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The Irrational and Polyopolistic Land Use across the World - An Evolutionary Political Economy Approach to a Microeconomic Obstacle Ignored by Nobel Laureate Schultz and Nominee Hirschman

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Abstract (525 words)
Section I challenges 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 can be efficient; (4) economies of scale do not exist in agriculture; and (5) investment in human capital counts much more than institutional changes and is the key to agricultural growth. It reveals that ever since the 1950s, after the land reform, the irrational and polyopolistic land use by able-bodied part-time and absent (mainly small) farmers earning higher off-farm income but unwilling to lease their insufficiently produced land beyond family consumption need to full-time farmers, has evolutionarily been a global obstacle with both public and private land ownership, traditional and modern agriculture, fragmented small and consolidatorily enlarged land, low and high income economies, food under-self-sufficiency and overproduction, and developing and developed countries, albeit land property rights have been well defined and sale/lease allowed, causing many negative consequences on agriculture, rural development, income distribution, government expenditure, competition, trade, environment, etc. (*Polyopoly* is designed by the author to mean the control by many sellers in contrast to monopoly and oligopoly). It has become a microeconomic root of the three persisting global macroeconomic problems: under-self-sufficiency, overproduction and agricultural protectionism. Evidence in Asia, Africa, South and North Americas, and Europe is cited.

Section II argues that Hirschman ignores that it has hampered the linkage effects.

Section III presents that only China has successfully exercised effective and appropriate solutions, but under public land ownership which may be unacceptable to others.

Section IV indicates that effective and appropriate solutions have not been adopted under private land ownership world-wide. It presents two effective (but not appropriate) Western European legislations and their shortcomings at the under-self-sufficiency stage, and fundamental and derived dilemmas at the overproduction stage at which, without a solution, the EU (and many other developed nations) has exercised protectionism by a coupling between subsidies and production (which together with price supports, export aids and import restrictions has made their farmers less competitive and harmed their consumers and taxpayers and the developing countries). In July 2002 the EU proposed a complete decoupling, but retreated in June 2003 to allow the Member States to keep the coupling, due to no solution to avoid production abandonment caused by part-time and absent landowners' refusal to lease their irrationally and polyopolistically used land to full-time farmers at low rents, which has just exposed this microeconomic root of protectionism.

Section V proposes effective and appropriate solutions for both developing and developed countries at both under-self-sufficiency and overproduction stages without changing private land ownership to achieve the following aims at the same time: minimize/abolish/prevent protectionism, while avoiding production abandonment and overproduction; reinforce full-time large farmers, whereas not crowding part-time and absent small farmers out of agriculture; reach/maintain basic self-sufficiency in cereals, meanwhile promoting multi-functionality of other agricultural and rural sectors and improving the environment.

Section VI predicts the promotion of fraternity among nations if the proposed solutions could be adopted globally. The author's analyses and suggestions have received positive responses from the EU, EU accession countries, CABI, OECD, UN, CSD, FAO, UNEP and World Bank.

I. Schultz's Assertions versus the History and Reality[1]

(I) Rationality of Small Farmers, Pursuit of Nonfarm Jobs, and Efficiency of Part-Time Farming

1. A Critique of Schultz's Assertions

(1) Definitions of efficiency and rationality

In *Transforming Traditional Agriculture* [1964] (reprinted in 1983 without changing views) which won the 1979 Nobel Economics Prize, `Schultz makes the very important point that farmers in low income countries are *rational* and make *effective* use of their resources. They are poor because their resources are very limited and because the knowledge is not available that would permit them to *produce the same output with fewer resources or a larger output from the same resources*' (Johnson 1983). According to Commentator AE2 (2003), 'In the framework of Prof Schultz, the rationality refers to the maximizing behavior subject to certain constraints, which is nothing but standard definition of the rationality in economics'. Thus, rationality and efficiency (effectiveness) are the same for Schultz.

However, the author's definitions of efficiency and rationality are not the same, and he treats the maximizing behavior only as the definition of efficiency and regards inefficient land use as land under-utilization. Generally speaking, when a country has not achieved stable basic self-sufficiency[2] in cereals,[3] any land insufficiently cultivated or idled may be regarded as inefficiently used. When a country has encountered constant overproduction,[4] if a land insufficiently cultivated

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[1] A first-time systematical and analytical criticism of most assertions of Schultz mentioned in this section has been made in the author's book (Zhou 2001: 11, 26-9, 76, 131, 152, 218, 244, 265, 288, 344, 373, 382, 384, 429), while this paper highlights and develops it. The book has cited 763 references most of which serve as evidence against his assertions on Japan (Chapter 4 with nine features of the Japanese model), other rice-based economies under private land ownership in monsoon Asia (Chapter 5: 184-88), China (Chapters 6-7 with 13 features of the Chinese model), other rice-based economies under public land ownership in monsoon Asia (Chapter 8), the USA (Chapters 9-10 with eight features of the American model), OECD and EU in general (Chapter 11: 397-8), Central-Eastern Europe (CEEC) and Central Asia (Chapter 11: 399-430), whereas this paper summarizes these lengthy texts into paragraphs and adds proofs in West Asia, Africa and Latin America. Therefore this section is a supplement to that book in terms of the criticism of Schultz's assertions and evidence.

[2] According to JSY (2005: 276), self-sufficiency ratio = [volume (or value) of domestic production (vdp) ÷ volume (or value) of domestic consumption (vdc)] x 100. Thus, a country could be regarded as having achieved self-sufficiency in one product if its (vdp ÷ vdc) x 100 = 100, over-self-sufficiency if its (vdp ÷ vdc) x 100 > 100, or under-self-sufficiency if its (vdp ÷ vdc) x 100 < 100. However, this is only in absolute terms. In relative terms, if a country has reached self-sufficiency or over-self-sufficiency in cereals in absolute terms, but there are still people in hunger (without obtaining the minimum daily calorie stipulated by the United Nations), then it has under-self-sufficiency in cereals in relative terms. An example could be Brazil which has been a net exporter of cereals and reached over-self-sufficiency in absolute terms, but also possessed many people in hunger and hence not achieved self-sufficiency in relative terms in cereals. The distinction between self-sufficiency in absolute and relative terms is designed by the author as not seen in the literature. A reference for the quantity of the *basic* self-sufficiency in cereals may be taken from China: over 90% of domestic production (Chen 2004).

[3] Exactly speaking, under-self-sufficiency in cereals should mean a self-sufficiency ratio in cereals under 100%. For convenience, however, the author uses this term as indicating under-*basic*-self-sufficiency in cereals.

[4] Overproduction of a product of a country shall mean the surplus of that product of that country which could not be sold internally or externally without or even with agricultural protectionism. This definition is formulated by the author as not seen in the literature. Agricultural protectionism denotes five main components: (1) subsidies coupled with production, (2) price supports, (3) export aids, (4) import restrictions including (i) either prohibition or high tariff for import and (ii) non-tariff barriers, and (5) subsidies decoupled from production at level beyond the WTO standards. The non-tariff barriers are not discussed here so as to concentrate on resolving the other items as the first priority. In a country without protectionism, (1) if domestic production is equal to domestic consumption, it is a competitive or true self-sufficiency; (2) if domestic production is more than domestic consumption, and the surplus is salable abroad, it is over-self-sufficiency but not overproduction; however if it is unsalable abroad, it is both over-self-sufficiency and overproduction, but it would not last long, as farmers would have no incentive to overproduce unsalable surplus; (3) if domestic production is less than domestic consumption, it is under-self-sufficiency, but the insufficiency gap would be matched by imports. In a country with protectionism, when domestic costs are higher than import costs, (1) if domestic production is equal to domestic consumption, it is a protectionist or untrue self-sufficiency; since if without protectionism, it would turn out to be under-self-sufficiency, as part or all of products would be imported, while the

or idled is requested by another farmer for farming, but the landholder does not agree to transfer it out, it may be perceived as inefficiently used; but if it is not needed by any other farmer, it may not. (This dynamic definition is not in the author's 2001 book). A reference for the criterion of insufficiently used land is in the Italian `Rules for the Utilization of the Uncultivated, Abandoned or Insufficiently Cultivated Lands' of 4 August 1978 (Art. 2): `Those lands whose average ordinary production in the last three years have not reached 40% of those obtained under the same cultivation, in the same period, on the lands of the same census zone, with the same cadastral characteristics, the cultural features being taken into account, are regarded as insufficiently cultivated'.

Furthermore, the author includes social justice (or appropriateness) into the definition of rationality. There are mainly two parts of the social justice, (1) for a basic social welfare of the farmers and (2) for the interests of the society. A non-maximizing behavior is inefficient but may be regarded as rational as long as it caters farmers' basic social welfare. But if the basic social welfare of the farmers has been catered, while the farmers still do not wish to transfer the land to other farmers who need it for effective use, then a non-maximizing behavior is irrational. This behavior may be 'rational' to the egoist and superficial interests of farmers themselves, but not so to the society's and their fundamental interests, such as in the waiting room of an airport at night, while some passengers have no seat at all and have to sit on the ground, others occupy more than one for a more comfortable sleeping. [The division and relationship between the efficiency and rationality are implicit in the author's book (Zhou 2001: 28), but explicit here]. A deeper analysis will be made when discussing the high income stage.

(2) At the low income economy

Schultz treats the low income countries as *closed* from the high wage stage or high income economy, as he states ([1964] 1983: 3-4, 11, 15): `Farming based wholly upon the kinds of factors of production that have been used by farmers for generations can be called traditional agriculture.' `A major new problem has arisen in a number of high income countries in which the agricultural sector has been most successful in adopting and using modern factors of production. It is the problem of adapting agriculture with its high rate of increase in labor productivity to a high income economy in which the demand for farm products is of slow growth. It becomes an acute problem when the labor force required for farming begins to decline at a substantial rate and many of the farm people . . . leave agriculture . . . for nonfarm jobs'. `But countries still saddled with traditional agriculture are not up against this particular problem.' Thus, the `related economic issues' of `the relatively low rate of increase in the demand for farm products as income rises' and `the adaptation of the agricultural sector to growth in high income countries' are `not considered' by him.

This paper, however, stresses that at least from the early 1950s on, the low income countries still saddled with traditional agriculture have been increasingly *open* to the high income economy, as small peasants there would migrate to those rural areas which have entered the high wage stage, cities and abroad to earn higher income as part-time and absent farmers,[5] thus also are up against the particular problem of adapting the agricultural sector to a high income economy. For example, although prewar Japan in East Asia was developed, its industrialization from the very beginning on

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domestically unsalable products would become overproduced, hence hidden under-self-sufficiency and hidden overproduction; (2) if domestic production is more than domestic consumption, and the surplus is salable abroad, it is both over-self-sufficiency and overproduction, because if without protectionism, part or all of exports would not be realized, and would turn to be overproduced, hence hidden overproduction; when a country has partly allowed imports, there could be coexistence of over-self-sufficiency, overproduction together with imports (revealing the uncompetitive or untrue self-sufficiency or over-self-sufficiency), as the domestically and externally unsalable surplus due to the higher costs would be accumulated into excessive inventory, while low cost products would be imported (this could the case of South Korea, see later); (3) if domestic production is less than domestic consumption, it is under-self-sufficiency. These classifications are formulated by the author as not seen in the literature.

[5] It would be more appropriate to call absent farmers as nominal farmers since an absentee cannot farm. They are called so just in order to reflect their psychology of not abandoning the title of farmers so as to facilitate their return to farming once having lost off-farm jobs. This explanation is not contained in the author's book (Zhou 2001).

was based on its imports of foods from, and exports of industrial goods to, colonies (Taiwan Province of China during 1895-1945 and Korea during 1910-45), `as it found that capitalistic rice-growing was a low-productivity undertaking' in its agricultural sector, which was really `relatively stagnant and "sick" in the decades leading up to World War II' (WWII) (Oshima 1987: 39, 109). 'In the prewar period, very little machinery was used in monsoon Asian rice-producing economies. Tractor cultivation was attempted, but did not meet with much success in the places where it was tried. Tools and implements were generally of the simplest type. Under such *traditional technologies*, rice growing in the Orient was one of the most labor-intensive types of agriculture known' (Wickizer & Bennett 1941: 50). Therefore at the end of WWII, Japanese agriculture was a traditional one. Land reform was made during 1946-50, which distributed land from large owners to peasants with no or little land, raised their incentive for production and productivity, released peasants from agriculture to off-farm activities, which in turn gradually caused agricultural labor shortage and the use of small machinery up to 1960. Of all farm households, its full-time households accounted for 53.6% in 1946 (JSY 1961: 71), 50% in 1950, 34.8% in 1955, 33.7% in 1960, and 20.5% in 1965; and of total farm household population, persons engaged mainly in farming (both those engaged exclusively in farming and those engaged in farming for more days than in other jobs) took 53.2% in 1955, 42.3% in 1960, and 38.3% in 1965 (JSY 1977: 99, 103). Schultz ([1964] 1983: 18) also cites that in Northwest Europe (Austria, Belgium, Denmark, France, West Germany, Ireland, the Netherlands, Norway, Sweden, and the UK), employment in agriculture declined by over one-fifth during 1950-59.

(3) At the high income economy

How then about the low income countries which are *open* to the high income economy? Schultz ([1964] 1983: 124) claims that `in communities where nearby off-farm jobs are readily available on both a part-time basis and a full-time basis the contributions of a human agent become divisible and part-time farming becomes possible; and it can be efficient.'

But this paper emphasizes a reality as contrary to Schultz's assertion. From the natural, economic and technological point of view, when there were few off-farm activities, rural development was at the low income economy or low wage stage, and peasants had to rely on agriculture. As population grew, they had to reclaim uncultivated normal land, then marginal land for food. As relatively easily reclaimable land diminished, shortage of land would appear, and land rent would rise as many tenants competed for land.

From the institutional point of view, under the feudal system, a few landlords owned large areas of land, while most peasants owned none or little and had to be either tenants paying exorbitant rents or laborers receiving extremely low wages. Under the centrally planned economy, land was publicly owned and collectively operated. Both systems could not bring about enough individual incentives of farmers for production. Hence the land tenure reform for equitable individual ownership or individual possession of publicly owned land, which usually distributed land to families with a combination of good, bad, remote and nearby parcels, causing fragmented small individual farms, which could raise incentives of individual farmers (private landowners or individual holders of public land) for production, increase productivity and release surplus peasants from agriculture.

However, in general, the elasticity in consumption of *cereals* is lower than that of *non-cereal agricultural goods* (cash crops, meat, fish, etc.) which in turn is lower than that of *industrial and service products* [keeping in mind that certain special agricultural products (vegetables, fruits, cheese, wine, ham, fish, and even a few cereals, etc.) may only be produced in some special localities and may have a relatively high elasticity]. From an evolutionary point of view, after people become richer, on one hand, they first tend to consume less cereals and more non-cereal agricultural goods; but the increase of their consumption of the latter may be limited and such consumption may even relatively decline afterwards too (in order to avoid obesity). On the other, they still have to consume certain agricultural goods. Therefore the income of the full-time (or active) cereal farmers would become lower than that of non-cereal farmers, which would in turn be lower than that of off-farm workers. This would induce many able-bodied farmers to first turn to

non-cereal production, and then seek off-farm employment, which would result in agricultural labor shortage, higher wage demand and use of small machinery (which did not require more land). As the economy further enters the high income stage, and labor becomes more expensive than large machinery, it would be necessary for the remaining full-time farmers to acquire more land, use large machinery, achieve economies of scale, reduce costs, and be viable or more competitive, if the part-time and absent small farmers could either sell or lease their irrationally used land to them.

But a global problem has been that under both public and private land ownership, with both traditional and modern agriculture, on both fragmented small land and consolidatorily enlarged land, in both low and high income economies, at both stages of food under-self-sufficiency and overproduction, and within both developing and developed countries, even though land property rights have been well defined and restrictions on land sale or lease removed, many able-bodied part-time and absent small farmers earning higher off-farm income have little willingness to sell land, in order to keep it as a security (so that they could return to farming once having lost off-farm jobs) and asset (to be passed to their children), and enjoy the rural environment (for a more natural, primitive, less polluted and vacational living). The modern rural facilities similar to those in cities (car, bus, train, electricity, gas, refrigerator, tap water, washing machine, television, fixed and mobile telephone, fax, computer, Internet, etc.) have made living in the rural areas convenient. They have little willingness to lease it out either, mainly due to low rent (the full-time farmers could not pay high rent because the revenue from production of cereals and many other agricultural goods would not be high due to their low elasticity in consumption), avoidance of possible misuse by tenants (who might apply much chemical fertilizer in order to gain a short-term high output), jealousy in preventing neighbors from prospering, self-use for family consumption and hobby, and fear that land leased out may not be withdrawn. The higher off-farm income has made the part-time and absent small farmers unnecessary to either sell or lease out land. These are the major reasons why the free market mechanism itself could not effectively lead the able-bodied part-time and absent small farmers to transfer their irrationally used land to the full-time farmers. Actually, the higher the off-farm income, and the more stable the off-farm jobs the able-bodied part-time and absent small farmers have obtained, the less incentive they would have in selling or leasing out their land. The irrational land use by able-bodied part-time and absent small farmers tend to expand from seasonal to year-around.[6]

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[6] The author's book (Zhou 2001: 7) shall be the first in literature to systematically reveal the irrational land use by able-bodied part-time and absent small farmers as a global obstacle. The monsoon Asia part is based on his PhD thesis defended in February 1998 in European University Institute (EUI, Florence, Italy) which received a unanimous praise of an international jury of experts: `We recommend the award of the PhD and congratulate the candidate on a comprehensive analysis of a highly complex and significant problem and for his carefully considered suggestion for its solution.' It was the second PhD thesis in economics receiving the jury's congratulations in the history of EUI. They regarded it as publishable as the Department of Economics of EUI stipulated that a thesis could be defended only after all the examiners have determined it as publishable. Indeed, even before the defense, two publishers (Edward Elgar Publishing and Ashgate Publishing) had already accepted its entirety. Edward Elgar (1997) declares that this book `will make a significant contribution to an important but rather *neglected* area'. Of 167 theses defended in the Department of Economics of EUI since its foundation in 1976 until 2 February 2001, only 13 or 7.8% had been published as books, including this one. (Zhou 2001: xxi-xxii, 24). After the defense, the thesis was revised and extended to the USA, Europe and Central Asia. Before the publication, four components were published by FAO [search (www.fao.org)] and four by CABI, and various parts accepted by international conferences held by FAO, USDA, WIDER, etc., in Bulgaria, Finland, France, Greece, Hungary, Italy, Morocco, the Netherlands, Norway, Russia, Slovenia, Spain, the UK and USA respectively (e.g., the part on the USA was accepted by the USDA Second National Small Farm Conference while that on CEECs-NIS by five international conferences on transition). The book has received endorsements [see (www.e-elgar.co.uk) (www.amazon.com)], and positive reviews in `World Agricultural Economics and Rural Sociology Abstracts', October 2001, Vol. 43, No. 10, Abstract 6046; `Rural Development Abstracts', December 2001, Vol. 24, Abstract 2480; `Journal of Economic Literature', March 2002: 301-2; `Agricultural Economics', January 2003, Vol. 28, Issue 1: 71-4; and 'Quarterly Journal of International Agriculture', Feb. 2003, Vol. 42, No. 1: 114-6 which judges 'this path-breaking book', 'His approach is very broad', 'The discussion of these types – along with the consequences they bring with them – provides insights that can hardly be found anywhere else', 'The book is *full of in-depth observations and analyses*', 'It is one of the most important contributions in our time to land-tenure literature and a must for all of those working in the

Here, the author, according to his above-mentioned definitions of efficiency and rationality, raises a hypothesis (which is implicit in his 2001 book but explicit here) that, with the same conditions (health, age, gender, diligence, education, skills, intelligence, information, etc.) between full-time and part-time farmers, in comparison with full-time farming, part-time farming *cannot* be efficient in terms of land use; while that for family consumption is inefficient but can be rational (mainly as an economic, social and technological buffer), that beyond family consumption need both inefficient and irrational.

