking, technological changes. But it would be inappropriate to raise it to be higher than that of the allocative efficiency of land and, generally speaking, institutional changes. The author holds that institutional changes (in particular allocative efficiency of land) are more fundamental and count much more than technological changes (especially investment in human capital). If the institutional barriers could not be removed *dynamically*, then technological changes (including investment in human capital) could not function well if at all; thus it is the institutional changes which are the keystone to agricultural growth. The following stages may be perceived.

1. '*Growth not dependent on additional schooling*.' 'They include growth from the opening up of new farm land' in 'The settlement by Europeans and their descendents of the Americas and Australia and New Zealand' which 'called for much brute human force and for some capital goods to farm the new land'; 'from water for irrigation provided mainly by public bodies' 'to use by illiterate farmers' in India; 'and from the mechanization of field crops made possible by skilled mechanics imported from other sectors or recruited from agriculture and trained specially to operate and repair machinery' in the Soviet Union. 'They also include some growth from the adoption and effective use of new agricultural factors that are profitable when only a few adjustments are required of farmers', referring 'to hybrid corn as an example' 'in Punjab, India'; and 'when new markets for farm products make it profitable to expand production', e.g., 'as a consequence of the cotton price supports by the United States which, during the early post-World War II period, gave cotton-exporting countries a lager part of the world market (and a stable price for cotton).' (Schultz [1964] 1983: 178-80, 187-8). Apparently, availability of farm land is a pre-requisite even for growth not dependent on additional schooling, as farmers could not achieve growth upon no land. Therefore, institutional barriers should have been resolved to the extent that farmers at least have some land to till, be it large areas in the Americas, Australia, New Zealand, and the Soviet Union, or fragmented small farms in India. Here, although Schultz ([1964] 1983: 178-9) notes that for 'The settlement by Europeans and their

descendents of the Americas and Australia and New Zealand' which 'called for much brute human force and for some capital goods to farm the new land', 'The principal explanatory variable was the rapid increase in the supply of farm land', he has neglected that it was after the land reform following the American Revolution through the War for Independence from Britain (1775-83) which abolished the feudalistic quit-rents (paid to absentee landlords in England in exchange for the use right of their land by farmers in the Atlantic coastal areas), prohibition of settlement west of the Alleghenies to protect British land speculators, and tax on the trade of the colonial farm products, that the English settlers could advance into the West; and it was after the Civil War (1861-65) which eradicated the slave system that the individual land ownership could be established in the South (see Zhou 2001: 333-4).

2. '*Growth dependent on additional schooling*. In general, where technically superior factors of production are a principal source of agricultural growth, schooling counts. This proposition also implies that this source of growth is no longer restricted to the adoption of only a simple new factor, but requires the successful adoption of a complex of such agricultural factors, and, furthermore, the adoption process is a long, continuing one' (Schultz [1964] 1983: 189). At this stage, Schultz ([1964] 1983: 196-7) realizes '*Political handicaps*. There are two major political factors that account for much of the observable *under-investment* in farm people and one such factor that causes serious *disinvestment* in these forms of human capital. They are as follows: (1) where large landowners are powerful politically, it is to be expected that they will have a strong vested interest in maintaining the status quo; (2) where poor countries are committed to investment in industry as the basic approach in achieving economic growth, agricultural skills and knowledge are neglected; (3) where ideology requires the elimination of private property in land and in other (material) means of production, farm people become strictly farm workers and their entrepreneurial skills are lost.'

However, here Schultz is also wrong as he holds a *static* view - once the three political handicaps or institutional barriers have been removed, then investment in material and human capital (within technological changes) will count much more than allocative efficiency of land (within institutional changes), and investment in human capital will become the key to agricultural growth. He ignores that the removal of institutional barriers should be *dynamic*, and in particular, there has appeared a fourth political handicap or institutional barrier: inefficient land use by able-bodied part-time

and absent small farmers, which will require a second round institutional reform, otherwise the investment in material and human capital would not function well if at all.