This is basically because full-time farmers could have more time to learn and apply modern agricultural science and technology, take care of farming and the environment, cultivate more land to achieve economies of scale and reduce costs, and thus '*produce the same output with fewer resources or a larger output from the same resources'* than part-time farmers. It is important to notice that even if the knowledge that would permit them to produce the same output with fewer resources or a larger output from the same resources is available, the part-time and absent farmers may not have enough time to learn and apply it, especially the modern scientific knowledge, as Schultz himself has admitted ([1964] 1983: 203-4): 'Farm people even more than many workers in nonfarm jobs must acquire skills and knowledge drawn from science if they are to be effective in using modern agricultural factors of production', and 'Much of what is learned that is vocationally relevant at the time will be wholly obsolete as agriculture in the community adopts and uses ever more modern agricultural factors.' They may not have enough energy to take care of their idled or insufficiently used land.[7]

But part-time (and absent) farmers may need a part of land for family consumption products (as an economic buffer), for keeping farming skills (as a technological buffer) and for survival once lost off-farm jobs (as a social buffer). Thus, on the part of land for family consumption, part-time farming, though inefficient compared with full-time farming, can be rational.

However, if part-time (and absent) farmers are unwilling to transfer the insufficiently produced land beyond the family consumption need to the full-time farmers who need it for efficient use to achieve economies of scale and reduce costs, be viable or more competitive, then part-time farming is both inefficient and irrational.[8] [A detailed discussion on the irrational land use by able-bodied part-time and absent small farmers in terms of the property rights and transaction costs theories including those by Coase, North, Demsetz, Furubotn and Pejovich, Laffont, Milgrom and Roberts, and Varian is in Zhou (2001: Chapter 3)].

In reality, if the part-time and absent small farmers could be guaranteed with a back-up basic social welfare and provided with appropriate remuneration, then some of them (especially old ones and single females without husband who owing to physical restrictions normally carry out relatively less farm or off-farm activities and wish to earn some rent) would be willing to transfer their otherwise irrationally used land in various suitable forms to the full-time farmers for effective use, yet others (particularly able-bodied ones) would still be unwilling to do so.[9] As a result, the remaining full-time small farmers, largely non-viable as the economy develops into the high wage

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field', 'Zhou's contribution is, however, remarkable in any case'. The author has provided consultations to FAO and OECD, and acted as a referee for `Agricultural Economics' at their invitations and been asked by 'Contemporary Authors' to be listed there.

[7] Evidence that the part-time and absent small farmers may not have enough time and energy to learn and apply the modern scientific knowledge and take care of their idled or insufficiently used land is in the author's book (Zhou 2001: 138-9 for Japan; 185-8 for other rice-based economies in monsoon Asia under private land ownership; 214-6, 248 for China; 383 for the USA; 397-8 for Portugal, OECD and EU in general; 416 for CEECs-NIS; 413 for Kazakhstan; 415-7 for Armenia; 418 for Georgia and Albania; 419 for Croatia; 421-2 for Slovenia; 424 for Poland). This paper will add evidence for West Asia, Latin America and Africa.

[8] The points that part-time farming cannot be efficient (in comparison with full-time farming), but that for family consumption is inefficient while rational and that beyond family consumption need both inefficient and irrational are implicit in the author's book (Zhou 2001: 28), but explicitly indicated here.

[9] Evidence that old and single female part-time and absent small farmers are much more willing to lease land out than able-bodied ones is in the author's book (Zhou 2001: 134 for Japan; 377-8 for the USA; 416 for CEECs-NIS; 419 for Croatia; 424 for Poland).

stage, could not easily get the resources irrationally held by the able-bodied part-time and absent small farmers for effective use, although the knowledge and other conditions are available to both the full-time, and part-time and absent small farmers that would permit them to produce the same output with fewer resources or a larger output from the same resources. National food security could only be kept at the subsistence level or could not even be maintained without huge government subsidies. Budget burden, unnecessary food under-self-sufficiency and import, higher domestic and international prices of agricultural goods, artificial food overproduction, agricultural trade protectionism, low competitiveness of farmers, inequitable income distribution, persisting poverty, insufficient cultivation or idleness of land, waste of other resources, soil degradation, environmental deterioration, etc. would also be incurred. Therefore at least some (mainly able-bodied) part-time and absent small farmers are not *rational* to the society's and their own fundamental interests, even if they may be 'rational' enough to their egoist and superficial interests.

2. Caveats and a Historical and Dynamic Approach

Commentator AE1 (2003) states that 'Chayanov (1923) already demonstrates the efficient characteristics of part-time farming, family farming and small farms for agriculture in Europe, Russia and Japan at the end of the 18th century, characteristics that Schultz refers to in his 1964 book.' The author is grateful to this comment because it may be representative of many other readers, and thus presents some caveats below.

(1) *Family farming* may not be equal to *small farms*' farming. The author's 2001 book has collected evidence that most of the successful and efficient large-scale farming is based on family farming (Zhou 2001: 135, 138 for Japan; 248-77 for China; 321-7 for the USA; 416-8 for Armenia and Georgia; 419 for Croatia; 422 for Slovenia).

(2) *Small farms* may not be equivalent to *inefficiency*. (i) At the low income economy, the land tenure reform for equitable individual ownership or individual possession of publicly owned land may bring huge incentives for production to farmers even upon fragmented small farms (evidence is in the author's book Zhou 2001: 123-7 for Japan; 191-209 for China; 333-4 for the USA; 416-8 for Armenia, Georgia and Albania). (ii) At the high income economy or the transition from the low to high income economy, there are also small farms whose owners or holders are full-time farmers, love farming and till land efficiently. Of them, those who could get more land could achieve economies of scale and become competitive [evidence is in Zhou 2001: 135, 138 for Japan; 223-94 for China; 378-80 for the USA; 416-8 for Armenia and Georgia; 419 for Croatia; 422 for Slovenia (implicitly)]; while those who could not get more land would have difficulty for even survival without huge government subsidies, or also become part-time and absent farmers (evidence is in Zhou 2001: 138-46 for Japan and Taiwan Province of China; 209-22 for China; 382-4 for the USA; 414 for Poland; 416-8 for Armenia and Georgia; 419 for Croatia; this paper will add evidence for Mexico).

(3) *Old and single female farmers* are much more willing to lease land out than *able-bodied part-time and absent small farmers*, as mentioned above.

(4) *Large landowners* are much more willing to either cultivate their land or lease it out. Large landowners still exist chiefly in those countries (i) where the land reform has not been completed (Brazil, the Philippines, South Africa, etc.), (ii) where after the land reform, small landowners gradually sold land to others who accordingly accumulated land (the USA, Canada, etc.), and (iii) where the land enclosure had driven small owners to cities to be cheap industrial workers and concentrated land to some large owners (the UK). Compared with small landowners, large ones are much more willing to either cultivate their land or lease it out principally because their gains from economies of scale would exceed the costs. Suppose 100 ha of land are owned by 100 persons, each 1 ha. If one cultivates or leases out this small land, he (she) may not earn much, while still bearing the potential risks the tenant might incur to his (her) land. Thus, if he had enough off-farm income, he would prefer to neither produce sufficiently on it nor lease it out. In contrast, if 100 ha are owned by one person, his gains from either producing sufficiently on it or leasing it out would be higher than his costs owing to economies of scale (which will be further dealt with later).

Of course, it has also happened that some large landowners are rich enough and just idle or under-utilize a part of land, if they feel the market prices are not high enough for them to produce sufficiently on it, and if the tenants could not afford to pay high rents. (Therefore this paper will finally propose to give full-time farmers access to any land insufficiently produced beyond the family consumption need of the owner no matter whether he is large or small).

With the above-mentioned caveats, the following discussion will concentrate on the inefficient and irrational aspect of the *able-bodied part-time (and absent) small* farmers (rather than putting 'part-time farming, family farming and small farms' in the same category as Chayanov presents) in a *historical and dynamic approach.*

The author has pointed out at the earlier part of this paper that from the natural, economic and technological point of view, when there were few off-farm activities, rural development was at the low income economy or low wage stage, and peasants had to rely on agriculture. As population grew, they had to reclaim firstly uncultivated normal land, and then marginal land for food. As relatively easily reclaimable land diminished, shortage of land would appear. Relatively easily reclaimable land largely disappeared in Asia before the 1950s (Ishikawa 1967: 61), and also in many other continents following the population explosion in the post-war period, which Schultz ([1964] 1983: 179) has also recognized - 'But good farm land is no longer around for the taking, except in a few parts of Latin America and in some areas elsewhere which are still inaccessible from lack of roads and other transport facilities'. Until then (including the end of the 18th century), whether part-time farmers were efficient or not, they would not affect full-time farmers very much since relatively easily reclaimable land was still available. But evolutionarily speaking, afterwards, the full-time farmers could not increase farm size if part-time and absent small farmers did not sell or lease out their irrationally used land (i.e., the part beyond their family consumption need).

3. Polyopoly of Cultivable Land

Exactly because on this earth, cultivable land can no more be created, the owners and holders of such scarce resource possess a *polyopoly*, which is invented by the author to denote the control of a kind of resource by many sellers in comparison with monopoly (by one seller) and oligopoly (by a few sellers).[10] For instance, in the expansion of a city, many owners of the surrounding land may demand very high prices for selling their land. Accordingly, polyopsony means the control of a kind of resource by many buyers in comparison with monopsony (by one buyer) and oligopsony (by a few buyers). For example, using polyopsony, many consumers of a country may boycott the imported products of another country. Of course, it is not the task of this paper to discuss all types of polyopoly and polyopsony and analyze which should receive social management. But the polyopoly reflected in the refusal of leasing the insufficiently produced land beyond the family consumption need by part-time and absent small farmers at low rents to the full-time farmers, is irrational and anti-market economy, could not be resolved by the free market mechanism itself, and should thus be intervened by the society (just as anti-monopoly and oligopoly) in order to reach a rational and competitive land use.

4. Evidence in Asia, Africa, South and North Americas, Oceania, and Europe

Using a comparative approach, the author generates the Japanese model of rural development as a leading example which would be universally meaningful. The Japanese model of rural development began by (feature 1) a land reform for individual ownership in 1946-50 with protection of tenants from eviction, low land rent, and land-holding ceiling in order to prevent the revival of feudal landlordism through land repurchasing. Although numerous fragmented small farms were maintained, it brought in huge incentives to peasants for production. Meanwhile national rural cooperatives were set up to provide overall services to family farms. Through (feature 2) government policies supporting rice production and rural development (chiefly rice self-sufficiency,

[10] The author is most grateful to Ian Fraser, Ken Hulley and Nicola Owtram for their help in choosing a proper English word from several proposed by the author to describe the phenomenon, and to Ian Fraser for advising the author to determine to use polyopoly. According to him, mono and oligo are originated from Greek, so as poly; in order to avoid polypoly, o is added in between, hence polyopoly.

rice price support, farm credit and subsidies, technological research and extension services); (feature 3) construction of rural infrastructure (mainly irrigation, land improvement, transportation, communication, electrification, and education); (feature 4) higher yielding and multiple cropping of rice and other cereals (which raised both land and labor productivity and released labor from cereal culture); (feature 5) diversified cropping and non-crop agriculture (which increased peasants' income, changed agricultural structures, and led to the establishment of rural enterprises for processing, transporting and marketing crop, livestock, fishery and forestry products); (feature 6) off-farm employment (which offered peasants jobs in both urban and rural enterprises, further raised peasants' income, altered rural structures, and promoted urbanization); and (feature 7) peasant migration to cities and work in town and village firms mainly by able-bodied males, full employment was realized and wages rose, which resulted in (feature 8) agricultural mechanization with small machinery. In 1960, rice self-sufficiency was attained, the first transition (agriculture to industry) completed, labor shortage appeared, and the second transition (industry to services) started. These positive features would be useful for other countries.

However, even though land consolidation [exchange of private ownership and location of spatially dispersed parcels of farms to form new holdings containing a single (or as few as possible) parcel(s), with the same (or similar) value as that of the original areas] has been progressing ever since 1949, the purchase of land by farmers was subsidized by the government from 1961 on, the land-holding ceiling relaxed in 1962, land rent control removed in 1970, and landlords allowed to retrieve land after long-term lease in 1970 and after short-term lease in 1980, (feature 9) *the irrational and polyopolistic land use by able-bodied part-time and absent small farmers* has remained as the last obstacle still unresolved to sustainable rural development.[11] In order to be viable and gain higher incomes, farmers (mainly full-time ones) and cooperatives lobbied for government protectionism of rice production. The ruling party yielded, fearing the loss of votes. Rice import prohibition during 1961-93 caused international protests. The government subsidies to farmers through buying rice at higher, and selling it at lower, prices resulted in major budget deficits and also artificial overproduction. In order to reduce surplus the government again paid farmers to cut young crops or turn rice to forage. Under the pressure of the WTO and USA, since 1994, it has imported rice but also set up high tariff and non-tariff barriers to restrict import. Its trade-distorting agricultural subsidies (around 60%) has been much higher than the WTO standards (10% of the total value of production for a developing country and 5% for a developed one), as Table 1 shows. Rice costs and prices rose well above the prevailing international levels. Its self-sufficiency has been kept until 1996 and reduced to 99%, 95%, 95%, 95%, 95% and 96% during 1997-2002 artificially under the heavy state protectionism. Most of other agricultural products, with less or no government subsidies, have lost self-sufficiency since the 1960s, and all have fallen into this situation since 1994. The only exception is whale, whose self-sufficiency has been maintained (at least until 2000, the ratio afterwards is not published by JSY) at the expense of this scarce sea animal despite the continuous international protests. Of all farmers, those in full-time decreased from 33.7% in 1960 to 20.1% in 2003, and those in part-time 1 (mainly farming) reduced from 21.2% in 1980 to 13.1% in 2003, while those in part-time 2 (mainly other jobs) grew from 66.2% in 1980 to 66.9% in 2003. During 1965-2003, there has been a general trend of a decrease of the total agricultural labor force and those males and females aged between 15-64, and an increase of those aged 65 and over. The utilization rate of cultivated land has been dropping from 133.9% in 1960 to 100% in 1993, 99.3% in 1994, and 94.4% in 2002. (JSY 1977: 100; JSY 1986: 159; JSY 1992: 153; JSY 1993/94: 272; JSY 1997: 235, 276; JSY 1999: 231; JSY 2000: 268; JSY 2002: 230, 231, 237, 278; JSY 2003: 278; JSY 2005: 230, 231, 237, 274). The cultivated land abandonment ratio grew from 2% in 1975 to

[11] The author (Zhou 2001: 7) has cited Oshima's view (1987: 65) that the last obstacle to sustainable rural development in monsoon Asia is (fragmented) small farms, but added that the inefficient (irrational) land use by able-bodied part-time and absent small farmers (private landowners or individual holders of public land) is the cause. Here it is developed by incorporating the polyopolistic use into the cause and regarding this cause as the last obstacle to sustainable rural development globally no matter whether the land is fragmented and small or not.

Table 1 Producer Support Estimate (%PSE) * of 22 Countries, EU and OECD 1986-2002 (Percentage in Value of Production)

Year	*86-90*	*91*	*93*	*95*	*96*	*97*	*98*	*99 p*	*2000*	2001	*2002 p*
Bulgaria		-39	-4	-25	-54	-10	2	-6			
Czech R. #	57	51	27	17	16	4	20	20	17	23	28
Estonia	75	59	-32	0	7	5	19	5			
Hungary #	32	13	22	14	10	5	19	23	22	19	29
Latvia	80	83	-40	5	3	4	16	17			
Lithuania	77	-262	-37	0	1	3	13	14			
Poland #	-4	-1	12	11	15	14	21	21	15	15	14
Romania	45	15	16	10	12	3	28	18			
Slovakia #	50	39	30	12	1	8	27	24	25	16	21
Slovenia			28	37	29	37	44	48			
Russia	78	60	-24	16	24	29	14	2			
EU-15 #	43	50	42	38	34	34	39	43	34	34	36
OECD	39	39	37	33	30	29	34	37	32	31	31
Year	*86-88*										
EU-15 #	44										
OECD	39										
Australia #	9						7	5	5	4	4
Canada #	33						17	17	19	17	20
Iceland #	75						67	67	64	60	63
Japan #	67						62	64	60	59	59
Korea, South #	71						57	69	67	63	66
Mexico #	-1						14	15	24	21	22
New Zealand #	11						1	1	1	1	1
Norway #	66						67	67	68	67	71
Switzerland #	73						70	72	72	72	75
Turkey #	14						25	23	21	10	23
USA #	25						23	25	22	23	18

* Producer Support Estimate (PSE) is an indicator of the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm-gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on farm production or income. Support expressed as percentage of gross farm receipts (%PSE) shows the amount of support to farmers, irrespective of the structure of a given country. For this reason, the %PSE is the most widely used indicator for comparisons of support across countries, commodities and time. It is equivalent to that for the trade-distorting agricultural subsidies.
p - Provisional.
Member states of the OECD.
Sources: OECD 2000: 25, 101-2. OECD 2001a: 71, 76-7. OECD 2001b: 181-2. OECD 2003: 213-4.

3.8% in 1995 (in so doing, the owners abandoned operation but not ownership, and consequently others still could not use their land). (For a detailed discussion, see Zhou 2001: 123-46).

In East Asia, the Japanese model was just repeated by Taiwan Province of China in the 1970s and South Korea in the 1980s (for more information, see Zhou 2001: 7, 146, 184-5). In South Korea, the government on one hand has been purchasing rice at a very high price level, which has led to overproduction by farmers (according to its Ministry of Agriculture and Forestry, surplus rice was 150,000 tons per year and the inventory had reached 1,500,000 tons by December 2003); and on the other exercising rice import protectionism, which has caused domestic rice price level five times that of China and Southeast Asia. This trade distorting behavior has violated the rules of the WTO and incurred its pressure to reduce overproduction and open domestic market. Thus on 4 December 2003 the government proclaimed a bill signed by President Moo-hyun Roh (Roh, Moo-

hyun) to reduce the rice purchasing price of per 40 kg by merely 2% to 59,200 won (about 50 US dollars) in order to decrease the overproduction. However, politically speaking, such measure would incur opposition by many members of the Parliament as they rely on farmers' votes, as evidenced by the fact that the rice purchasing price had never been reduced ever since 1948 when South Korea was founded. (TTNN 2003). Economically speaking, even if the rice purchasing price were reduced, and overproduction decreased or avoided, then full-time farmers' living standard would also be lowered, so that many of them would become part-time and absent farmers to earn higher off-farm income. If they could lease their insufficiently used or idled land (beyond family consumption need) to the fewer remaining full-time farmers, then the latter could achieve economies of scale, reduce costs and earn a living standard equivalent to that of off-farm income gainers. But because there is no such a measure to oblige the lease of the irrationally used land of the part-time and absent farmers to the full-time farmers, the latter would be forced to either abandon rice production (which is strategic to the country) or press the government to continue the high purchasing price and protectionism to guarantee them a high living standard (which is the result and reality). There is what has been indicated above, a coexistence of over-self-sufficiency, overproduction together with imports (revealing the uncompetitive or untrue self-sufficiency or over-self-sufficiency), as the domestically and externally unsalable surplus due to the higher costs has been accumulated into excessive inventory, while low cost products have to be imported.

As a comparison, the author also generates 13 features of the Chinese model of rural development. During 1978-83, mainland China contracted village collectively owned land in fragmented small forms to households for individual operation, while villages provided services and general management (feature 1 institutional changes for a small-scale farming and collective-individual mixed economy) which aroused peasants' incentives for production and released surplus labor to off-farm activities, and carried out government policies supporting rice production and rural development (feature 2), construction of rural infrastructure (feature 3), higher yields and multiple cropping of rice and other grains (feature 4), diversified cropping and non-crop agriculture (feature 5), off-farm employment (feature 6), peasant migration to cities and work in town and village firms (feature 7) and agricultural mechanization with small machinery (feature 8), which were similar to features 1-8 of the Japanese model. At the beginning of the 1980s, the irrational and polyopolistic land use by part-time and absent small farmers had also appeared. But China has then implemented effective and appropriate solutions to this obstacle as institutional changes for a large-scale farming and collective-individual mixed economy (feature 9 starting roughly around 1985), which made it possible to realize agricultural mechanization with large machinery (feature 10), earlier development in some (chiefly Eastern and coastal) rural areas, and its promotion in other (mainly Central and Western) areas especially from the early 1990s on (feature 11), introduction of more advanced technology and management, larger investment, and domestic and international markets to agriculture by urban-rural joint enterprises, and external and foreign single and joint ventures (feature 12), and prevention of food overproduction, promotion in quality and perfectization in variety of agricultural products, and improvement of the environment, while strengthening development of the Central and especially the Western areas (feature 13 mainly from mid-1999). (For more information, see Zhou 2001: 7, 146, 184-5, Chapters 6-7)

Consequently, in November 2001, the Association of Southeast Asian Nations and China has decided to form a free trade zone in 2010 (in which the tariff on rice will be reduced by 50% in 2015) (WXC 2004). But Japan and South Korea could not join mainly because if they opened their agriculture markets, they would not stand the competition from the other countries with lower costs. Thus the irrational and polyopolistic land use by able-bodied part-time and absent small farmers has become the root of their agricultural protectionism.

Although Malaysia, Thailand, Indonesia and the Philippines in Southeast Asia; Bangladesh, India, Pakistan, and Sri Lanka; and Bhutan and Nepal in South Asia are generally at the earlier phases of the Japanese model under private land ownership, irrational and polyopolistic land use by part-time and absent landowners has already happened, although to different extent, as rural labor

force has been induced to abandon agriculture (but not necessarily land ownership) to go to cities. In those rural areas where many peasants still rely on land for subsistence, there are also landowners who hold land without leasing it out. For example, India has made land reform so that large landowners no longer exist, but the medium- and small-sized landowners are allowed to lease land out and withdraw it after the termination of the leasing contract. It has not yet eliminated mass poverty and hunger in the rural areas. In the late 1990s, the government has embarked upon an ambitious target of doubling food production and making India hunger-free in 10 years. But even so, large amount of land is idled by absent landowners who have no intention of renting it out. (For more presentation, see Zhou 2001: 185-7). According to Chakrabarti (2001), the problem has been aggravated in many developing countries since the late 1990s as the WTO free agricultural trade agreement has made their agriculture more unprofitable and compelled more farmers to seek off-farm income while idling land (e.g., in India), in front of the heavily subsidized exports and high tariffs of the developed countries (thus India together with other developing countries have been pressing the developed nations to reduce and abolish agricultural protectionism). Cambodia, Laos and Vietnam in Southeast Asia have transformed the former public land ownership under the centrally planned economy into a nominal state - but *de facto* private - land ownership, i.e., the state-owned land has been possessed by households permanently and the possession could be sold, and in Cambodia the residential land became privately owned and salable. This has resulted in both newly landless and irrational and polyopolistic land use. (For more analyses, see Zhou 2001: Chapter 8). At the same time, full-time farmers who love farming and still existent or appearing landless farmers who need land have had to cut trees and grasses to get land, hence damaging the environment.

The general situation in Southeast Asia is summarized in the `Symposium Theme' of the International Symposium (2002) in Chiang Mai, Thailand: `The dynamic economic and demographic development in many regions of Southeast Asia has brought about fundamental changes for rural areas and the agricultural sector. Rapid population growth, urbanization and increasing purchasing power of populations in more developed regions through industrialization induce changes in the quantity, quality and structure of food consumption. At the same time income disparities between urban centers and rural areas and among social/ethnic groups have risen. These developments tend to result in an overexploitation and degradation of natural resources, decreasing agricultural productivity and thus risks of rural livelihoods. *Migration into urban centers* and further encroachment of agriculture into marginal areas are on the rise creating a vicious circle of increasing poverty and destruction of natural resources.'

In Lebanon and Yemen of West Asia, according to Owaygen (2002) and Destremau (2001) respectively, land is privately owned, and many able-bodied male part-time and absent farmers went to earn higher income in cities or abroad, while leaving women to cultivate, hence land insufficient cultivation. Land idling is also serious.

In Latin America, population living in the countryside dropped from 58% in 1950 to 25% in 1995 (Abramovay [1996] 1997: 56). In general, land reform has been made only to a low extent, large land owners still dominate while most peasants have no or little land (Liu & Su 2002). There are even large landowners who idle land without leasing it to small or landless farmers for survival (Hunt 2003) because they are too rich and do not care about the low rent the poor tenants could afford to pay. Numerous small and landless peasants have thus been forced to migrate to cities, where many of them could find no regular jobs or no jobs at all, but just live in slums, with rising crimes (Liu & Su 2002). But even in places where the land reform has been made, of the new small landowners, while some have survived on the land, others sold land ownership or use rights and re-became landless, and further others just idled land and migrated to cities (Carisio & Helmold Macieira 2004). Hence the irrational and polyopolistic land use has become a fundamental microeconomic root of the persisting poverty, inequality and injustice.

For example, in Brazil of Southern Latin America, there has been a bimodal of large land estates and small farms. During 1972-96, those larger than 1,000 ha had reduced from 48.3% to 45.1%, while those smaller than 100 ha increased from 16.4% to 20.4%, owing to the ongoing land

reform (OECD 1999-7: 21). But Abramovay [1996] (1997: 62-3) reports that `An FAO team noted that the most recent rural exodus, at least in the regions where family farming has a significant weight, mainly affects young people. This poses very serious succession problems although I have found *no university research on this problem in Brazil*. However, this is a subject which provokes increasing concern in the social movement, as it questions the ability of family farming to reproduce itself. This theme deserves much more attention from the researchers and international organizations dealing with rural development.' Moreover, in the regions where family farming dominates, `self-employed professionals who live in towns often buy land from farmers in difficulty or from aged farmers.' The State authorities of Santa Catarina were thus worried by not only `the prospect of a rural exodus involving young people' but also `the destructive effect on rural communities of the systematic buying of lands by people who were not going to live on them (doctors, lawyers, etc.)' (more appropriately, not going to carry out agricultural production on them).

Although Brazil has been a net food exporter with over-self-sufficiency in absolute terms, hunger persists so that it has under-self-sufficiency in relative terms. Why do not the large producers reduce prices so as to let poor people in hunger afford to buy their foods? One of the main reasons would be that people in hunger are just too poor, so that if the prices were lowered to the levels affordable to them, they would be below the costs. (Carisio & Helmold Macieira 2004). But why do they even idle a part of the land without leasing it to the poor? One of the main reasons would still be that people in starvation are just too poor to pay high rents. Although the new President Luiz Inacio Lula da Silva since 1 January 2003 has launched a Hunger Zero campaign, as long as there are large and small landowners who neither cultivate nor lease land out, while full-time or landless peasants who need land for survival and competitiveness could not get it, hunger would not be easily wiped out, nor poverty, inequality and injustice.

In Mexico of Northern Latin America, in the 20th century, `rural areas across the heartland have been sustained by', `or thrived on, the earnings of men and women who *temporarily* migrated to the USA for work. Farmers in many parts of Central Mexico made temporary forays up north and used the money they earned to maintain their families back home.' `Migrants also pooled their money and filled in for strapped or corrupt local governments by supporting public works projects that ranged from paving streets and installing portable water systems to refurbishing churches and furnishing classrooms with computers.' `The abandonment of villages . . . would seem little more than an inevitable progression because declining federal agricultural subsidies have made it hard for the farming industry to support large numbers of small growers.' (Thompson 2001: 2)

`At the turn of a new century, however', as the USA increased border control, `*permanent* emigration has squeezed parts of Mexico's rural core to the verge of extinction. Officials in Michoacan State reported that the number of migrants leaving for the USA had increased to some 50,000 people each year. About half of them move permanently to the USA'. `In village Casa Blanca, the families – usually fathers first, followed years later by their wives and children – have been swept north by the desperate torrent that carries floods of immigrants to the USA, leaving widening swaths of Central Mexico *abandoned*. In the 1990s, most of the 5,800 people once living in Casa Blanca have moved to Tulsa, Oklahoma. Fewer than 2,500 remain, and many of them have begun referring to this desert village as a ghost town.' `Migration experts worry that having entire families and villages transplanted north of the border could pose serious economic consequences because incentives to send money home could wane.' Thus, while President Vincente Fox `has been a vocal advocate for making the US-Mexican border more open to the free flow of Mexican workers, he has also said that he aims to carry out projects that would help lift rural areas out of poverty to encourage more Mexicans to stay home.' In the week of 11-15 June 2001, `he inaugurated a micro-lending program aimed at supporting homespun businesses in the poorest regions of the country. But of the 2,000 people who lived in the Michoacan village of Huacao 10 years ago, only 400 remain – nearly all of them are women, children too young to trek across the border or elderly people who feel too weary.' (Thompson 2001: 2)

According to NAFTA (North American Free Trade Agreement), from 1 January 2003 on, Mexico should open the agricultural markets to the USA. During the week of 16-22 December 2002, the Lower House of the Mexican Parliament passed a resolution to ask the Upper House to abolish the NAFTA articles for such opening. In the afternoon of 26 December, the national 'Permanent Agricultural Delegates Congress' issued an ultimatum to President Fox, demanding him to sign the 'National Rural Agreement' by 30 December, otherwise they would launch a campaign on 31 December to block the roads and harbors of the whole country to hamper the imports of the cheaper US agricultural goods. In the evening of the same day, he had to yield to them by agreeing to establish a dialogue mechanism with farmers' organizations, assist farmers who suffer from the shocks of the cheaper imports to raise competitiveness and open markets, and sign the 'National Rural Agreement' which imitated the EU approach of providing *subsidies*, sanitary assistance, vocational training, legal consultation to farmers, thus temporarily resolving the crisis of resisting NAFTA. (TTNN 28 December 2002)

Therefore, in Mexico, on one side, so much land is idled by the part-time and absent small farmers; while on the other, many farmers could not get land or increase farm size, achieve economies of scale, reduce costs and become viable or more competitive in front of the cheaper US imports, and have had to press the government to provide more subsidies.

In mid-2003, the Mexican Ministry of the Environment and Natural Recourses released a report that the ecological environment in 70% of the country's land and sea territory has been being destroyed, including 32 states and federal districts as the 'highest dangerous zones', and the economic losses of the country due to the deterioration of the ecological situation has amounted to 67 billion US dollars each year. (Song, Xin-De 2003)

The most prominent problem is forest devastation. According to official data, one century ago, the primeval and afforested forests covered 99% of the land territory, and forests even existed in some dry areas of the country. But during 1993-2000, over 7,890,000 ha of forests have sorrowfully disappeared. The forest area of the whole country in 2003 was about 142,000,000 ha, while the largest area of the destroyed forests annually reached 1,500,000 ha. By this speed, according to the Ministry of the Environment and Natural Recourses and other relevant agencies, in maximally 60 years, the entire primeval forests would vanish, and in 127 years, all the forests and biological diversities would be gone. (Song, Xin-De 2003)

The main causes of the forest destruction include (1) frequent forest fires due to lasting high temperatures; (2) rampant narcotic drug production (marijuana, opium poppy, etc.) which demanded for cutting trees for land; and (3) serious *inefficient land use* which forced those farmers who needed more land but could not get it from those who held it irrationally and polyopolistically, to slash forests to increase farm size, or create grazing land (Song, Xin-De 2003). Thus, the irrational and polyopolistic land use by able-bodied part-time and absent small farmers has also led to the environmental deterioration.

In order to prevent the ecological environment from further worsening, the Mexican Parliament has promulgated a law on sustainable forest development and other pertinent laws, so as to control the land reclamation through destroying forests. The government has set up the National Forest Commission to implement the relevant laws and strengthen the consciousness of the public on the forest and environmental protection. (Song, Xin-De 2003)

However, no measure has been taken to overcome the irrational and polyopolistic land use by able-bodied part-time and absent small farmers. On one hand, as long as the full-time farmers need more land so as to be competitive or merely viable but could not get it from those who hold it in irrational and polyopolistic use, the danger that they might be forced to slash forests to increase farm size or create grazing land would exist. On the other, even if full-time farmers could be effectively prevented from doing so, how they could become competitive or merely viable now that they could not get land from those who hold it in irrational and polyopolistic use, remains an unresolved problem.

Lipton, 'lead scholar' for 'Rural Poverty Report 2001' of the International Fund for Agricultural Development (as he informs the author), asks (2003) 'Why does the voluntary choice of Mexicans to better their chances by emigrating give cause for concern?' Hopefully the above explanations have answered this question. He also argues that 'Perhaps the land they are abandoning is bad or exhausted. Anyway, in a large-farm system its yield would be even less'. To this argument, the author would like to point out that 'bad or exhausted' land is not useless, and there could be farmers who are willing to cultivate and improve it. The author's book cites two examples in China: 'Bai Village of Baicun Township of Dingxiang County of Shanxi Province had 3,073 mu (204.87 ha) of farmland. It reserved 112 mu (7.47 ha) of *saline-alkali* land for leasing to produce sorghum in the mid-1980s. The contract was for one year and renewable. The rent was 8,000 yuan in total, 71.43 yuan per mu (0.067 ha) in 1987, but raised in 1988 to 11,000 yuan, 98.21 yuan per mu, by tendering among six farmers representing 20 households' (Zhou 2001: 230). 'In the mid-1980s, in the areas formerly *flooded* by the Yongding River and areas with more *sandy soil* and fruit trees of Langfang Prefecture of Hebei Province, the village collectives could not provide effective services while single household operation was too weak, 1,135 joint households farms emerged, on average contracting 55 mu (3.67 ha) per farm. In 1986, nine households of Si-De Ren et al. contracted 160 mu (10.67 ha) of land. All the nine principal laborers were experts, three for fruit trees, two for melons and vegetables, and four for grain. They gathered funds of 11,000 yuan, dug a motor-pumped well, built six farm houses, planted 4,000 fruit trees, produced grain and oil crops on 100 mu (6.67 ha), melons and vegetables on 60 mu (4 ha), and could earn 18,000 yuan, 2,000 yuan per laborer' (Zhou 2001: 250). Therefore, as long as other farmers wish to lease in the abandoned 'bad or exhausted land', they should be given access. If 'its yield would be even less' and the tenants could not survive or get profits on it, they would naturally quit. Now that 'small farmers are rational', they should be allowed to learn from their own experiences through 'try and error' to find their optimal farm size. It would be unnecessary and irrational to prohibit them from doing so.