Concerning political handicap (1), Japan is an example. Schultz ([1964] 1983: 181, 186-7) claims, 'There is next the issue of investment in farm people associated with little or no favorable effects on agricultural production. It is hard to discern any clear-cut historical cases that support this kind of relationship.' 'But there are apparently none in which better schooling of farm people who continue at farming is associated with a stagnant agriculture.' 'There are all manner of historical clues indicating that there has been a strong positive relation between the level of skills and knowledge of farm people and their productivity at farming.' 'When does schooling matter in farming? Increases in yield per acre over time from the adoption, first by producers in one country and then in other countries, of new yield-increasing inputs strongly imply that a widespread adoption of such inputs' 'in the case of growing rice, or of corn, differences in schooling may be a major explanatory factor.' 'The differences in rice yields correspond closely with the differences in the schooling of rice growers. In countries where the level of this schooling is high, rice yields are also high. The new combination of inputs that accounts for the large increases in rice yields in particular countries, notably in Japan, have not been adopted by rice growers in those countries where the farm people who grow rice are predominantly illiterate.' Schultz is dealing with agricultural growth. But he is not aware that the *high rice yields* of farmers with schooling would not naturally be turned into *high output* of rice of the whole country to reach at least self-sufficiency, nor automatically be associated with *low costs* of rice production. As mentioned in Zhou (2001: Ch 4), in Japan, after the land reform in 1946-50 to remove political handicap (1), rural education has been strengthened and farmers have indeed developed high-yielding technology. But since 1960, because much land has been held by able-bodied part-time and absent small farmers (who have been well educated too) in inefficient use, full-time farmers could not easily increase farm size to reduce costs, rice self-sufficiency could not be maintained without extremely distorted government price supports which then led to artificial overproduction. The Japanese model has been repeated by Taiwan Province of China and South Korea. In fact, farmers in Japan and Taiwan have transferred and applied their advanced technologies in mainland China because it has found effective ways to transfer the land inefficiently used by able-bodied part-time and absent small farmers to the full-time farmers including external and foreign ones. Interesting enough, advanced large agricultural

machinery made in Japan could find much use in itself, but be imported into China as it is able to achieve economies of scale. (See Zhou 2001: 258-9, 263, 283)

Regarding political handicap (2), in the recent decades, poor countries have been increasingly attaching importance to agricultural skills and knowledge, rather than committing themselves to investment in industry as the basic approach in achieving economic growth. Even so, their efforts could not be well realized due to the obstacle of the inefficient land use by able-bodied part-time and absent small farmers. Mexico is a case in point. Schultz ([1964] 1983: 193) mentions that 'No doubt Mexican nationals working in the United States gain much from the on-the-job training they acquire. Meanwhile, many higher skills can presently be had by Mexicans more cheaply at home than abroad by attending one of Mexico's technological institutes'. Unfortunately, on the large areas of land whose operation (but not necessarily ownership) has been abandoned by the able-bodied part-time and absent small farmers emigrating temporarily or permanently to the USA (see Zhou 2002: 5-6), the higher skills of themselves or other farmers learned at home and abroad could not be used.

As for political handicap (3), China and CEECs-NIS are illustrating. As Zhou (2001: Ch 6, Ch 11) presents, both have reformed the former centrally planned economy into a market economy: China contracted the village owned land to households for operation during 1978-83, while CEECs-NIS made land privatization or farm-restructuring in the early 1990s. Afterwards, however, inefficient land use by able-bodied part-time and absent small farmers has appeared in both, which has hampered the full-time farmers with entrepreneurial skills from achieving economies of scale.

Thus, when Schultz ([1964] 1983: 195) stresses 'an optimum allocation of resources available for investment not only among capital goods but importantly also between such goods and the capabilities of people', he neglects that there is a need for an optimum allocation of land between part-time/absent small farmers and full-time farmers and this fundamentally counts much more than the optimum allocation of investment between material capital and human capital.

As the author (Zhou 2001: 16-9) presents, agricultural production is a function of many variables including institutions, technologies, policies, prices, production structures, labor, capital, education, health, weather, etc. These variables, however, play different roles. According to Oshima (1987: 47, 53), in previous studies of development theories and strategies, the growth of per capita product was explained as owing to either proximate *sources* or ultimate *causes*. There was a tendency to group various inputs into

the category of sources (labor, capital, education, structural changes, etc.); and to group the explanations of changes in the productivity of inputs into the category of causes, the major ones being changes in institutions and technologies. Oshima himself (1987: 5-6) studies the underlying long-term ultimate causes that sustain economic growth by assuming that growth is largely the outcome of the interplay of institutional and technological changes, as emphasized by Kuznets (1966), and finds that it is the *institutional component* that is the most important in the interaction of institutions and technologies underlying the growth of developing countries. Examples of the institutional changes are land tenure reforms from the feudal landlord ownership to individual land ownership (such as in Japan during 1946-50), and from the centrally planned economy to family-based operation (such as in China during 1978-83).