Of course, Mexico is a net exporter of agricultural goods and there are large and profitable farmers. But this cannot automatically get rid of the poverty from the many full-time small farmers and landless farmers who need land for becoming viable or more competitive. Therefore it would be necessary to give them access to the land irrationally and polyopolistically held by the part-time and absent small farmers. In so doing, at least poverty, inequality and injustice could be reduced.

In Peru of Southern Latin America, according to Ganoza Roncal (2003), because the mountainous areas are poorer than the plain regions, numerous young farmers have abandoned agriculture in the mountains to replace the young farmers in the plain areas who had migrated to the cities, USA or Europe to earn higher incomes. It is worried that the next step of the newly arrived young farmers would be to leave the plain regions for the cities, USA and Europe too, just as already happened in Mexico and Brazil.

In Egypt of North Africa, the rural areas are still less developed as `the poor are absolutely dependent on public services', `simply because they do not have the means to acquire literacy, good health, adequate nutritional standards or irrigation facilities through the private sector'. However, there has been a shift from anti-poverty and equalitarian strategies towards economic growth and trade liberalization since 1985 as prompted by the World Bank and IMF. The 1952 land reform law of protecting tenants from eviction and guaranteeing a low level of land rent was repealed by the 1993 law which permitted the land rent to be determined by the market forces from 1996-97 on. As a result, the production costs of small farmers increased, many landowners recovered land from numerous tenants who in turn became dependent on being hired as farm workers, their real wages declined, and land rent rose sharply. The share of small landowners of less than 2 ha decreased, while that of medium landowners of 10-20 ha increased. (El-Ghonemy [1996] 1997: 183-6). But the free market mechanism has not necessarily led to efficient land use: waste of cultivated land has already happened at such a low income stage, and become so serious that Vice Prime Minister and Minister of Agriculture Yousuf Amin Wali had to declare on 6 April 1998 that idling and wasting cultivated land was illegal, and each province had the power to stop such behavior by

administrative means (XHNA 1998). But no effective measures have been taken since, so that land idling has become more serious (Mansouri 2005).

In Morocco, according to Mtilk (2005) and El Mouaatamid (2005), agricultural land is privately owned. An average family has three (rural areas maybe five) children. Equitable land inheritance among children (one share to sons and half a share to daughters so that after marriage a husband and wife would equally have 1.5 shares) has led to fragmentation. Rain plays an important role in agriculture. Due to no rain for years and poverty, many farmers left for towns or Europe. Then they got jobs there, and forgot farming skills, have no interest in, and could not easily return to, farming. Many of them have just idled land as absent farmers. Since the 1960s, the government has built many reservoirs, artificial lakes, and canals. However, even in the regions with enough water, there are part-time and absent private landowners who inefficiently use land. For example, a geographer who has received higher education and is working in the capital of Rabat, has a privately owned land in the Eljadida City of the Doukkala Region (about 200 km from Rabat) which has enough water supply and good soil. His parents do not work. But he neither cultivates nor leases out the land, a typical absent farmer. On the other hand, there exist many landless people who migrate to work in different farms and would like to lease in land. But under the belief that the use of privately owned land cannot be obliged, there is no measure by the government to oblige the idled land to be used rationally and competitively.

Tunisia, according to Ahmed, Boufaroua, Kherreddine and Mansouri (2005), remains an agrarian country dominated by traditional agriculture. Following the independence from France in 1964, the government turned the French-occupied land into state ownership and distributed it to farmers with no or little land for individual ownership. Now most land is privately owned, and the rest is owned by the state. The state leases the state owned land to able-bodied farmers for up to 15 years with conditions for good cultivation. If they were not matched, the land would be taken back. But there is no punishment on the waste or under-utilization of the privately owned land. In fact, many able-bodied farmers have left for cities (e.g., living in Siliana city which is in the center of the country) or Europe, their old parents, wives and children cultivate land inefficiently. Land idling has also happened. Although there is land leasing (hamous) by able-bodied part-time and absent farmers, the rent being 20% of the revenue of the tenants, it is not often, because the part-time and absent landowners have strong linkage to their land even if they do not use it sufficiently. There are able-bodied full-time farmers who want to cultivate more land and landless farmers who wish to get land, but have no access to the idled or under-utilized private land.

In Madagascar, Malawi, and Mauritius of Southeast Africa, according to Razafindravonona (2001), Thangata (2002) and Bhukuth (2001) respectively, land insufficient cultivation and idling by part-time and absent private landowners are serious.

In the 11 countries of Benin, Burkina Faso, Côte d'Ivoire, Ghana, Guinea, Guinea Bissau, Mali, Niger, Senegal, Sierra Leone and Togo of West Africa, onchocerciasis (river blindness) has been one of the causes for depopulation and emigration from the ORZs (Onchocerciasis Reference Zones) during the 1960s-70s, which led the valleys to be abandoned. The OCP (Onchocerciasis Control Program) launched in 1974 by the World Bank, WHO, UNDP, FAO, etc., finally turned the ORZs into OFZs (Onchocerciasis-Freed Zones) in 1991. The OFZs and notably the valleys have been repopulated increasingly from the mid-1980s on. (CICRED 1999: 3, 29, 46, 111-5)

In the latter half of the 1990s, FAO's research in nine of these countries (without Guinea Bissau and Sierra Leone) (CICRED 1999: VIII, 3) finds that the land tenure system before the abandonment and after the recovery has always been in communal ownership, under the control of the elders of tribes/lineages. The new settlers are their tenants. (Ciparisse 25 February 2002). However, `in some cases, elders have sold pieces of land with or without the agreement of their lineage, to settlers, mainly due to the necessity/possibility of easy money gain for the elder owners; increased feeling that who directly farms could progressively acquire some *de facto* permanent rights on the piece of land where he/she settled; and local marriages' (Ciparisse 13 March 2002).

`The unit engaged in agricultural production and commercialization is the household', as `small holders'. The new settlers have been carrying out *traditional* agriculture, as `agriculture is not mechanized', and `the prevailing production system is based on the principle of the extensive land occupation. The system, of course, is highly dependent on labor and incorporates few commercial inputs. Moreover, it presents the disadvantage of low yields per unit of cultivated areas since an increase in production depends more on extending the cultivated areas than on any real transition towards intensive production. This is especially the case in food producing areas.' (CICRED 1999: IX, 86, 92, 104)

`Most of the rural areas of Sub-Saharan Africa are currently undergoing the highest population growth in the history. At the same time, migrations have increased and diversified.' `The OFZs in West Africa are a good example of this type since they are not yet densely populated. They are experiencing high immigration flows'. `The most innovative information emerging from this research turned out to be the high degree of mobility of the young adults whose families had settled in the OCP valleys'. `Their young populations continue to emigrate to the capitals, towns or rural areas of neighboring countries or to Europe.' `If the ways in which the valleys are being repopulated were to continue as they are today, this would lead to an increase in the proportion of women and children in the agricultural work force with consequent decline in production capacities.' (CICRED 1999: VIII-IX, 11). The migration by male adults to other rural areas is usually for producing cash crops which are more profitable than cereals (Ciparisse 13 May 2002), while that to cities is for off-farm activities, which are even more lucrative than cash crop production. Hence the appearance of the irrational and poliopolistic land use by able-bodied part-time and absent small farmers in low income countries still saddled with traditional agriculture and developing towards the high income economy under both public and private land ownership.

In Mauritania, according to Mbodj (2005), rice, wheat, sorghum and millet are the main foods. Most land is owned publicly, by the state, tribes (mainly in the north), or local communities (governed by big families, chiefly in the south). The rest of the land is owned individually. Individuals may buy land from the state, tribes and local communities. Some individuals have owned large areas of land and employed farm workers. Much land in the north is deserted, equal to about two thirds of the country's territory. In the south, there is enough water and good soil, but inefficiently used. There are part-time and absent farmers and also full-time farmers. According to the regulations, land unused for five-10 years may lead to its taking over by the state. But in practice, such punishment has not been implemented. Leasing is allowed, but has not been carried out often. Thus land under-utilization is very serious. The other main problems in agriculture are the lack of financing, machinery, and help for sale in the market. As a result, none of the main foods is self-sufficient. The imported foods are twice more than the domestically produced. Sorghum and millet are mainly imported from the neighboring countries. Foreign aid has not included any measure on the efficient land use. There is no civil war. The government does not have much power over the tribes and local communities, which are powerful. Thus the tribes and local communities may oblige the efficient land use if they realized its importance.

In certain African countries, the governments do not allow land leasing, in fear that if it were allowed then the private landowners could go to cities to earn higher off-farm income while idling land (Mikos 2004). These governments have neglected that the prohibition of land leasing cannot prevent the private landowners from becoming part-time and absent to work in cities, while still insufficiently using or idling their land. Therefore the correct way shall be to permit land leasing and give full-time farmers the right to lease in the insufficiently used land beyond the family consumption of the landowners, so that those landowners who would like to earn high off-farm income could do so, while their land could be used in a rational and competitive way.

CEECs (Central and Eastern European countries - 15 in total) and NIS (Newly Independent States of the former Soviet Union or CIS - Commonwealth of Independent States – 12 in whole), since the early 1990s, have implemented land privatization or farm restructuring mainly by (1) restitution of land to former private owners, and (2) distribution of individual land (and asset) shares for

private ownership or private possession in public ownership to farm members. Individual land owners or possessors then had the choice to either set up individual farms, or remain in the collectively operated large farms. In Poland and former Yugoslavia, about 80% of agricultural land have always remained at private land ownership after WWII.

As a result, on one hand, in *domain 1* (individual or private farms), numerous able-bodied part-time and absent farmers earning higher off-farm income tend to hold fragmented small farms in irrational and polyopolistic use without selling or leasing them to the full-time farmers (most land rented out is from the governments, some city dwellers who were restituted land but only till a small part for subsistence due to the lack of experience and capital to establish their own farms, and some old and single female peasants). Land market has not been activated by the free market mechanism. The remaining full-time farmers could not easily increase farm size or receive necessary community services. These were findings by the World Bank in Croatia, Armenia, and Georgia in 1996, Poland in 2000, and in CEECs-NIS in general in 1997; by OECD in Albania and Kazakhstan in 1998, and Slovenia in 2000; and by IAMO in CEECs-NIS in general in 1999, etc. On the other, many large farm members voluntarily remain in collective land operation (*domain 2*). Some landowners have got physical parcels (which are typically fragmented as a combination of good, bad, nearby and distant parcels for equity among landowners) and rented them back to large farms (mainly because they possess more facilities and provide more services). Some others (in NIS) have obtained paper shares from a large farm and only upon quitting can they be given physical parcels (which may usually be fragmented). In either case, the large farm has distributed the gathered private land to groups of employees for operation, which, although benefiting from collective services, is a continuation of the operation system under the centrally planned economy and keeps the individual incentives low. Such collectively operated large farms (typically in the NIS) usually also assign small household plots to members for individual operation (which proves efficient, demonstrating the possibility of successful family operation upon larger land). This is a Dual Land System. (For a detailed presentation on both domains 1 and 2, see Zhou 2001: 399-430). In fact, the percentage in agricultural land by collectively operated large farms, due to their low individual incentives and ineffective management, has been declining across CEECs-NIS (SYCSEEC 2002: 93-4), and domain 2 is in transition towards domain 1 as some landowners have been persuaded to withdraw land from the collectively operated large farms for individual farming (Lerman: 2003). Thus, the imperative task shall be to foster domain 1 by overcoming the irrational and polyopolistic land use of able-bodied part-time and absent small farmers and, upon this basis, strengthening community's promotion of full-time individual farmers and sustainable rural development.

Land idling happened too. For example, Russia has privatized land ownership since 1991. But, in the meeting of the State Council on 22 April 2002, President Putin told the Governors of the 89 Republics that in the past 10 years, about 18 million ha of cultivated land, equal to the territory of France, had been idled (XHNA 2002). Thus Russia passed a law in 2002 to allow land sale and lease to individual nationals, and land lease (up to 49 years) but not sale to foreigners, hoping such created land market could lead to efficient land use (Lee Myers 2002. Lee Myers 2002). But the situation has not been improved and that law remains on paper according to Petrikov (2004).

As Table 1 displays, by 2002, most CEE accession countries of the EU had given trade-distorting agricultural subsidies at a higher level (around 20%) than the WTO standard. After joining the EU in May 2004, they started to receive higher protectionism than before (although lower than the EU-15 level) and encountered overproduction immediately in the same year. The EU bears an even higher level (about 35%). In fact, how to overcome the irrational and polyopolistic land use by able-bodied part-time and absent small farmers has become the key in the CAP (Common Agricultural Policy) reform for both the EU-15 and new accession countries. However, this key has been largely neglected. For example, the EU agricultural support to its CEE accession countries has focused on early retirement, young farmers, training, infrastructure, land consolidation, credits, fine seeds, better quality, higher yields, machinery, organic farming, environment protection, processing and marketing of products, rural tourism, etc. (SAPARD 2000). But no effective measure has been

taken on the fundamental issue - to overcome the irrational and polyopolistic land use by able-bodied part-time and absent small farmers (actually such measure has not been included in the aid programs to the developing countries by the developed nations and developing countries themselves, international organizations, NGOs, etc. across the world). According to the EU, it is the old farmers who inefficiently use land (but actually they are more willing to lease land out), while able-bodied farmers use land efficiently. It is thus not a surprise that while old farmers have been paid for early retirement and transferring land to young farmers, much land is irrationally and polyopolistically used by many able-bodied part-time and absent small farmers in the accession countries.

In Western Europe, at the under-self-sufficiency stage, effective (but not necessarily appropriate) laws were implemented in Germany (1915), the UK (1947), Norway (1955) and Denmark (1989) to oblige the lease of the inefficiently used land of the part-time and absent farmers to full-time farmers for sufficient production, and in the EU (1963) and Italy (1978) to give right to farmers to cultivate any insufficiently produced land. But at the overproduction stage, such laws met a fundamental dilemma: if landowners were still obliged to either produce sufficiently on their land or lease it out for so doing, there would be overproduction; if not, much land would be used inefficiently, then how to make full-time farmers achieve economies of scale, reduce costs, become viable or more competitive in front of other countries with larger farm size and lower costs, and keep basic self-sufficiency in cereals at the EU level? Without a solution, the EU implemented protectionism, which made its farmers less competitive, harmed its consumers and taxpayers and the developing countries. Thus in July 2002 the EU had proposed a complete decoupling, but could not avoid the consequent production abandonment and loss of basic self-sufficiency in cereals, so that in June 2003 it retreated to allow to keep the coupling which causes overproduction. Therefore the irrational and polyopolistic land use by able-bodied part-time and absent small farmers has been the fundamental root of protectionism and overproduction of the EU. (For details see later part).

In the USA, small farmers have been being crowded out of agriculture by large farmers and their number has been declining ever since 1935. But the development in recent decades of off-farm employment pursued as subordinate to the loss-making independent small farming has resulted in irrational and polyopolistic land use by able-bodied part-time and absent small farmers. This has indeed slowed the process of small farmers' exiting farming, but not halted it. In order not to be squeezed out of agriculture, the part-time and absent small farmers could raise their income by leasing out their irrationally and polyopolistically used land for other farmers to achieve economies of scale, or they themselves could lease in such land to become large farmers, forming part ownership. Indeed some small farmers, including African Americans who are the weakest of this group, have succeeded in becoming competitive large farmers by renting in a part of land. But in general only old and single female small farmers are willing to lease land out. Even the US Department of Agriculture which has been trying to help small farmers to acquire land and increase farm size, has stuck to the way for them to purchase land, and neglected to promote leasing. On the other hand, protectionism and consequent overproduction have also persisted in the USA. (For details, see Zhou 2001: 313-32, 370-84). Such phenomena exist in Canada too (see Zhou 2001: 397-8). There are also irrational and polyopolistic land use and production abandonment by part-time and absent small farmers in Australia (Cornhill 2004. Pyne 2004) and New Zealand (Payton 2004).

But the USA, Canada, Australia and New Zealand do not have the worry of losing basic self-sufficiency in cereals because the earlier immigrants had formed the largest farms of the world with much lower costs which can easily feed their small populations and compete with other countries. Thus they have not exercised obligation on the part-time and absent small farmers to lease their irrationally and polyopolistically used land to the full-time farmers. In the USA, the main root of protectionism is in its political system: in order to get more votes, politicians yield to farmers' pressure for higher incomes and larger overseas markets, rather than due to the concern of losing basic self-sufficiency in cereals caused by the irrational and polyopolistic land use of part-time and absent small farmers (Francis 2004). In Canada, the main reason of protectionism is to protect its

domestic markets for higher incomes of the farmers (Mackay & Leduc 2004). But New Zealand and Australia have generally speaking not implemented protectionism. (See Table 1)

The above evidences have shown that the irrational and polyopolistic land use by able-bodied part-time and absent small farmers has indeed been a global problem under both public and private land ownership, with both traditional and modern agriculture, on both fragmented small and consolidatorily enlarged land, in both low and high income economies, at both stages of food under-self-sufficiency and overproduction, and within both developing and developed countries. Schultz, as his many citations reveal, is well informed of the historical and contemporary agricultural situations of Japan ([1964] 1983: 4, 13, 21, 105, 124, 162, 181, 187, 190-1) and China ([1964] 1983: 21, 48-9, 61, 106). It is thus a surprise that when publishing the book in 1964 he does not notice that this problem had emerged in Japan since 1960 (and even earlier), and reprinted it in 1983 without changing views when it had become serious at least in Japan, Taiwan Province of China, South Korea, and emerged in mainland China, and been widely reported.

(II) Existence of Economies of Scale in Agriculture

Schultz ([1964] 1983: 9-10) also claims that the tenet `that the costs of agricultural products fall as the size of the production unit in agriculture increases' (which is his definition of the economies of scale in agriculture) has `no logical basis'. But even he himself ([1964] 1983: 122-3) has admitted that `Where human effort (labor) is cheap relative to the price of other agricultural factors, a one-man (or family) farm may be efficient with a small garden-type tractor; on the other hand, where human effort is relatively dear, a one-man farm may be efficient with a combination of two or even three tractors that differ in size and type.' However, `It requires very special conditions for a fleet of big tractors to be efficient, conditions which in fact rarely exist.' Apparently, large farm size is such a condition. But the rare existence of such conditions does not mean that this tenet has `no logical basis'. Actually, in `a high income economy in which the demand for farm products is of slow growth', and `the labor force required for farming begins to decline at a substantial rate and many of the farm people . . . leave agriculture . . . for nonfarm jobs' (Schultz [1964] 1983: 15), increase of farm size of the remaining full-time farmers would already be logically possible, and could be realized if the irrational and polyopolistic land use by the able-bodied part-time and absent small farmers could be overcome.