Zhou (2001: 70-1) has presented technological efficiency - a production plan is (technologically) efficient if there is no way to produce more output with the same inputs or to produce the same output with less inputs, as Varian argues (1992: 4). *Static or short-run technological efficiency* could be attained *without* changing technologies but with higher incentives and/or better division and coordination of labor through institutional changes. It could also be reached by adopting already invented more advanced technologies which were not used before peasants gained incentives and/or achieved better division and coordination of labor. For example, the land reform and setting-up of cooperatives in Japan during 1946-50 gave huge incentives and better division and coordination of labor to peasants, and the land tenure reform in China during 1978-83 also highly motivated farmers. They increased production quickly with the already used technologies, and then adopted the existing more advanced technologies unused before.

Dynamic or long-run technological efficiency needed for achieving sustainable growth depends heavily on the technological progress embodied in construction of rural infrastructure, higher yields and multiple cropping of rice and other grains, diversified cropping and non-crop agriculture, off-farm employment, peasant migration to cities and work in town and village firms, agricultural mechanization with small or large machinery, as well as regional transfer of development and environmental improvement, which would take longer time (e.g., finding a higher yielding variety of rice, building a big dam, transforming a desert, or educating peasants may cost several years). But once production has reached the frontier permitted by the established institutions, even though increases of production or reduction of costs are still technologically possible (through agricultural mechanization with large machinery), they tend to be hampered by vested interests, just as

the inefficient land use by able-bodied part-time and absent small farmers in the Japanese model. At this stage, a second round of institutional changes is needed to allow sustainable rural development, just as the overcoming of this obstacle in the Chinese model around the mid-1980s. Thus Barker, Herdt and Rose (1985: 157) conclude that of so many variables for rural development, the institutional changes are the keystone.

3. *Coexistence of growth not dependent and that dependent on additional schooling*. Schultz asserts ([1964] 1983: 183), 'it is true that programs to improve the skills and knowledge and health of workers were generally not a pre-requisite to the advances made during this phase of the Industrial Revolution. Why, then, should schooling be essential today? The answer lies in the fact that poor countries now entering upon industrialization are not employing the simple, primitive machinery and equipment of a century or two ago. Nor could they do so even if they wished to, because such things have become collectors' items for museums.' Here, Schultz has ignored the existence or persistence of the *dual economy*, i.e., modern industry mainly in cities and traditional agriculture in rural areas (see Zhou 2001: 35). 'The simple, primitive machinery and equipment of a century or two ago' have been employed not only still in 1964 (such as in China), but even now (such as in Africa), and not yet completely become collectors' items for museums. Of course, it does not mean schooling is not important today. But availability of land inefficiently used by able-bodied part-time and absent small farmers to full-time farmers has become more essential.

Schultz ends his book by claiming ([1964] 1983: 205), 'in sum and substance, the man who is bound by traditional agriculture cannot produce much food no matter how rich the land. Thrift and work are not enough to overcome the niggardliness of this type of agriculture. To produce an abundance of farm products requires that the farmer has access to and has the skill and knowledge to use what science knows about soils, plants, animals, and machines.' He is not aware that access to land is more fundamental as efficient land use is the basis of sustainable agricultural and rural development, without which, other agriculture-promoting measures (early retirement, young farmers, training, infrastructure, land consolidation, credits, fine seeds, better quality, higher yields, localized production, small and especially large machinery, organic farming, environmental protection, market access, etc.), would not function well (if at all), and the development of off-farm activities would even weaken the agricultural sector.

II. Failures of Backward and Consumption Linkage Effects on Agriculture Underrated by Hirschman

The inefficient land use by able-bodied part-time and absent small farmers has also caused the failures of the backward linkage effects of the agro- and other industries and the consumption linkage effects on agriculture, which has been paid little attention by Hirschman and others.