Schultz ([1964] 1983: 9-10, 17-8) further declares that this tenet has not `stood the test of time' and `empirical findings'. His empirical findings are that large-scale farming did not play a role in the excellent growth of agricultural production during 1952-59 in Western Europe, which was an `old, crowded workshop with a population density much greater than Asia's, and with a poor endowment of farm land generally'. However, the fragmented small farms were efficient in a low wage economy when there was little off-farm employment and labor was cheaper than large machinery, such as in some Western European countries and Japan during the recovery period after WWII and China during the initial reform period (1978 - mid-1980s) (concrete evidence is in Zhou 2001: 7; 123-7 for Japan; 191-209 for China). But in a high wage economy when large amount of labor has been absorbed by off-farm activities, and large machinery has thus become cheaper than labor, that tenet would function, as evidenced by Japan, China, some CEECs and NIS, EU, Australia, New Zealand, Canada and, in particular, Schultz's home country USA (detailed factual analysis is in Zhou 2001: 128-31 for Japan; 248-77 for China; 344-52, 378-80 for the USA). Therefore, unfortunately, it shall be Schultz's assertion that has not `stood the test of time' and `empirical findings' in the high income economy.

(III) Role of Human Capital in Agricultural Growth[12]

It is significant for Schultz to raise the concept of human capital ([1964] 1983: 136, 176, 186), '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*

[12] In (Zhou 2001: 16-9, 70-1) the author has stated the correct opinions, but without mentioning the wrong views of Schultz criticized in this sub-section.

that are augmented by investment in *human capital*', and to 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"'. Therefore, 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. According to his definition of efficiency as cited at the beginning of this paper, the 'efficient allocation of land in farming' should naturally mean the allocation of land in farming to those who can '*produce the same output with fewer resources or a larger output from the same resources*' from those who cannot.

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) is correct at realizing '*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 as if 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: irrational and polyopolistic land use by able-bodied part-time and absent small farmers as the low income economy develops towards the high income economy, 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 constitutes a typical 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', and '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 basic self-sufficiency, nor automatically be associated with *low costs* of rice production. As mentioned above, 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 irrationally and polyopolistically used by able-bodied part-time and absent small farmers (who have also been well educated either in agricultural or other sciences), full-time farmers could not easily increase farm size to reduce costs, rice self-sufficiency could not be

maintained without extremely distorted government protectionism which then led to artificial overproduction, and, loss of self-sufficiency after the Japanese domestic market was forced by the GATT (WTO) and USA to be opened (although at a low extent) in 1994, and since then its basic rice self-sufficiency has still be maintained with heavy state protectionism. The Japanese model has been repeated by Taiwan Province of China and South Korea. In fact, farmers in Japan and Taiwan Province have transferred and applied their advanced technologies in mainland China (TTNN 16 December 2002) because it has found effective and appropriate ways to transfer the land irrationally and polyopolistically used by the 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 not find much use in itself, but be imported into China as it is able to achieve economies of scale. (For more information 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 lead to expected results due to the obstacle of the irrational and polyopolistic 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'. Sarcastically and unfortunately, on the large areas of land whose production (but not necessarily ownership) has been abandoned by the able-bodied part-time and absent small farmers emigrating temporarily or permanently to the USA as above-cited, the higher skills of themselves or other farmers (who cannot have access to such land) learned at home and abroad could not be used.

As for political handicap (3), China and CEECs-NIS are illustrating. As above-presented, 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, irrational and polyopolistic 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 increasing farm size, achieving economies of scale, reducing costs, becoming viable or more competitive.

Therefore, 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' (i.e., between material capital and human capital), 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).

The author (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. (For details, see Zhou 2001: 70-1; for Japan 123-7; for China 17-8, 205-9)

Dynamic or long-run technological efficiency needed for achieving sustainable growth depends heavily on the technological progress embodied in the construction of rural infrastructure (including education as the main form of investment in human capital); higher yields and multiple cropping of rice and other cereals; diversified cropping and non-crop agriculture; off-farm employment; peasant migration to cities and work in town and village firms; agricultural mechanization with small machinery (features 3-8 in the Japanese and Chinese models) 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). (See Zhou 2001: 71; for Japan 125-7; for China 18, 291-2, Chapters 6-7)

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 irrational and polyopolistic land use by able-bodied part-time and absent small farmers in feature 9 of the Japanese model has suggested. At this stage, in an evolutionary approach, a second round of institutional changes is needed to allow sustainable rural development. Just because this obstacle has been overcome as in feature 9 of the Chinese model around the mid-1980s, further technological progresses embodied in agricultural mechanization with large machinery; regional transfer of development; introduction of more advanced technology and management, larger investment, and domestic and international markets to agriculture by urban-rural joint enterprises, and external and foreign single and joint ventures; and prevention of overproduction and improvement of the environment (features 10-13 in the Chinese model) could be realized. Therefore, Barker, Herdt and Rose (1985: 157) conclude that of so many variables for rural development, the institutional changes are the keystone. (See Zhou 2001: 18-9; for Japan 131-46; for China 209-94)

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: for monsoon Asia 35, 54, 185-7, 297, 302-4; for China 17-8). Thus, '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 as above-mentioned), and not yet completely become collectors' items for museums. Of course, it does not mean schooling is not important today. But availability of farm land irrationally and

polyopolistically used by able-bodied part-time and absent small farmers to full-time farmers has increasingly 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 the rational and competitive 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 large machinery, organic farming, environmental protection, information, market access, etc.) would not function well (if at all), and the development of off-farm activities would even weaken the agricultural sector.

(IV) Imbedded Influence of the Five Assertions of Schultz

But the author’s views against the above-mentioned five assertions of Schultz do not as yet seem like a commonplace idea. This is mainly because `Schultz’s arguments have had a substantial impact on some of the economists who are actively involved with structural aspects of public policies and with project evaluation’ (Bowman 1983); `The notion that “farmers’ behavior is rational” has been recognized and accepted by Western economists in general since the publication of Schultz’s *Transforming Traditional Agriculture*’ (Lin, Justin Yi-Fu 1988: 63); `It has had a significant effect upon economic research and thinking about agriculture in low income countries, and it has had an effect upon what governments and international agencies have done with respects to agricultural policies'; `If this seems like a commonplace idea, it is so because of the writings of T. W. Schultz.' (Johnson 1983). The above-mentioned assertions of Schultz have become so imbedded a commonplace idea, that many economists do not even appeal to or mention him, while his influence could be clearly seen.

For instance, although Lerman and his World Bank colleagues had found just to the contrary in Croatia, Armenia and Georgia in 1996 (as above-cited), he (1999: 20) still has the belief that free market forces could effect the transfer of land irrationally and polyopolistically used by the able-bodied part-time and absent small farmers to the full-time farmers, as if they were rational and competitive enough to automatically and voluntarily make such transfers in the land markets:

> Once land has been allocated to individuals through the various processes of restitution and distribution, the new owners may immediately sense a need for adjustment of their holdings. Some landowners have no inclination to farm their land: they are too old, too frail, have better jobs outside agriculture, or do not have sufficient knowledge to become successful farmers. The optimal course of action for these landowners may be to get rid of their land. Other individuals, who know how to farm efficiently, may wish to increase their holdings in order to achieve higher earnings and greater welfare. The optimal course of action for these individuals is to acquire more land. The land market provides a meeting place where both groups of agents may enter into appropriate transactions for adjustment of land-holdings through transfer of ownership rights (buying and selling of land) or use rights (leasing of land). The economic role of land markets as a stage for *farm size optimization* explains the *considerable interest* in this issue in transitional economies, where the new farm sizes are decided abruptly and quite arbitrarily through administrative and political processes.

Although without mentioning Schultz, Lerman and these transitional economies have evidently been deeply influenced by his allegations.[13] Another example is that in the above-

[13] Fortunately, in commenting the earlier version of this paper presented in the UNESCO Seminar `Poverty and Sustainable Development' in Bordeaux, France 22-23 November 2001, Lerman has actually recognized that his above-cited view is not compatible with the world-wide evidences and turned to be positive to the author’s proposals to solve the problems, for which the author is most grateful.

mentioned International Symposium (2002) in Chiang Mai, Thailand, a senior Indonesian economist Dillon states to the author that whatever peasants do, they are correct and have good reasons. He further specifies (2002): ‘In the sixties, Schultz's research in India proved "small but efficient". Since then there have very many studies showing that farmers are generally very close to "allocative efficiency" although they might be quite distant to "technical efficiency"’. Apparently, he and the authors of the ‘very many studies’ have also been imbedded with Schultz’s assertions, so that they do not notice the *allocative inefficiency* of the able-bodied part-time and absent small farmers with their irrational and polyopolistic land use while full-time farmers could not have access to their land.

Similarly, in the view of Commentators EA1 & EA2 (2005), ‘Certainly there are inefficient land uses across the world, but not only one cause’. As explained in the author’s 2001 book and 2003 Cambridge Conference paper and developed in this paper, after the land reform of distributing land from large owners for equitable small individual ownership, when off-farm activities were rare, farmers would tend to efficiently use land, even though many rural facilities were still backward. The best examples were the immediate agricultural growth in Japan after the land reform of 1946-50 and in China after the economic reform of 1978-83. Of course, the rural facilities should be developed, otherwise they would cause inefficient land use. But following the development of off-farm activities, many able-bodied part-time and absent small farmers earning high off-farm income would have no willingness to lease even the land beyond their family consumption need to the remaining fewer full-time farmers. This problem has been increasingly serious in Japan ever since 1960 while the rural facilities have been well established. Similarly, one may not say that the rural facilities are backward in the present EU-15. But if the coupling and other protectionist policies were all abolished, production abandonment caused by the refusal to lease land to the full-time farmers by the part-time and absent small landowners at low rents would happen. Therefore, after the development of off-farm activities, the irrational and polyopolistic land use by able-bodied part-time and absent small farmers has become the *most fundamental cause* of the inefficient land use when the rural facilities are backward (such as in many developing countries currently) and the *unique cause* when the rural facilities are advanced (such as in many developed countries presently.

In a democratic society, if a view were found as inappropriate, it would be rebutted. For instance, Amartya Sen (1998 Nobel economics laureate) writes `Surplus Labor in India: A Critique of Schultz's Statistical Test' (in his 1964 book), Schultz defends himself in `Significance of India's 1918-19 Losses of Agricultural Labor - A Reply', and Sen argues further in `Surplus Labor in India: A Rejoinder' - all in *Economic Journal* (March 1967: 154-65). Another example is that Schultz in his 1964 book attacks the `zero marginal product' hypothesis of Arthur Lewis (1954), but the Nobel Economics Prize Committee democratically and fairly made these two academic `foes' share the 1979 Prize albeit neither school has convinced the other (even now).

But the author is unaware anyone else (besides Zhou 2001) who has criticized the above-mentioned five assertions of Schultz in literature. Apparently, this was not because other authors were lenient to him, but because they were not found as inappropriate. Now that they have already been unsuitable in 1964, more so in 1979, further so in 1983, and still so presently, a systematical and analytical refutation of them would be necessary, and researches of effective and appropriate solutions to the obstacle neglected and misjudged by him imperative.

II. Failures of Backward and Consumption Linkage Effects on Agriculture Ignored by Hirschman[14]

The irrational and polyopolistic 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

[14] The author’s comments on Hirschman’s linkages theory are not in Zhou (2001).

consumption linkage effects on agriculture, which has been paid little attention by Hirschman and others.

Hirschman (1954, 1958, 1977, 1987) has developed the linkages theory. 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 presented above, Japan has provided an inconsistent case. Now that the agro- and other industries have been well developed in that country (features 5-7), 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.) Likewise, the EU proposed a complete decoupling between subsidies and production (the major component of the agricultural protectionism) on 10 July 2002, but retreated to allow to keep the coupling on 26 June 2003, just in order 'to avoid abandonment of production' (see below). The EU's high import tariffs have also been continuously criticized by the developing countries and international organizations. It is well known that the agro- and other industries are well developed in the EU, why could not their backward linkage effects on agriculture and domestic-products-oriented consumption linkage effects be realized so that the abandonment of agricultural production and increase of unnecessary imports would not happen once the agricultural protectionist policies have been lifted?

Therefore, 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 the time? If not, mainly at which stage of rural development? What are the major reasons? How to resolve them?

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 in either 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 humankind 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 Colombia `was moving forward' and believed `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, inequality and injustice there and elsewhere.

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 above-mentioned `Symposium Theme' of the International Symposium (2002) in Thailand has reported a worsening agricultural situation

exactly in Thailand and Southeast Asia. It is thus 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 effective and appropriate solutions.

As analyzed in the author's book (Zhou 2001) and earlier parts of this paper, it is the irrational and polyopolistic land use by able-bodied part-time and absent farmers (typically small but not excluding large landowners such as in Latin America where land reform has not been completed) which has restricted the functioning of the market mechanism, and restrained the full-time farmers from achieving economies of scale or just becoming viable. 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 (if without government trade-distorting protectionism) and imports have to be resorted to. Although this obstacle appeared first in Japan in 1960, it has increasingly become global under both public and private land ownership, with both traditional and modern agriculture, upon both fragmented small and consolidatorily enlarged land, in both low and high income economies, at both stages of food under-self-sufficiency and overproduction, and within both developing and developed countries.[15]

III. China's Successful Experiences Based on Public Land Ownership

Unlike the USA, Canada, Australia and New Zealand, other nations (as large as China, India, Brazil, and the EU, and as small as Japan, South Korea, and many other countries across Asia, Africa, Latin America, and Europe) do worry about losing basic self-sufficiency in cereals.

This is not merely an economic issue, as political, social and cultural factors enter. Economically speaking, one may suggest those countries with food shortage caused by the irrational and polyopolistic land use of able-bodied part-time and absent small farmers to import from others, until this has led to a global food shortage to raise the prices of agricultural products and induce the part-time and absent farmers to make efficient land use to produce more. However, before this pure and idealistic Ricardian model of free market mechanism could function, those countries in food shortage would have to lose basic self-sufficiency in cereals and chiefly rely on imports. But politically speaking, if a country relied on imports for its cereals, then it might be threatened in diplomatic conflicts and have its throat cut during wartime. Thus, basic self-sufficiency in cereals (such as rice for Asia and wheat for Europe) is a strategic issue. That is why Japan could tolerate under-self-sufficiency and rely on imports for all the other agricultural goods but not rice (as well as whale of course), which has consequently been heavily subsidized ever since 1960 for reaching artificial self-sufficiency (and even overproduction) and whose import since 1994 was mainly due to the international pressure. Not to mention those poor African, Latin American and Asian countries and CEECs still at the food under-self-sufficiency stage which could neither afford to import with their scarce foreign exchanges nor rely on international donations to feed their populations. Socially and culturally speaking, one may easily propose the EU to only keep the landscape for tourism and import everything else, e.g., cheaper agricultural and industrial goods from Australia, the USA and many developing countries. But the EU would not agree as abandoning agriculture especially cereal production which has been carried out for hundreds of years would be socially and culturally unacceptable.

The UK before losing world-wide colonies had not sought basic self-sufficiency in cereals in Britain and Northern Ireland. This has often been cited as an example to advocate that basic self-sufficiency in cereals is not necessary for a country. (Beaumond 2004. Brooks 2004). But such advocators have forgotten that when it had world-wide colonies, the colonies and the occupying country constituted a large sovereign nation, so that it could rely on them for basic self-sufficiency in cereals. This is just an example that basic self-sufficiency in cereals is necessary for a country.

[15] The author emailed his Cambridge Conference paper (Zhou 2003) including this section to Hirschman for his comments on 12 March 2004 but has never received his reply.

Similarly, the EU as a super nation intends to keep basic self-sufficiency in cereals at the EU level, but not for each Member State, so that some Member States may overproduce to feed the others. In fact, some Member States (e.g., Italy, Portugal) do bear under-self-sufficiency in cereals.

One may think that basic self-sufficiency in cereals is not necessary for any country since today's world is completely different from before as there is no perspective of war; it might be necessary for developing countries because they do not have enough foreign exchanges to import foods but not so for developed nations. Such a view has not taken into account that sanctions, embargos, invasions, wars and threats have not disappeared, so that today's world is not yet *completely* different from before. Thus, many countries have been forced to maintain food sovereignty and advocate for a basic or ever complete self-sufficiency for more products than cereals in the WTO negotiations (Brooks 2004). The free trade zone to be established in 2010 between the Association of Southeast Asian Nations and China as decided in November 2001 will reduce the tariff on rice in 2015 only by 50%, rather than 100%, reflecting the strategic desire of the member states to keep a certain degree of self-sufficiency in rice, is an example. The author visited the WTO in 13-14 September 2004 and asked which country is willing to lose basic self-sufficiency in cereals, but no country could be indicated.