Hirschman has developed the linkages theory in 1954, 1958, 1977 and 1987. A linkage (or linkage effect) is a characteristic, more or less compelling sequence of investment decisions occurring in the course of industrialization and, more generally, of economic development. More specifically, the linkage effects of a given product line are investment-generating forces that are set in motion, through input-output relations, when productive facilities that supply inputs to that line or utilize its outputs are inadequate or nonexistent. *Backward linkage* leads to new investment in input-supplying facilities and *forward linkage* to investment in output-using facilities, both are *physical* or *production linkage*. *Consumption linkage* is the stimulus towards domestic production of consumer goods that will be undertaken as newly earned incomes are spent on such goods (which are often initially imported). *Fiscal linkage* includes direct fiscal linkage whereby the state extracts (and subsequently spends) revenue through taxes on exports, and indirect fiscal linkage whereby it raises (and then disposes of) receipts via tariffs on imports. *Inside linkage* describes situations in which the same economic operators who are already engaged in the ongoing activity are impelled to undertake the new activity (either yielding a new product at the same place or producing the same product in a new place); while *outside linkage* depicts circumstances under which the new activity is taken up by foreigners or the state. Backward, forward and consumption linkages can be either inside or outside linkages, whereas fiscal linkage is outside linkage. Hirschman claims that the linkages capture much of the development story: development is essentially the record of how one thing leads to another, and the linkages are that record. They focus on certain characteristics inherent in the productive activities already in process at a certain time. These ongoing activities, because of their characteristics, push or invite some operators to take up new activities. Whenever that is the case, a linkage exists between the ongoing and the new activity. (Hirschman 1977: 72-3, 80-1; 1987: 206-9). This paper is mainly concerned with the relevant problems in the backward linkage effects of the agro- and other industries and consumption linkage effects on agriculture.

Hirschman's linkages theory has been very influential and widely accepted. For instance, FAO stresses that `Industries based on agricultural raw materials played a

major part in the early stages of the industrialization of developed countries, and they are no less important in the industrialization now under way in developing countries. Such industries are estimated to account for nearly half of the total manufacturing value added and almost two thirds of the employment in the manufacturing sector in the developing countries, and their share in the developed countries, although smaller, is still substantial. The development of such industries also has many beneficial feedback effects on agricultural production itself' as there exist `the strategic links and interdependencies between agriculture and agro-industries.' (Santa Cruz 1998: iii). Of these feedback effects, `The most direct one is, of course, the stimulus it provides for increased agricultural production through market expansion. Often, in fact, the establishment of processing facilities is itself an essential first step towards stimulating both consumer demand for the processed product and an adequate supply of the raw material. The provision of transport, power and other infra-structural facilities required for agro-industries also benefits agricultural production. The development of these and other industries provides a more favorable atmosphere for technical progress and the acceptance of new ideas in farming itself.' (FAO 1997). `An effect that is sometimes overlooked is the substantial increase in employment in the production of the raw material that may result from setting up an industry using it. Even if the industrial process is itself capital intensive, considerable employment may be generated in providing the raw material base.' (Marsden & Garzia 1998: 13)

However, as the author (Zhou 2001: Ch 4) shows, Japan has provided an inconsistent case. Now that the agro- and other industries have been well developed in that country, why could not their backward linkage effects on agriculture be realized (regarding the decline in agricultural production and employment of able-bodied labor force in agriculture)? Contrary to the domestic-products-oriented consumption linkage effects which should lead to import substitute as defined by Hirschman, there appear *reverse* or import-oriented consumption linkage effects which have substituted domestic products with imports (of agricultural goods in this case). (The reverse or import-oriented consumption linkage effects is a concept formulated by the author.)

The following questions arise: can the backward linkage effects of the development of the agro- and other industries on agriculture be realized always? Can the more favorable *atmosphere* for technical progress and the acceptance of new ideas in farming itself provided by the industrial development be turned to *reality* all time? If not, mainly at which stage of rural development? What are the causes and solutions?

In fact, although admitting (1987: 209) that `Some or all of the linkages can fail to materialize and an inquiry into these failures permits a preliminary sorting out of major conceivable reasons for negative developments', Hirschman has not endeavored to go beyond the preliminary study to systematically research the failures either in one or more linkages, deeply analyze the major reasons, and make great efforts to seek solutions. Rather, he mainly takes delight in talking about the normal functioning of the linkages. But this would be not only futile in front of the failures, but even harmful, as it may lead to the ignorance of them and the illusion as if once, e.g., the agro-industries have been established, their backward linkage effects on agriculture would automatically be realized. An analogy could be that, when mankind did not know the circulation of blood in the human body, its discovery was significant. Afterwards, further researching the normal blood circulation is still necessary, but more importance should be attached to elucidating and curing the mal-circulation, since these tasks cannot be fulfilled by merely talking about the normal circulation. It would be inappropriate and even detrimental if medical scientists remained at mainly speaking on the normal circulation, while paying little attention to so many diseases of mal-circulation. Just think if doctors cheerfully talked about the normal blood circulation in front of so many blood cancer patients who are going to die currently still without solutions. Similarly, despite Hirschman (1998: 80, 83, 101) has been an economic adviser to Colombia since 1952 and then other parts of Latin America, developed the linkages theory basically out of his studies there, happily felt that Colombia `was moving forward' and believed that `there is no doubt that Latin America has made considerable progress in the 30 years since World War II', how to explain why the `moving forward' in that country did not lead to more wonderful advancement and the `considerable progress' in that continent did not expand to more successful development through the linkages but fell into decline in the 1980s, and how to solve the persisting mal-functioning of the linkages there? In fact, it is systematic studies, discovery of main reasons, and solutions of the failures of the linkage effects which are desperately longed for by the vast people in deteriorating poverty there.

Correspondingly, the above-cited FAO report (1997) has primarily repeated the normal backward linkage effects of the agro- and other industries on agriculture raised by Hirschman, as if these effects could be taken as granted. By the same illusion, the afore-mentioned FAO document (Marsden & Garzia 1998) has only indicated problems in the development of the agro-industries, and emphasized its backward linkage effects

on agriculture, while essentially ignored the failures in the realization of them. It is interesting that the recommended methodology `was field-tested during an FAO project in Thailand' (Santa Cruz 1998: iii), but the `Symposium Theme' of the International Symposium (2002) has reported a worsening agricultural situation exactly in Thailand and Southeast Asia. Therefore, it is imperative to systematically study the failures in the realization of the backward linkage effects of the agro- and other industries and the consumption linkage effects on agriculture, their main reasons, and the solutions.

As analyzed in Zhou (2001), it is the inefficient land use by able-bodied part-time and absent small farmers which has restricted the functioning of the market mechanism, and restrained the full-time farmers from achieving economies of scale. Thus, fundamentally it is this obstacle which has hampered the realization of the backward linkage effects on agriculture of the agro- and other industries, and caused the reverse consumption linkage effects, as the demand for agricultural products these linkages have induced could not be matched domestically (without huge government trade-distorting subsidies) and imports have to be resorted to. Although this obstacle appeared mainly in Japan in 1960, it has increasingly become global under both public and private land ownership, with both traditional and modern agriculture, in both low and high income economies, at both stages of food under-self-sufficiency and overproduction, and within both developing and developed countries.

III. Seeking Suitable Solutions under Private Land Ownership

The author's book (Zhou 2001) finds that for realizing food self-sufficiency, both the models of Japan with fragmented small farms (followed by Taiwan Province of China, South Korea, etc.), and the USA with joined large farms (pursued by Canada, the EU, etc.) under private land ownership and the Chinese model based on public land ownership have been successful, which are exemplars for other countries still facing food under-self-sufficiency to learn. Afterwards, however, the former models could not overcome the inefficient land use by able-bodied part-time and absent small farmers, and the governments had to turn to protectionism, which caused overproduction and many other problems, while the Chinese model could and has prevented overproduction (for details see Zhou 2001: Ch 6-7). Public land ownership may not be acceptable to other countries. Then how to overcome it under private land ownership?

(I) A Western European Legislation at the Food Under-self-sufficiency Stage, and the Fundamental and Derived Dilemmas the EU Faces at the Overproduction Stage

1. At the food under-self-sufficiency stage, a legislation to oblige farmers to either cultivate land or lease it for farming had been adopted by the EC Council Directives 1963/262, 1963/261, and 1967/531; the Agricultural Holdings Act of 17 July 1989 of Denmark; the Law of Cultivating the Land of 31 March 1915 of Germany; the Rules for the Utilization of the Uncultivated, Abandoned or Insufficiently Cultivated Lands of 4 August 1978 of Italy; the Agriculture Act of 6 August 1947 of the UK; and the Land Act of 18 March 1955, Act of Tenancy of 25 June 1965, and Concession Act of 31 May 1974 of Norway. It ceased functioning in the EU following overproduction, but is still implemented in Norway due to endured under-self-sufficiency.