But even if in a peaceful world without perspective of war and threat and without frontiers and tariffs among nations, could the Ricardian model of free market mechanism function automatically, so that the global food shortage would raise the prices of agricultural products and induce the part-time and absent farmers to make efficient land use to produce more? As is well known, before the land reform, a few landlords owned large areas of land, while most peasants owned none or little and had to be either tenants paying exorbitant rents or laborers receiving extremely low wages. Although the prices of the agricultural products were much higher than what the poor people could afford, the Ricardian model of free market mechanism could not induce the landlords to produce more and reduce prices so that poor people could afford other than remaining in hunger or going to die. This was essentially because they were oligopolists or even monopolists (in some regions) in land ownership, and wished to keep prices and profits high rather than responding to the social interests including the need of the poor. The above-mentioned Brazilian case where large landowners refuse to reduce prices of the already overproduced foods so as to let people in hunger to afford, and decline to lease land out at low rents in order to make poor full-time or landless farmers rent in their land, is an existing example. Hence the land reform which has been obliged by the state to distribute the land of the large owners to peasants with no or little land. But afterwards, many able-bodied part-time and absent small farmers have not used land efficiently even at the under-self-sufficiency stage. Why did not the high prices at food shortage period induce them to at least lease the land beyond the family consumption need to the remaining full-time and still existent or appearing landless farmers? This is mainly because they are polyopolists in land ownership, and only respond to high rents rather than the social interests containing the need of the full-time and landless farmers who cannot afford to pay them. That is why at the under-self-sufficiency stage, laws of obliging them to lease insufficiently produced land to full-time farmers have been implemented in Germany, the UK, Denmark, the EU, Italy and still in Norway although there was no internal war within each of these countries. Therefore, high prices caused by food shortage even without war or tariff among nations could not make the Ricardian model of free market mechanism function automatically, and in order to realize rational and competitive land use, effective and appropriate state obligation would still and always be necessary.

As above-cited, the author's book (Zhou 2001) presents that China has found effective and appropriate solutions to this microeconomic root, and accordingly maintained basic self-sufficiency in cereals, prevented overproduction, improved the environment, without resorting to protectionism.

As the first stage, during 1978-83, China carried out a land tenure reform from the centrally planned economy to market economy by keeping public land ownership of villages, while contracting the land to households as the basic operation level whereas the villages provided general management and services, hence successfully reached basic food self-sufficiency in 1984.

Although the contracted land could be sub-let, irrational and polyopolistic land use by able-bodied part-time and absent small farmers also happened at the beginning of the 1980s and became serious afterwards. Thus in an evolutionary approach, as the second stage, around the mid-1980s, a second round of institutional changes has been conducted. Under the guidance of the government, the villages, upon the majority agreement of the villagers, obligatorily kept a smaller land for family consumption for the part-time and absent small farmers, while allocating the rest of their land competitively to the full-time farmers (Dual Land System). The government also encouraged (but not forced) part-time and absent small farmers to be fully engaged in off-farm activities or become permanent residents of small and medium cities and towns, and voluntarily transfer all their land to the fewer remaining full-time farmers to achieve economies of scale (Single Land System). Thus China maintained basic self-sufficiency in cereals rather than losing it as Japan did (followed by Taiwan Province of China and South Korea). As the third stage, during 1995-99, it encountered temporary food overproduction. The government has then obliged farmers on the environmentally sensitive land to convert it back to the nature (forestry, grassland, lake land and wetland) forever, and paid them a basic income support until they could earn a living through production of fruits, vegetables, livestock, fishery, planned cutting of woods with reforestation, agro-industry for processing agricultural products, transportation, rural tourism, and other off-farm activities. It has meanwhile kept the rational and competitive use of the normal land to produce surplus food, which is allocated to the farmers of the environmentally sensitive land converted to the nature. Therefore, nation-wide, the food supply and demand have been balanced and chronic overproduction prevented, whilst the environment improved. By overcoming the irrational and polyopolistic land use of able-bodied part-time and absent small farmers as the fundamental microeconomic obstacle, China has given subsidies to agriculture by only 2% of the total value of production, much less than 10% for a developing country and 8.5% for China (Song & Yao 2005). At all the three stages, there has been a close macro-micro linkage in gradual, evolutionary and dynamic experimenting, policy-making, popularizing, and stability-maintaining. (For details see Zhou 2001: Chapters 6-7.). Of course, there is still room for China to improve, which will be dealt with later. Public land ownership, however, may not be acceptable to many other economies.[16] Then how to solve this microeconomic root under private land ownership?

IV. Unsuitable Solutions under Private Land Ownership

(I) A General Survey

1. *Those solutions which had functioned from the Middle Ages to the 1950s in Western Europe* (land enclosure, primogeniture, massive emigration, land sale due to the then backward conditions of rural areas) would not work now (see Zhou 2001: 146-50).

2. *Traditional land consolidation* currently being carried out in some CEECs, NIS and other developing countries incurs enormous individual bargains, and costs tremendous time (even decades), financial and human resources. Although the joined parcels would convenience cultivation and smoothen leasing, due to the low elasticity in consumption of cereals and many other products, the raise of tenants' income might not necessarily be so high as to induce the part-time and absent small landowners to lease land out, as the experiences of Japan and Taiwan Province of China have demonstrated. As analyzed below, those EU countries which had already carried out successful land consolidation long time ago (such as Denmark) are also facing production abandonment following the reduction of protectionism. Moreover, population growth and inheritance could easily re-fragment the joined family farm, as the Indian practice has shown. (For a comparative international survey of land consolidation under private farmland ownership and its shortcomings, see Zhou 2001: Appendix 3.1). Thus it is helpful but not a fundamental solution.

[16] The author attended the above-mentioned International Symposium (2002) in Chiang Mai, Thailand, where participants also expressed that though the Chinese reform experiences are successful, it would be difficult to transplant them into other countries, because China holds public land ownership, while most other countries have private one.

3. How about imposing a *land waste tax* which seems more market oriented? In fact, such a tax has been repeatedly proposed, e.g., as early as in (1956: 563) by Schiller (and may even be earlier by others), and as recently as in (2002) by Onchan for Thailand where the irrational and polyopolistic land use by able-bodied part-time and absent small farmers has become very serious. The Romanian Law on Land Resources of 20 February 1991stipulates ‘Article 53. All owners of agricultural land must assure its cultivation and its soil protection’; ‘Article 54. Land owners who do not fulfill the obligations stipulated in article 53, will be summoned in writing to comply, by the commune, city, or municipality. Those who do not obey the summons and who through their own fault, do not fulfill their obligations within the time established by the town hall, will be given an annual fine of 5,000 to 100,000 lei per ha, depending on the land's category of use. The fine is ordered by reasoned decision of the town hall, and the money becomes an income to the local budget’; ‘Article 55. . . . They lose right to the use of the land after a period of two years’. Such a fine is also a land waste tax.

However, a land waste tax is unable to function effectively. (1) If the tax were low, some farmers would be willing to pay, while still idling the land. For example, in China, the village collectively owned land was contracted to households which should produce a quota of cereals and/or other products to be sold to the state and could then dispose of the extra output in the market. But there were landholders who paid cash to fulfill the quota while still idling the land, so as to spare all their time onto earning higher off-farm income (Zhou 2001: 215). (2) If the tax were high, some farmers could claim that they could not afford. It would not be so easy to punish them by imprisonment. In fact, such a law may not be passed as the parliamentary members dare not offend the part-time and absent landowners. (3) Many farmers are absent, earning higher income in other rural areas, cities or abroad. It would almost be impossible for the police to wait in their home unknowing when they would return, or search and arrest them elsewhere either directly or indirectly via the International Criminal Police Organization or other countries’ police. There is also the question whether other countries’ police would cooperate. For instance, many Albanian, Tunisian and Moroccan landowners are illegally working in Italy while idling land at home. But tax evasion in Italy itself is widespread and the police often close one eye. While the police are having troubles in finding and arresting the tax evading absent farmers, the land is still being idled. (4) The tax is normally paid to the governments, although a part might be channeled to local communities to improve services to full-time farmers. But if the full-time farmers could not get the fundamental service they need, i.e., access to the irrationally and polyopolistically used land of the able-bodied part-time and absent small farmers, other services would be insignificant. Thus they may not have the incentive to report an insufficiently cultivated or idled land to the tax officers. The tax officers may not have the incentive to charge the tax because it does not enter their own pocket. Rather they might have the incentive to take bribes and allow tax evasion. But if a proportion of tax could be given to tax officers as bonus, they might charge it arbitrarily and exorbitantly. As a result of such difficulties, in Romania, although land leasing is widespread, idling of normal land still exists according to Balint (2004).

4. A law to *confiscate idled private land* has been adopted in a presidential decree issued in November 1997 in Tajikistan (EIU 1998: 27); and has been debated in the Romanian Parliament in the spring of 2002, but has met difficulty in getting it passed mainly because it was regarded as too harsh to private landowners (Atanasiu 2002).

5. If GMO (Genetically Modified Organism) cereals were produced, could a nation achieve basic self-sufficiency while tolerating production abandonment by part-time and absent farmers? (1) Most consumers of the world would not accept GMO foods. (2) Even if so, economies of scale would still exist so that full-time large farmers would prevail by lower costs in producing GMO cereals, while those nations suffering from production abandonment by part-time and absent farmers would lose basic self-sufficiency in cereals in the competition due to their higher costs.

6. If a Land Bank (such the South Korean government was trying to establish in 2004) could effect the transfer of the irrationally and polyopolistically used land of the part-time and absent

farmers to the full-time farmers? A Land Bank only provides information concerning where and which land is idled or insufficiently produced, but cannot effect its transfer to the efficient and rational users. In fact, in many villages, there is no information asymmetry or shortage, as the full-time farmers can see the idled or insufficiently produced land of their part-time and absent farming neighbors, but cannot have access to it due to the refusal of the owners to lease it out at low rents.

Thus the author tries to find a new model which would work at both food under-self-sufficiency and overproduction stages for both developing and developed countries with private land ownership, and raises 'the principles of the new model' (without the element of physically *unwithdrawable* but financially salable private land shares) at (Zhou 2001: 165-6), and several possible applications of them.

One application is Proposal 5.1: village-wide corporate ownership of physically *unwithdrawable* but financially salable private land shares, which was published by FAO in October 1997 first (Zhou 2001: 154-65). It is then found that this would meet psychological barriers as landowners prefer that their private land could be withdrawn from the use by others.

Another application is raised when dealing with the EU (Zhou 2001: 398 second paragraph), which does not require such unwithdrawability. It is this one, although only occupying less than half a page in the book, that this paper develops into a set of major policy proposals. The following sections will first analyze two Western European laws which have functioned effectively at the under-self-sufficiency stage, the dilemmas the EU faces at the overproduction stage as the background, and then present the author's policy proposals and its possible global relevance.

(II) Two Western European Legislations at the Food Under-Self-Sufficiency Stage

1. A legislation to oblige farmers to either cultivate land or lease it for farming has been implemented once in Germany, the UK, Denmark and still in Norway.

In Germany, `Previous scarcities of foodstuffs prompted the legislation to adopt provisions to help guarantee an adequate food supply by obliging farmers to cultivate agricultural land in accordance with good husbandry. If a farmer did not satisfy this legal obligation, the law provided sanctions, such as the compulsory leasing of the land to another person willing to cultivate the land in accordance with good husbandry.' This obligation was set up in the `Law of Cultivating the Land' of 31 March 1915 and removed in 1961 owing to the appearance of surplus production. (Winkler 1992: 83. Kroescbell 1982: 69)

In the UK, the Agriculture Act of 6 August 1947 demands that the owner of agricultural land bear the responsibilities of good estate management to enable an occupier of the land `to maintain efficient production as respects both the kind of produce and the quality and quantity thereof' (section 10); and that the occupier of agricultural land bear the responsibilities of good husbandry to maintain `a reasonable standard of efficient production, as respects both the kind of produce and the quality and quantity thereof, while keeping the unit in a condition to enable such a standard to be maintained in the future' (section 11). The minimum lease period is one year (section 40). It renders the Minister of Agriculture the power to supervise whether these responsibilities have been fulfilled (section 12), and if not, to impose a fine and/or imprisonment on the bearers of these responsibilities (section 14), and to purchase compulsorily the land (section 16). Following the occurrence of surplus production and EC Council Regulation 1094 of 1988 on set-aside arable land, the implementation of this Act has also been relaxed (Rodgers 1992: 149).

In Denmark, the Agricultural Holdings Act of 17 July 1989 sets down that `Agricultural holdings and their lands *must* be used for agriculture, horticulture, and forestry.' `Subdivision of agricultural holdings may not be carried out without a license from the land authorities. This ensures that the holdings are not split up into small enterprises, for example in case of succession.' 'As a general rule, only individuals may acquire agricultural holdings in the rural zones. Persons who acquire an agricultural holding in these zones must live on the farm permanently for eight years whether they actually manage the farm or not. If the area of the holding exceeds 30 ha, they must also have a training in agriculture and they must not farm out any part of the land'. `The

person who actually manages an agricultural holding, whether it is the owner him- or herself, a tenant, or a manager, must live permanently on the holding'. `Landowners who wish to use their land for a purpose other than farming must obtain a permit from the many authorities that deal with the legislation mentioned above' (the Queen, Parliament, Ministry for the Environment, Ministry of Agriculture, local government - county and municipal councils, and courts). 'Each authority is free to refuse a permit if it feels that the landowner's project would be harmful to the interests the legislation tries to protect.' `If the yield of the land is too feeble to make farming worthwhile, the farmer must at least not use the land for other purposes' (of course he could lease such land out). Concerning leasing, `The statute only requires a written contract specifying the rent and the term of the lease. It does not regulate the rent, which is solely determined by the market price.' As a result of such promotive measures, the problem that `the technical and economic development in agriculture in the last decades have made most registered holdings too small for survival' has been overcome, the farms' `number has fallen and their size has increased', and `most Danish farms today consist of a holding owned by a farmer who has rented adjoining land'. Adjusting to the happening of food overproduction, it `does not compel a farmer to cultivate marginal farmland, and he may also profit from the set-aside scheme of the EC Regulation 1094 of 1988'. (Wulff 1992: 36, 38-9, 40, 44, 46-7). The Agricultural Holdings Act of 15 July 1999 further permits owners to idle or set aside normal land. Although landowners are not obliged to set aside land according to the government planning, possibilities of expropriation exist within the specific Danish rules on nature conservation, nature restoration and wetland restoration (the Nature Protection Act of 3 January 1992) which are not related to the EC agricultural law. (Anker 4 March & 13 May 2002)

In Norway (which has not joined the EU), the Land Act of 18 March 1955, the Act of Tenancy of 25 June 1965, and the Concession Act of 31 May 1974 lay down that a farmland must be either self-cultivated, or leased for farming even if the rent is not so high as to satisfy the landowner (of course, the owner can choose the highest rent bidder, thus a leasing market still exists; but the rent can be fixed by the Municipal Agricultural Board if there is disagreement); unreasonably high rent is unlawful; the minimum lease term is five-year; a reasonable yield must be produced; the landowner must live in the farm even though the land is leased out (so as to keep rural population); otherwise the land will be compulsorily sold; sufficient farmland is secured for active farmers, and it is possible to keep the price of farmland lower than the market price. Although these regulations have been criticized as `communist', Norwegians do not want to change them. For Norway, `with a hard climate and marginal conditions for agriculture, development could lead to an increased movement of people from the districts to the centers and the end of agrarian activities in many districts'. `The legislation securing arable land for agricultural purposes has, as a whole, been successful. Use of arable land for densely built-up areas, roads, and other purposes has decreased. The aim of being self-sufficient in food has been achieved for husbandry products, most vegetables, feed grains, and half the grain used for human consumption'. (Austena 1992: 140-3, 146-7). The legislation is still applied as basic self-sufficiency in cereals has not been achieved.

2. A law to give farmers right to till any insufficiently cultivated land in the EU and Italy.

At the EU level, `A number of directives affect the ownership of farmland as a farmer'. The EC Council `Directive 1963/262 provides for the right to pursue agricultural activities on agricultural holdings that have been abandoned or left uncultivated for at least two years. No special permit is required'. `Directive 1967/531 provides for the abolition of discriminatory restrictions on the application of the law on agricultural leases. Directive 1963/261 concerns the right to take on lease any property'. Following overproduction, these directives terminated (officially on 30 July 1999 but actually in the 1980s), and the EC Council Regulation 1094 of 1988 and Regulation 2328 of 1991 decided to pay farmers to set aside a part of arable land from cereals production, on the condition that the `Member States have to take the necessary measures to keep the land in good agricultural condition. They can make the necessary provisions for managing the land so that the environment and natural resources are protected [article 2(3)].' (Van der Velde & Snyder 1992: 9, 13-4)

In Italy, the `Rules for the Utilization of the Uncultivated, Abandoned or Insufficiently Cultivated Lands' of 4 August 1978 requires (Art. 4) that the Regions assign such lands `for cultivation to the requesters who are obliged to cultivate them in a single or associated form'. Regulation of the Tuscan Region 'Norms to Realize the Law of 4 August 1978 No. 440 for the Productive Recovery of the Uncultivated, Abandoned or Insufficiently Cultivated Lands' of 3 November 1979 (Art. 3) further stipulates that 'The town governments, should execute census and classification of the uncultivated or abandoned lands; and besides, provide its renewed annual relative lists'. 'The censused land lists determined by the town government should be published for 30 days in the government bulletin'. (Art. 4) 'The entities who intend to cultivate such lands should attach a declaration of commitment to cultivation and a general plan of recovering and utilizing such lands to their demand for assigning such lands' for the Provincial Commission to approve and assign the lands. After the EU met overproduction, these laws have not been implemented, but still valid; and could be exercised again if food security once more became a problem.

(III) The Fundamental and Derived Dilemmas the EU Faces at the Overproduction Stage

At the overproduction stage, these legislations ceased functioning because the EU has faced a fundamental dilemma and some derived dilemmas still without being solved.

The fundamental dilemma is: still obliging farmers to either cultivate land or lease it out for farming would strengthen overproduction; but if not, much land would be irrationally and polyopolistically used by able-bodied part-time and absent small farmers, while full-time farmers could not easily achieve economies of scale, reduce costs, become viable and more competitive in front of the USA, Canada and Australia with much larger farm size and much lower general production costs and many developing countries with much lower labor costs.[17] Without a solution, farmers (mainly full-time ones) pressed the governments for a high standard living equivalent to that of the part-time and absent farmers against the difficulties caused by the lower prices following the overproduction. The governments had to yield fearing losing not only their votes but also basic self-sufficiency in cereals if full-time farmers were also forced to become part-time and absent. Thus the EU implemented protectionism of a coupling between subsidies and production; price supports to keep agricultural goods at prices over the international levels; export aids for farmers to dump products at prices lower than costs to developing countries, and high tariffs against cheaper imports. As the coupling is the most important of them, the following analysis will focus on it.