2. At the overproduction stage, this legislation ceased functioning because the EU has faced a fundamental dilemma and some derivative dilemmas: still obliging farmers to either cultivate land or lease it for farming would strengthen overproduction; but if not, much land would be held by able-bodied part-time and absent small farmers in inefficient use, while full-time farmers could not easily achieve economies of scale to be competitive in front of the USA, Canada and Australia with much larger farm size and much lower general production costs and some developing countries with much lower labor costs, or even be viable. Without a solution, farmers (mainly full-time ones) pressed the governments for a high standard living against the difficulties cause by the lower prices following the overproduction. The governments had to yield to them in order to get their votes. Thus the EU turned to protectionism of coupling between subsidies and production, trade-distorting price supports to maintain agricultural products at prices higher than the international levels, and high tariffs against cheaper imports. The following analysis will mainly be on the coupling.

(1) The coupling not only could not solve that fundamental dilemma but has even led to some derived dilemmas.

Concerning overproduction. Under the coupling, if farmers have produced surplus, the EU has to buy it, which has encouraged overproduction. Thus on one hand, the EU intends to avoid the surplus, and has established quotas on some products (e.g., milk, sugar); and set-aside arable land scheme (with subsidies for farmers to join voluntarily) to stop production of cereals (and other arable crops), which includes mainly normal but also marginal land. On the other, however, overproduction has not been prevented because the coupling as an engine is still yielding it. Derived dilemma 1.

Regarding competitiveness. Under the coupling, farmers' competitiveness through lowering costs seems not so important, because if they could not sell products,

the EU would buy them. Thus on one side, the EU has the incentive to make the land use more efficient via economies of scale to reduce the endured high costs, and has exercised an early retirement scheme in both the EU and CEE candidate countries to pay old farmers to transfer land to young farmers. But it would in turn contribute to overproduction. Hence, on the other, inefficient land use by able-bodied part-time and absent small farmers exist in many EU states (Finland, France, Germany, Ireland, Italy, Portugal, Spain, Sweden, etc.) and candidate countries. Derived dilemma 2.

In respect of the budget. The coupling has led to overproduction and cost the taxpayers and consumers huge amount of money. The EU wishes to reduce the heavy budget deficits and has introduced in the setting-aside and early retirement schemes, which however, have added financial burdens too, meanwhile have resolved neither overproduction nor inefficient land use. Derived dilemma 3.

In the field of the international cooperation, the EU aims to help the developing countries and has set up many programs with economic and technological assistance. But the coupling, price supports and high tariffs have just unfairly restricted imports and harmed the interests of the Third World. Therefore, the EU has been continuously criticized in this aspect. Derived dilemma 4.

(2) The decoupling could not bypass that fundamental dilemma. Realizing some of the shortcomings of the coupling, the EU conducted incremental partial decoupling between subsidies and production during 1992-99, and released the `Mid-Term Review of CAP of Agenda 2000' (MTR 10 July 2002). Its major importance is that the EU has finally proposed to completely decouple the link between direct payments and production, so that farmers would fully compete in the market, rather than gearing production to the trade-distorting subsidies. It will be implemented by the 10 countries to join the EU in May 2004, thus reducing the financial burdens of the enlargement. It would also improve market opportunities for the developing countries, and constitute a good example for the other developed countries to follow. The MTR is significant also in that the decoupled direct payment to each farm will be conditional upon cross-compliance with the environmental, food safety, animal health and welfare, and occupational safety standards. This would lead to chiefly positive results in these fields.

At the demand side, the decoupling has increased the need for more efficient use of land. As mentioned above, under the present system of coupling, competitiveness of farmers seems not so important, because if farmers could not sell their products, the EU would buy them. After the decoupling, however, the EU would cease doing so.

Therefore farmers would have to fully compete in the market for selling their products. This would in turn necessitate the increase of farm size so as to achieve economies of scale and reduce costs by the full-time farmers.

At the supply side, some MTR measures may strengthen the inefficient land use. First, after the decoupling, farmers would have to sell their products in the market because the EU would no longer purchase their surplus, and market prices would be lowered due to more competition. This would lead to a positive result that farmers would no more have the incentive to produce surplus, but also a negative consequence, i.e., 'in some cases abandonment of land', as MTR (2002: 19) anticipates, rather than leasing it to the full-time farmers who would require it for achieving economies of scale. Second, after the decoupling, a direct payment would be given to each farm to guarantee the basic living of the farming family, even if it does not produce any product, as long as it has fulfilled the cross-compliance with the environmental standards (the cross-compliance with the food safety, animal health and welfare, and occupational safety standards would be irrelevant if the farm neither produces any crop, nor raises any animal, nor hires any labor). This would give the incentive to some farmers to just enjoy a direct payment without production, and spend all their time on earning off-farm income, without leasing the land to the full-time farmers who would need it to increase farm size.