1. The coupling could not solve that fundamental dilemma but has led to derived dilemmas.

Concerning overproduction. Under the coupling, if farmers have produced surplus, the EU has to buy it, which has encouraged overproduction and concealed the irrational and polyopolistic land use by able-bodied part-time and absent small farmers in the large farm sector mainly in the plain areas where land is generally consolidated, because the protectionism could guarantee the income of the tenants to be able to pay high rents to the landowners to lease land out (here the large farm obviously means a farm under operation, not necessarily under ownership, as the operator may lease in small parcels to form a large farm). Thus on one hand, the EU intends to avoid the surplus, and has put quotas on some products (e.g., milk, sugar); and set aside a part of arable land from production of cereals (and other arable crops, i.e., food-used oilseeds and protein plants), including highly productive land (producing over 92 tons/20 ha in cereals, representing on average 72% of the arable crops area, and at a rate set each year by the EU, in the 2000/01-2006/07 marketing years 10%) under a (*quasi-)*compulsory program (Council Regulation 1251 of 1999: Article 6; European Commission 2002: 1) (*quasi* means farmers are not obliged to set aside land, but induced to do so if they wish to receive set-aside subsides), and less productive land on a voluntary basis (European Commission 2002: 3). On the other, overproduction has not been avoided since the coupling as the engine is still yielding it. Derived dilemma 1.

[17] The author is unaware anyone else who has revealed this fundamental dilemma in the literature.

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 enduring high costs, and has exercised an early retirement scheme in both the EU and CEE accession countries through SAPARD (2000) to pay old farmers to transfer land to young farmers (lease, sale, or entitlement change without sale). But it would in turn contribute to overproduction. Thus on the other, irrational and polyopolistic land use by able-bodied part-time and absent small farmers seriously exists in the small farm sector of the southern states (Greece, Italy, Portugal, Spain) and accession countries where land is more fragmented because the rents of the fragmented small parcels are usually lower than those of the consolidated land. Of course, it also appears in other countries like Finland, Germany, Ireland, Sweden, etc. Derived dilemma 2.

In respect of the budget. The coupling has led to overproduction and unanticipatable budget as the overproduction may exceed the expectation, and cost the taxpayers and consumers huge amount of money. The EU wished to reduce the heavy budget deficits and has introduced in the set-aside and early retirement schemes, which however, have added financial burdens too, meanwhile have resolved neither overproduction nor irrational and polyopolistic land use. Derived dilemma 3.

In the field of the international cooperation, the EU aims to help developing countries and has set up many programs with economic and technological assistance. But the high trade-distorting coupling, price supports, export aids and import restrictions have unfairly harmed the interests of the Third World. Thus, 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) as a watershed document in the CAP reform. Its major importance was that the EU had 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 subsidies. It would be implemented by the accession countries, thus reducing the financial burdens of the enlargement. It stipulated 'the maximum sum paid to a farm will be EUR 300,000' annually (MTR 2002: 23) so as to abate the previous situation that most subsidies went to the fewer large farms. It would also improve market opportunities for the developing countries, and constitute a good example for the other developed nations (in particular the USA, Canada, Japan, South Korea) to follow.

The MTR was significant also in that the decoupled direct payments to each farm would be conditional upon cross-compliance with the environmental, food safety, and animal welfare standards. This would bring about chiefly positive results in these fields but could not bypass the above-mentioned fundamental and derived dilemmas.

At the demand side, the decoupling has increased the need for more efficient land use. As mentioned above, under the coupling, competitiveness of farmers seems not so important, because if farmers could not sell 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. Higher quality and localized special trade marks could promote their sales. But with the same or similar quality, in the sea of numerous localized special trade marks (each of which would claim that it is the best), and for many cereals which could not be easily specialized locally, lower costs would be more competitive. 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 irrational and polyopolistic 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 more than what they could sell, but also a negative consequence, i.e., 'in some cases abandonment of land', as MTR (2002: 19) anticipated, 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 ha which has been granted a payment in 2000-02 under one of the support schemes (e.g., in the UK 200-250 pounds per year), even if it does not produce any product, as long as the farmer has fulfilled the cross-compliance with the environmental standards (it would not be difficult to plant trees and grasses to prevent soil erosion), while the cross-compliance with the food safety and animal welfare standards would be irrelevant if the farm neither produces any crop nor raises any animal. This would give the incentive to some and even many 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, so as to avoid the decoupled payments from going to the tenant (according to the MTR, the decoupled direct payments should be given to the operator who could be either landowner or tenant). It was under the belief to let farmers decide whether to produce or not, that the farm ministers of the EU Member States proposed in the MTR that the decoupled payments be given to farmers even if they produce zero (Lohe 2004). But they have overlooked that even though some farmers do not wish to produce, other farmers do wish to but could not gain access to the irrationally and polyopolistically used land of the part-time and absent landowners. Thus exactly according to the same belief, there should be an effective and appropriate solution to realize the 'efficient allocation of land in farming' to those who can 'produce the same output with fewer resources or a larger output from the same resources' from those who cannot, which unfortunately the MTR did not provide.

Therefore, the decoupling could not bypass the above-revealed fundamental dilemma. Rather, it would only expose it which has been largely concealed by the protectionism. Although the MTR anticipated 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 either resume coupling or continue other forms of protectionism so as to guarantee them a high standard living.

This was the author's prediction in his Cambridge Conference paper (Zhou 2003: 26-7) submitted on 13 June 2003. Unfortunately, supportive evidence appeared so quickly: on 26 June 2003, after about one year's debates on MTR, what the EU farm ministers adopted (European Commission 2003) was a retreat from MTR's '*completely* decoupling the link between direct payments and production' to a *bulk decoupling and limited coupling*: 'the *vast majority* of subsidies will be paid independently from the volume of production', while 'Member States may choose to *maintain a limited link between subsidy and production* under well defined conditions and within clear limits', just in order 'to avoid abandonment of production'. Although called 'a *fundamental* reform of the CAP', it was downgraded to be merely a continuation in the same category of the incremental partial decoupling during 1992-99 for those countries still keeping the coupling. This has clearly demonstrated that after the complete decoupling, some farmers would irrationally abandon production, rather than leasing their irrationally and polyopolistically used land to the full-time farmers who would need it to achieve economies of scale, reduce costs, and become viable or more competitive. In 2004, a few Member States have chosen to keep the coupling (e.g., France on cereals, Austria on beef), while others a complete decoupling, and further others to decide in 2005-06. But even if a complete decoupling could be made, there are still price supports, export aids, and import restrictions of the protectionism to guarantee the income of the tenants. Once all of them have been further reduced and abolished, and the high decoupled payments[18] have also been decreased to the WTO standards as the EU plans to after 2013 (Ahner 2004), the refusal of leasing land out at low rents and production abandonment by landowners would happen. Thus, the irrational and polyopolistic land use by able-bodied part-time and absent small farmers has become the most fundamental root of the agricultural protectionism. Unfortunately, this root has largely been neglected in both the academic and policy-making fields.

[18] According to Choplin (2004), the EU's budget on the decoupled payments is higher than that on the coupled ones.

Concerning reducing overproduction, the MTR proposed to continue the (*quasi*-) compulsory set-aside on highly productive land (i.e., farmers should set aside such land if they want to get the decoupled direct payments), while lowly productive land could receive the decoupled direct payments no matter whether it is set-aside or not (i.e., not compulsorily). This was adopted by the EU Presidency Compromise (30 June 2003: 6, 12, 27) (in agreement with the Commission). Although the new set-aside is called environmental set-aside, it is still aimed at reducing overproduction. Here the EU has again neglected that its overproduction is not caused by the availability for farming of too much highly productive land, but by protectionism (without which farmers would have no incentive to overproduce even if much highly productive land is available) which is in turn caused by the irrational and polyopolistic land use of the able-bodied part-time and absent (mainly small) farmers. The EU farm ministers' decision of 26 June 2003 and EU Presidency Compromise of 30 June 2003 have been legalized into Council Regulation (EC) No 1782/2003 (29 September 2003).

However, continuing protectionism is not a solution acceptable to the developing countries, international organizations, and the EU itself. Thus in 2000, the EU had adopted the Lisbon Strategy which advocates more competition. Seeing the unsatisfactory result of its implementation, at the beginning of 2005, the EU has revised it and requested the Member States to set up national programs of execution. Before taking the EU Presidency during the latter half of 2005, in the second half of June, the UK Prime Minister Tony Blair argued that it would be too late to discuss in 2014 the reduction of the CAP expenditure which accounts for 40% of the EU budget while only about 5% of the EU citizens are working on agriculture; asked to decrease EU's protectionist farm subsidies (of which France has been the largest recipient) which have made the agriculture of not only France but also the EU uncompetitive, so that the EU could turn the funds to developing more competitive industry, services, education, science and technology in which it is behind the USA and has suffered brain drain to the USA; and otherwise, the UK would continue to demand the EU to return over 4 billion Euro from its contributions annually which was gained in 1984 by the then Prime Minister Margaret Thatcher as a balance against the reception of the large quantity of farm subsidies by France. Austria, Germany, the Netherlands, Sweden, etc. also wish to reduce their financial contributions. However, the French President Jacques Chirac did not agree, because if so, many farmers would not produce. (Tian 2005. Guang Ming Net-Daily 2005. CPE 2005). Thus, the EU is at a crossroad: either continue protectionism (causing overproduction), or face production abandonment (losing basic self-sufficiency in cereals).

3. These legislations could not both promote large farmers and retain small farmers in agriculture, which is also an unresolved dilemma persisting in developed and developing countries

During the incremental partial decoupling of 1992-99, the EU had 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' in the view of Beaumond (2002) (although the view of many developing countries may not completely be the same). 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? Apparently, the above-mentioned Western European legislations could not provide a solution.

(IV) The Unsuitability of the Legislations at the Under-Self-Sufficiency Stage

Now that the above-cited two Western European legislations have been successful for overcoming food under-self-sufficiency, why could not they be popularized to many other countries still at that stage? One of the reasons is that they oblige landowners to lease out *all* their inefficiently used land or give right to other farmers to till *all* of it (which might be imperative in the war era, but not so in the peace epoch), so that part-time and absent landowners would be unable to produce for their family consumption and keep farming skills; and once lost off-farm jobs, would have no access to their land rented out, or have to withdraw it within the contractual period (as many developing countries cannot afford to provide them with a basic social welfare), hence affecting the lessees.

V. A Proposed Effective and Appropriate Solution for Private Land Ownership

The author thus proposes, in an evolutionary approach, a legislation for both developed and developing countries at both under-self-sufficiency and overproduction stages, without changing private land ownership, to achieve the following aims at the same time: minimize/abolish/prevent protectionism, while avoiding irrational production abandonment and overproduction; reinforce full-time large farmers, whereas not crowding part-time and absent small farmers out of agriculture; reach/maintain basic national self-sufficiency in cereals, meanwhile promoting multi-functionality of other agricultural and rural sectors and improving the environment. (1) Creation of a Dual Land System (where the farm is larger than for family consumption). A landowner may keep a part of his land as *land for family consumption* (as an economic buffer without relying on buying foods in the market, also for practicing farming skills as a technological buffer and returning to agriculture once lost off-farm jobs as a social buffer) even if he does not produce sufficiently on it. The rest of the land is *land for market*. If nobody would like to lease it in, the landowner may keep it even without sufficient production, so that overproduction could be avoided. But if other farmers, without being forced by any one, merely out of their own economic considerations, would like to lease it in to achieve economies of scale, reduce costs and become viable or more competitive, the owner could not refuse, so that irrational production abandonment could also be avoided. The minimum lease term should be determined according to the local conditions and the nature of the crops. Having rented in contiguous parcels of different owners, the tenant would have the right to remove their boundaries and join parcels together so as to eliminate fragmentation (which is also an unsolved task under private land ownership), with the original boundaries recorded in the cadastre and a map and shown by field signs. Once the leasing contract is over, the owner has the right to withdraw the land. But if he does not produce sufficiently on it for maximally one year, while other farmers wish to lease it in for so doing, he could not decline. (2) Different treatments to land. The EU should gradually reduce and finally abolish protectionism, and make the non-environmentally sensitive land (no matter whether highly or lowly productive) available for full-time farmers to achieve economies of scale, while setting aside the environmentally sensitive land (both highly and lowly productive). Set-aside is temporary and not enough. Such land should even be converted back forever to the nature (forests, lake land, grass land and wet land). Its landowners should not produce cereals, but could still pursue production of fruits, vegetables, livestock, fishery, afforestation, processing of agricultural products, transportation, rural tourism, and other off-farm activities. Thus full-time large farmers could be boosted, overproduction of cereals reduced, multi-functionality of other agricultural and rural sectors promoted, and the environment improved.

Some explanations are necessary as follows.

1. The above-proposed legislation does not intend to replace land reform of distributing land for individual ownership out of equity reasons, which is still necessary where a few persons own large areas of land while many peasants own none or little (especially in some countries in Africa, Latin America, and South and Southeast Asia). Nevertheless, there would be no harm but benefits in adopting it before the land reform, as well as during and after it.

2. After the land reform, if there are few off-farm activities and farmers still have to rely on land for survival, the protection of tenants from eviction, control of land rent at the low level, and land-holding ceiling to prevent the revival of feudal landlordism through land repurchasing would be necessary, as Japan implemented following the land reform of 1946-50 (this point is particularly relevant to those African, Latin American, and South and Southeast Asian countries which have just carried out land reform). But once off-farm activities have developed and absorbed many part-time and absent farmers, such restrictions should be evolutionarily removed to facilitate the land transfer to the full-time farmers, as Japan did during 1962-80. Those countries which have reached the similar stage but not yet abolished such restrictions, e.g., Thailand (Onchan 2002), are advised to do so now.

On this respect, the author would like to point out that there is still room for China to improve. Since the early 2000s, the state first replaced various fees on farmers by agricultural tax, then waved the tax in many provinces, increased other financial and material supports (Chen & Qi 2005), and gave decoupled subsidies to farmers (XHNA 2005), so as to maintain farmers on agriculture and attract part-time and absent farmers back to farming. They brought about positive results as China has kept basic self-sufficiency in cereals. However, as many part-time and absent farmers returned to farming, the industrial labor shortage has been strengthened (Guo 2005). Some part-time and absent farmers did not want to return to farming. They boiled the free seeds from the government and sowed them, and showed the non-growing result to the officials so as to convince them that they could not farm (Rui 2005). Moreover, increasing decoupled direct subsidies is not a fundamental solution to promote agriculture. Once the decoupled subsidies have exceeded the standard of the WTO for China, but many farmers still did not want to farm, then further raising decoupled subsidies would become protectionism. Thus, in the author's view, the fundamental solution would be to encourage (though not force) those farmers who prefer to earn off-farm income to do so, rather than attracting them back to farming, while transferring a part or even all of their inefficiently used land to the fewer full-time farmers who love farming, so that the latter could achieve economies of scale, reduce costs, become viable and more competitive. Evolutionarily, more and more peasants would move to the industry and services with higher off-farm income, while the fewer remaining full-time farmers would also gain from economies of scale and strengthen agriculture.

3. Implementing this legislation could reach the aim of the traditional land consolidation, but without the difficulties of exchanging ownership and locations of fragmented small parcels, and regardless of the inheritance which may further fragment the ownership and location of the family farms. Of course, it does not exclude the implementation of the traditional land consolidation.

4. As presented above, a land waste tax may suffer from the difficulties of determining the tax levels, escaping of the landowners, low incentive of other farmers to report it to the tax officers, the ineffectiveness and corruption of the tax officers. The proposed legislation would be more effective, because as long as a *land for market* has been insufficiently cultivated for maximally one year, while other farmers wish to lease it in, the owner could not refuse and the local land authorities could exercise the lease even if the landowner is absent. Full-time farmers would have the incentive to report it to the land authorities since it would be they who would have access to it.

5. This legislation is much more lenient than land confiscation or obliged land sale while still reaching the same aim of avoiding land waste.

6. This legislation may overcome the above-mentioned fundamental dilemma between overproduction and irrational and polyopolistic land use, and the derived dilemmas. In particular, it allows a certain degree of production abandonment as long as other farmers do not wish to lease in the insufficiently produced land beyond the family consumption need of the owners, so that overproduction could be avoided. But if other farmers wish to do so, then the landowners could not decline, so that the full-time farmers could achieve economies of scale, reduce costs and become viable or more competitive in both domestic and international markets. Accordingly, it would prevent under-self-sufficiency in cereals because once it has appeared, domestic food prices would rise, and full-time farmers would have incentive and possibility to lease in the insufficiently

produced land of the part-time and absent farmers so as to produce more. It would also permit the full-time farmers to reduce costs and become more competitive in the international markets.

7. Under the proposed Dual Land System, the *land for family consumption* is still held by the part-time and absent landowners so that their family need for vegetables and cereals could be catered, farming skills kept, and small farmers not crowded out of agriculture, hence an *appropriate* solution; while the *land for market* is leased competitively to the full-time farmers, so that they could achieve economies of scale, reduce costs, be viable and more competitive and obtain incentives for longer term investment. If the landowner is absent, the local land authorities could implement the leasing of the *land for market*, hence an *effective* solution. Therefore, this legislation would be suitable for both traditional and modern agriculture, fragmented small and consolidatorily enlarged land, low and high income economies, food under-self-sufficiency and overproduction stages, and developing and developed countries under private land ownership.

8. Of course, the part-time and absent farmers should be allowed to lease out even their *land for family consumption* on a voluntary basis. But they should make sure that they would not withdraw such land before the leasing contract is over (if the tenant has not violated the contract), so as not to affect the interests of the tenant.

9. Would this legislation make land lease more complicated as the local land authorities would have to distinguish farmers into full-time, part-time 1 (mainly on farming), part-time 2 (mainly on off-farm jobs) and absent, or large and small scale? Such distinction is for theoretical and statistical reasons (as in the Japan Statistical Yearbooks). In the real operation, as long as a part of the land (beyond the family consumption need of the owner) has been insufficiently produced for one year, and the owner has no intention to sufficiently produce on it the next year, while other farmers would like to lease it in, then there would be no need to know whether the owner is full-time, part-time 1, part-time 2 or absent, large or small farmer, for the local land authorities to authorize the leasing the land beyond his family consumption need.