Therefore, the decoupling could not bypass the above-revealed fundamental dilemma. Rather, it would only expose it which has been largely covered by the protectionism of coupling. In fact, although the MTR anticipates the risk of land abandonment after the decoupling, it has provided no solution to deal with it. Thus if this fundamental dilemma could not be overcome, then the decoupling might fail, as the full-time farmers would again exert pressure on the political parties to resume coupling so as to guarantee them a high standard living.

3. This legislation could not both promote large farmers and retain small farmers in agriculture, which is also an unsolved dilemma persisting in the EU, USA, Canada, and other developed and even developing countries. During the incremental partial decoupling of 1992-99, the EU has gradually replaced price subsidies by direct income subsidies, reduced intervention schemes, and successively decreased administrative prices towards the international levels, aiming to achieve a `farming without subsidies' and let the market decide prices in the long-run. As a result, `not all EU agricultural production is sheltered by high tariffs and the EU prices may be close to international

levels for a significant share of EU production, depending on market price fluctuations' (Beaumond 2002). Such market-oriented measures have been relatively favorable to the large farmers, because they have lower costs due to economies of scale and are stronger in the market competition; but unfavorable to the already weak small farmers, and have led to more exiting by them from agriculture, and consequently encountered protests from farmers out of their gained interests. Thus the EU wishes to both strengthen large farmers and retain small farmers in agriculture, because on one hand, urban unemployment has already been so high and homeless people so many, and on the other, rural development should be promoted to avoid the increase of `ghost towns' with nearly empty population. (Zhou 2001: 398). But how to combine these two seemingly contradictory aims? The above-mentioned Western European legislation could not provide a solution.

Moreover, now that this legislation has been successful at overcoming under-self-sufficiency, why could not it be popularized to many other countries still at that stage? One of the reasons is that it obliges farmers to lease out *all* their land, so that part-time and absent farmers may not be able to keep farming skills; and once lost off-farm jobs, they would either have no access to their land rented out, or have to withdraw it within the contractual period (because many developing countries still cannot afford to provide them with a basic social welfare), hence affecting the lessees.

(III) Possibly Suitable Solutions under Private Land Ownership

In order to overcome the global obstacle of the inefficient land use by able-bodied part-time and absent small farmers and achieve efficient and sustainable land use under private land ownership at both stages of food under-self-sufficiency and overproduction, the author, in a dynamic and variable approach, proposes to introduce a legislation to oblige the farmers to either cultivate their land or lease the inefficiently used *part* of it (as *land for market*) for farming at the under-self-sufficiency stage; and to grant the right to the full-time farmers to lease in the inefficiently used part of land of the part-time and absent farmers (as land for market) at the overproduction stage [i.e., a farmer may not be obliged to either cultivate his (her) land or lease it for farming *actively*; but if another farmer wants to lease in his inefficiently used part of land for farming, he (she) is obliged to agree *passively*; subsidies (decoupled from production) and tariffs should be gradually reduced to the WTO standards so that farmers would have no incentive to produce more than what they could sell; when a cultivable land is not demanded for farming, the owner should keep it in a good agricultural or environmental condition]. In both stages, the landowners may keep a part of the

cultivable *land for self-consumption*, forming a Dual Land System. The maximal length for the inefficient use of a land would be one year, beyond which it could be obliged to be leased actively at the under-self-sufficiency stage or passively at the overproduction stage. The minimum lease term would be one- (preferably five-) year (longer term possible). Having rented in contiguous parcels of different owners, the full-time farmers would have the right to remove their boundaries and join parcels together so as to eliminate fragmentation (which is also a difficult and unresolved task under private land ownership), with the original boundaries recorded in the cadastre and a map and showable by field signs. Once the lease contract is over, the landowners would have the right to withdraw their land. But if they did not use it efficiently, they would have to lease a part of it (beyond the self-consumption need) to the full-time farmers actively at the under-self-sufficiency stage; or passively when demanded by the full-time farmers at the overproduction stage. The lease could be available to the nationals of other countries on a reciprocal basis.