10. In so doing, the market is not repealed, but would be promoted. (1) If the landowner himself cultivates the land, he could compete in the market. (2) If his insufficiently used *land for market* is requested by several farmers, he could select one offering the highest rent, hence a leasing market. (3) After winning the contract, this tenant could compete in the market. (4) If the lessee failed to fulfill the contract, the landowner (or in his absence land authorities) would have the right to stop the contract and transfer it to another tenant, so as to guarantee the land to be *really* operated competitively.

11. If the highest rent a requester could offer is still lower than the amount the owner demands, should the state compensate for the gap in order to avoid obliging the owner to lease land out? Practically speaking, (1) if so, the owner may demand increasingly high and exorbitant amount of rent, so that the state could not afford. Suppose a landowner charged 500 Euro as the annual rent of his land, and there were four requesters who could only afford to pay 100, 200, 300 and 400 Euro respectively. The landowner could pick the 400 Euro payer (other conditions equal) as the tenant. But if the state paid the gap of 100 Euro to the landowner, he would ask for 600 Euro next year, 700 Euro further next year, . . . and an increasingly unlimited amount in the future, which no state could afford. (2) If the state had to set up a ceiling on the compensation it pays (e.g., 100 Euro, so that the landowner could not receive more compensation if he charged over 500 Euro), this would also be an obligation, thus a certain degree of obligation could not be avoided. (3) Even if the state could afford to pay a compensation for the gap, this would be another form of protectionism not allowed by WTO. Thus the state should not compensate for the gap. Theoretically speaking, this gap is actually a polyopolistic profit (just like a monopolistic and oligopolistic profit), and should thus not be allowed. This approach reflects a mixed economy combining market economy (the owner could choose the highest rent bidder – 400 Euro payer) and state intervention (the owner could not refuse to lease land out at a rent lower than his demand – the state would not compensate for the gap of 100 Euro). Thus this is not a command economy which excludes market economy, but a third way between them.

12. One may suggest to divide the decoupled direct payment of the EU between the landlord and tenant, rather than giving all of it to the tenant, so that landowner may have incentive to lease land out. But in so doing, the part given to the tenant may not be enough to cover his costs in cross-compliance with the environmental, food safety, animal welfare standards. Thus, the landowner may be provided with some other incentives to lease the land out. One possibility would be a reduction or exemption of the agricultural tax and land rent tax. But the total sum of all kinds of subsidies and incentives should be decreased to the WTO standard.

13. One may think that this legislation may violate one of the private property rights - right to use and not to use one's property; and put landowners at an inferior position in negotiations with tenants. But since cultivable land on this earth can no more be created, if some landowners neither use their land nor allow other farmers to use a part of it (unless paying high rents), this would amount to polyopoly, similar to monopoly and oligopoly which are not permitted by modern capitalism. A part of such high rents is profits from polyopoly of land just as profits from monopoly and oligopoly . For example, large firms like Microsoft, Nokia, Simens cannot do whatever as they wish just because they are private firms, but must follow national and international laws, especially the anti-monopoly and anti-oligopoly laws. It seems that such laws have put them at an inferior position in negotiation with consumers. But actually they have just put them at a fair position so that they can only earn normal competitive profits but not monopolistic and oligopolistic ones. The rationale under the proposed legislation is the same as that under the above-cited Western European laws: land is not only a private property, but also a scarce natural resource, and should be used in a rational and competitive way for the social, economic and environmental interests which are in accordance with the fundamental interests of the able-bodied part-time and absent small farmers.

14. One may also hold that democracy should not oblige landowners to lease land out. But in many developed countries, their democracy has forced domestic taxpayers and consumers to pay more for agricultural products, and compelled developing countries to suffer from their protectionism, just to protect the irrational and polyopolistic interests of their landowners. Moreover, democracy of the developed countries has set up so many regulations on the use of private properties, such as the speed and noise of private cars, pollution of private factories, and pollution of private landowners on their own and neighbors' land. At the under-self-sufficiency stage, the above-mentioned Western European countries all used democracy to oblige an efficient land use. Logically, the same democracy should also establish regulations for a rational and competitive land use at the overproduction stage.

15. Would the landowners in general accept this kind of obligation? At the under-self-sufficiency stage, they have accepted as mentioned-above, because they could understand that otherwise the whole nation would suffer from hunger. At the overproduction stage, they would also accept if sufficient dialogue could be made so that they could understand that otherwise the whole nation would either resort to protectionism or lose basic self-sufficiency in cereals (as the EU faces) or suffer from both (as Japan has encountered). Actually at the beginning of 2005, the EU has re-launched the Lisbon Strategy to permit, encourage and strengthen competition. This proposed legislation is promotive to this Strategy.

16. By this legislation, would full-time large farms get oligopoly and suffocate competition in the land leasing market? This would not happen as there are optimal farm sizes in each location which would deter farm size from becoming too large and concentrated in few farmers.

17. By this legislation, private land ownership will not be affected, but irrational and polyopolistic land use could be avoided. As for how to implement and organize the leasing while catering the interests of the landowner, tenant and society, and in particular avoiding misuse of land by the tenant, the landowner could choose the highest rent bidder, and they could share the inputs and outputs, so that not only the landowner but also the tenant would have the incentives to achieve the highest profits, prevent losses, and avoid deterioration of the land quality. This has been practiced in the USA (see Zhou 2001: 374-7). If the landowner is absent and the land authorities have to rent out his *land for market*, then they should call for tender and rent the land to the person

who is the most experienced and skillful, and bids for achieving the highest rent, and investment in improving the infrastructure and quality of the land, using more organic fertilizer and less chemical one, protecting the environment, etc. If the lessee did not implement the contract, then the land authorities will have the right to stop and transfer it to another competent tenant via tender. The above-cited 1979 law of the Tuscan Region of Italy also shows a good example of implementation. Relevant laws should also be established. For example, according to Giannoni (2005), in the EU, there are large companies which pay high rents to landowners, but do not apply fertilizer. In so doing, land fertility may be lost in four-five years time. Some of the landowners know this problem, but still lease land to them out of the fear that the agriculture of the EU has no future, and in order to earn easy and quick money. Thus the EU should stipulate both maximal level of chemical fertilizer (to prevent pollution) and minimal level of organic fertilizer (to protect fertility) to be applied, make field examinations and impose penalties on those who have violated them. Just as implementing other regulations, the costs of examinations should be born by the taxpayers and penalty payers.

18. There are countries where the clarification of land property rights still has not been completed, such as Albania where a land may be claimed by several families of a clan (Vittuari 2005). Needless to say, such clarification should be completed and land ownership certificates issued. However, even before this uneasy and time-consuming task has been finished, the proposed legislation could be exercised. The local land authorities could authorize the lease of the insufficiently produced land beyond the family consumption need of the claiming families to the full-time farmers (which would at least be better than land waste), and distribute the rent to the claiming families in a roughly equal way as a temporary solution. Of course, it would require field trials to find a suitable solution.

19. Would self-sufficiency in cereals stop international trade? There are several kinds of rice, wheat and other cereals. No country could produce all of them economically, so that international swaps would exist even if a country has achieved self-sufficiency in cereals in terms of quantity. Moreover, the author advocates only a *basic* self-sufficiency in *cereals*, so that international trade would be kept in cereals, and also continue in non-cereal products.

20. Following this legislation, the world prices would tend to be stable as the possibilities of both under-self-sufficiency and overproduction would be largely reduced.

21. Once the environmentally sensitive land (both highly and lowly productive) has been permanently converted back to the nature (forests, lake land, grass land and wet land), its landowners should not produce cereals, but could still pursue production of fruits, vegetables, livestock, fishery, afforestation, processing of agricultural products, transportation, rural tourism and other off-farm activities. The government could pay them a subsidy until they could earn a normal living upon non-cereal production activities, which is not regarded as trade-distorting.

22. Though the principles of this proposed legislation should be adapted to local conditions, it would be universally appropriate to give full-time farmers access to the insufficiently produced land beyond the family consumption need of the part-time and absent farmers and convert the environmentally sensitive land to the nature once stable overproduction has happened.

23. Here the author uses a dynamic and evolutionary approach from minimizing to abolishing protectionism. (1) If a country has not rationally and competitively used all its cultivable land while implementing protectionism to achieve basic self-sufficiency in cereals, its protectionism could not be regarded as having been minimized (such as Japan and South Korea with much idled land). In the large farm sector of the EU, currently leasing is widespread. Would it mean that all cultivable land has been rationally and competitively used so that its protectionism could be justified as already minimized to keep basic self-sufficiency in cereals? The answer is no, because it is the protectionism at the expenses of the taxpayers and consumers and developing countries which enables the tenants to pay high rents to the landowners to lease land out. (2) Once a country (such as the EU, Japan, South Korea) has rationally and competitively used all its cultivable land, it would be able to avoid overproduction and under-self-sufficiency of cereals (with normal natural

conditions) without the coupling, price supports, export aids, and high decoupled payments, hence abolishing the bulk of protectionism. However, if its costs were still higher than in other countries, it would need to implement import restrictions so as to keep basic (or certain degree of) self-sufficiency of cereals. In so doing, it could be regarded as having minimized protectionism. Likewise, if a country has rationally and competitively used all its cultivable land but suffers from unfavorable natural conditions (such as the cold weather in Norway), it would be understandable for it to implement import restrictions as a minimum degree of agricultural protectionism in order to achieve basic (or as much as possible although below basic) self-sufficiency in cereals. (For example, the free trade zone to be established in 2010 between the Association of Southeast Asian Nations and China as decided in November 2001 will reduce the tariff on rice in 2015 only by 50%, rather than 100%, reflecting the strategic desire of the member states to keep a certain degree of self-sufficiency in rice.) With certain import restrictions in cereals, the full-time large farmers could still gain advantage within their own countries. Such countries could also allow cheaper laborers of foreign countries to enter to lease in their land or become farm employees so as to reduce labor costs further. (3) Once a country with higher costs has joined a super-nation like the EU, it would be unnecessary for each Member State to reach basic self-sufficiency in cereals, as some Member States could overproduce to feed the others and there would be no threat of losing basic supply of cereals [this view has been shared by the EU Commission policy-makers Ahner (2004) and Borchardt (2004), but some farmer organizations (e.g., in Sweden) (Eriksson 2004) and Member States (e.g., Hungary) (Somogyi 2004) still wish to attain basic self-sufficiency in cereals at the Member State level], so that the remaining protectionist policy of import restrictions could be lifted within the super-nation. (4) As the EU has been expanding, so as the free trade zones and friendly partnerships among countries in other continents, more and more nations in such zones and partnerships could get rid of wars and threats among the member states, and have no need to achieve basic self-sufficiency in cereals in each member state, so that their free trade could be promoted and import restrictions in cereals diminished and finally ended. Following this trend, the free trade zone between the Association of Southeast Asian Nations and China would further reduce rice tariff after 2015 and finally to zero. Likewise, the EU would not invade China again as many of its Member States did before 1949 and China would not invade the EU just as it has never done so. The EU and China could avoid threatening each other and establish friendly partnership of free trade to import the agricultural products from the cheaper partner, so that the EU could finish the last protectionist policy of import restrictions versus China. There would be two possible results. (i) The prices of China's cereals were raised by the imports of the EU but (plus transportation costs) still lower than the EU level so that the EU could import all cereals from China. This would be less realistic as even those countries with largest farms would not be able to feed the whole world (if without protectionist policies to give unfair incentives to farmers to overproduce and make dumping to other countries), not to mention China dominated with small farms, so that other countries would still have room to produce for their internal and external markets. (ii) The imports by the EU from China raised the prices of China's products (plus transportation costs) to or over the EU level so that the EU farmers could produce a part for its own demand although less than basic self-sufficiency. This would be more realistic. Under either result, each partner may still produce its own localized special products which, even if the costs were higher, could still be bought domestically and externally. For example, although China is still a developing country, a part of its population has become rich and consumed the more expensive fragrant rice of Thailand. (5) Only after the whole world has entered a permanent era without sanctions, embargos, invasions, wars and threats, and without tariffs, would basic self-sufficiency in cereals for any nation be unnecessary as each country could import from others, so that the last protectionist policy of import restrictions could be abolished among all countries of the world. (Of course, if before the arrival of this stage, some countries do not care about losing basic self-sufficiency in cereals and would like to rely on imports without any import restriction, they should be allowed to do so.) But even at that stage, the pure and idealistic Ricardian model of free market mechanism would still not function (as argued

above, food shortages and high prices would not necessarily induce those owners with polyopoly on land to produce more to cater the need of the poor consumers, rather, they would prefer to enjoy the high prices and profits), so that this proposed legislation would be necessary permanently – as long as polyopoly of land ownership still exists on this planet without the possibility of creating more cultivatable land.

VI. Potential Global Relevance

The implementation of the above-proposed legislation would promote fraternity and fair competition among nations of the world.

1. For decades, developing countries have had two types of problems - their own and agricultural protectionism from the developed nations. This proposed legislation is relevant to them. But even if they have resolved this microeconomic root, the protectionism of the developed nations would still make their agriculture less or un-profitable, hence continuing the inequality and injustice between the developed and developing countries. Moreover, protectionism in agriculture of the developed nations and that in industry and services of the developing countries are interrelated - if the developed nations could not reduce and abolish theirs in agriculture then the developing countries would not do their part in industry and services in the WTO negotiations. But in order to reduce and abolish agricultural protectionism, the developed nations would have to prevent irrational production abandonment, otherwise they would not lift protectionism. This legislation could just resolve this microeconomic root also in the developed nations, so that the further reduction and final abolition of their agricultural protectionism would be possible, hence also the industrial and service protectionism of the developing countries.

2. The EU has requested the CEE 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 (Enlargement June 2002), hence dividing the enlarged EU. The Western EU farmers have been actually allowed to lease in land in CEE, but not at the same level vice versa. The author discovers that in the agricultural sector, the reality and trend in the world as well as the EU is that able-bodied farmers are more interested in earning higher off-farm income, so that allowing the full-time farmers from CEE to lease in the irrationally and polyopolistically used land of the part-time and absent farmers of the Western EU would not constitute competition with and crowd them out of agriculture [in fact there is already an agricultural labor shortage in some parts of the EU, e.g., the Italian agricultural trade unions have demanded the Labor Ministry and Parliament to adopt a law to permit hiring workers for its agriculture from outside the EU-15 with possible priority to the accession countries (Bani 2002)]. The CEE full-time farmers could certainly benefit the Western EU by their lower labor costs just as their Western EU counterparts could help CEE 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 should be no harm for the Western EU to allow free labor movement from CEE immediately (or through a much shorter transition period) after or even before the accession, hence increasing fraternity and fair competition between the Western and CEE EU areas.

3. If all countries of the world could adopt this legislation and allow not only nationals but also foreigners to lease in the irrationally and polyopolistically used land of their part-time and absent farmers, then resources would be more efficiently used, poverty, inequality and injustice reduced, the environment improved, sustainable rural development achieved, fair competition on the WTO basis 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.

The author's analyses and proposals have obtained 39 positive responses by the EU, EU accession countries, CABI, OECD, UN, CSD, FAO, UNEP and World Bank, been accepted in their continuously upgraded versions by 11 international conferences in 10 countries during November 2001 - November 2004, and presented in seven seminars in four countries during May 2003 – April 2005. When in South Korea in July 2004, the author discussed deeply with seven professors in six universities of four cities, one senior research fellow in a national research institute and directors of two national farmer organizations who told me that my proposals would be adoptable in their country, but it usually follows the EU and USA. The author then visited WTO in Geneva in 13-14 September 2004 and discussed with three officials (one planned to spend 30 minutes but voluntarily extended to two hours and a half because he had not heard these ideas from others). During 20 September - 29 October in Brussels, the Deputy Director of the Cabinet of the New (2004-09) EU Commissioner for Agriculture (spending one hour and a half), Deputy Director-General for Agriculture responsible for policy-making and Head of Unit 'Studies and overall approach' (one hour in Brussels by both and over two hours by the Deputy Director-General during 4-6 November in Halle Germany), Director of the EU Task Force on Land Tenure of the EU Commission; representatives from the Ministries of Agriculture of 19 EU Member States (who prepare for and attend meetings of the EU Council of the Agricultural Ministers); two Members of the European Parliament for agriculture and regional development respectively; directors of 20 farmer organizations from 17 EU Member States and four pan-EU farmer organizations; and representatives to the EU from the Ministries of Agriculture of South Africa (plus Ambassador), India; Argentina, Brazil; Australia, Canada, New Zealand, and USA received the author. The author's analyses and proposals have gained wide understanding and support from the European officials, scholars and farmer organizations' representatives he has talked face to face deeply. In particular, the Deputy Director-General for Agriculture of the EU Commission and Deputy Director of the Cabinet of the New EU Commissioner for Agriculture confirmed that if irrational production abandonment happened following the further reduction of protectionism, the EU would have few choices - resuming the reduced protectionism would not be possible, so that adopting the author's proposals would be the remaining choice.

Having not heard any alternate to the remedy in this paper in the various international occasions in the past years, the author is extremely happy that Commentators EA1 & EA2 (2005) so confidently conclude that 'Certainly there are inefficient land uses across the world, but not only one cause, and *certainly not only one simple remedy*'. The author should thus be most grateful if any distinguished readers could be so nice as to give the author the following information: (1) another work which has provided global evidence that the irrational and polyopolistic land use by able-bodied part-time and absent small farmers has become the most fundamental microeconomic root of the three persisting world-wide macroeconomic problems: food under-self sufficiency, overproduction and agricultural protectionism; (2) any alternate to the author's proposals for both developing and developed countries at both under-self-sufficiency and overproduction stages, without changing private land ownership, to achieve the following aims at the same time: minimize/abolish/prevent protectionism, while avoiding irrational production abandonment and overproduction; reinforce full-time large farmers, whereas not crowding part-time and absent small farmers out of agriculture; reach/maintain basic self-sufficiency in cereals, meanwhile promoting multi-functionality of other agricultural and rural sectors and improving the environment; (3) such alternate would be adoptable (e.g., by the EU) to shorten/complete the already decades-long (and probably endless) protectionism reduction process; and (4) how could the EU (and Japan, South Korea, etc.), without adopting the author's proposals, break the swing between protectionism (and subsequent overproduction) and abandonment of production (and consequent loss of basic self-sufficiency in cereals).

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