(IV) Potential Global Relevance

1. In the recent decades, there have been serious conflicts between developing and developed countries, and among developed ones, as most developed nations (except Australia and New Zealand) have provided high trade-distorting subsidies coupled with production to their farmers and tariffs against cheaper imports. Why should they rely on protectionism? One of the major reasons is the above-mentioned fundamental dilemma. On one hand, following the development of off-farm activities, more and more able-bodied part-time and absent small farmers inefficiently use land without incentive to sell or lease it, while full-time farmers could not easily increase farm size, achieve economies of scale and reduce costs. On the other, if the governments obliged farmers to either cultivate land or lease it for farming, there would be overproduction. Without a solution, the political parties have had to yield to the pressure mainly from the full-time farmers for a high standard living by coupling subsidies with their production so as to get their votes. The coupling has concealed the above-mentioned fundamental dilemma, since under this protectionism, much land is devoted to farming as if land were efficiently used, and the governments even have had to set aside some land in order to reduce overproduction. But actually the land is not so efficiently used as it seems to be, because if the coupling were lifted, then the operation of some (or even much) land would be abandoned, while the full-time farmers would have much difficulty in becoming competitive (or even viable) as they would not easily get the inefficiently

used land of the able-bodied part-time and absent small farmers for achieving economies of scale. Currently the USA, Canada, Japan, South Korea, etc. still have not determined to decouple subsidies from production (as the MTR has appealed to them) and have thus faced continuous international criticism. Once having decided to follow the EU, this fundamental dilemma would also be disclosed. The above-proposed solutions would resolve it so that both developed and developing countries could compete fairly on the basis of the WTO standards, promoting fraternity among nations.

2. In the EU enlargement, the negotiations have focused on agricultural and forest land purchase. Many EU candidate countries in CEE, fearing that their cheaper land may be bought quickly after the accession, have concluded with the EU for a transition period of seven-12 years during which Western EU citizens could not buy their land. On one hand, this would hinder the advanced Western EU farmers from working in agriculture of CEECs, hence a separated European 'Union' after the enlargement. On the other, a potential risk has been neglected: once a land has been purchased by Western EU citizens after the transition period, it may still be inefficiently used since it could be treated merely as an asset. In contrast, if the above-proposed legislation could be adopted in both the EU and candidate countries, then Western EU citizens could *immediately* lease in the inefficiently used part of their land for farming in CEE, without affecting its ownership, while the inefficient land use by the Western EU purchasers could also be prevented, thus achieving a true European *union* in agriculture after the accession. Moreover, this legislation is a major improvement and development of a Western European one implemented once in the EU and still in Norway. Thus adopting it would also promote CEE's integration with Western Europe.

3. In the EU enlargement negotiations, the EU has requested the CEE candidate countries to postpone free movement of their cheap laborers into the Western EU areas up to seven years after the accession, worrying that they may easily take jobs away from the Western EU workers. Most of them have agreed on a reciprocal basis vis-a-vis the Western EU member states, again dividing the enlarged EU. In contrast, the author's book (Zhou 2001) and this paper have discovered that in the agricultural sector, the reality and trend in the world as well as the EU is that many able-bodied farmers are more interested in earning higher off-farm income, so that allowing the fewer full-time farmers including those from CEECs to lease in the inefficiently used part of their land would not constitute competition with the part-time and absent small farmers and crowd them out of agriculture (in fact there is already an agricultural labor shortage in some

parts of the EU). Moreover, while the CEE full-time farmers could benefit the Western EU by their lower labor costs, their Western EU counterparts could help CEECs by capital and technology. The competition among Western and CEE full-time farmers in the leasing markets in both the Western and CEE EU areas would be mutually constructive. Therefore, at least in this sector, there would be no harm for the EU and CEE candidate countries to allow reciprocal free labor movement immediately (or through a much shorter transition period) after, or even before, the accession, hence increasing fraternity between the Western and CEE parts of the EU.

4. If all countries of the world could adopt these suggestions and allow not only nationals but also foreigners to lease in the inefficiently used part of the land (beyond the self-consumption need) of their part-time and absent farmers, then resources would be more efficiently used, environment protected, sustainable rural development achieved, fair competition boosted, and fraternity among nations further advanced. There is already a successful example: China has allowed external and foreign farmers to lease in its land for agriculture, and farmers from its external regions (Hong Kong and Taiwan Province) and foreign countries (Australia, Brazil, Canada, Germany, Israel, Japan, Singapore, Thailand, the USA, etc.) have indeed done so there (see Zhou 2001: 258-9), while Chinese farmers have rented land in other countries, e.g., Hungary and Russia, for agriculture.

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