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**THE URGENCY OF INSTITUTIONAL CHANGES FOR LDC,
NIC AND DC AGRICULTURES***

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Four driving forces for development are: technical, institutional and human improvements along with growth in the stocks of physical and biological capital. All four seem individually essential; any one, two or even three are insufficient. Despite efforts of prominent economists to estimate separate returns to efforts to improve each of these four forces individually, their complementarity precludes reliable estimation of their separate contributions to development. When one of the four forces is deficient empirical workers find what appears to be great returns to providing the missing one because provision of it, as a missing essential ingredient, permits unused stocks of the other three to be used to contribute to the apparent productivity of the missing one. When there are no unused stocks of one, two or even three of the four forces, the provision of additional amounts of the fourth fails to generate more agricultural development as development is already constrained by one or more of the other three. This can be verified by examining the cases of oil palm technology in Nigeria and Malaysian and the minimal impacts of capital loans and grants in Africa and South America, of public administration institutes and projects in Africa and of numerous human development projects in Latin America and Africa.

It is the thesis of this paper that institutional limitations are presently the most serious constraining factor for the agricultures of the DC's and NIC's. Present stocks of technologies and of biological and physical capital are more than adequate in these countries. So too are their stocks of human capital. The LDC's on the other hand typically lack all four but are now constrained more by existing institutions and human capital stocks than by technologies and stocks of biological and physical capital. In this paper, I stress institutional constraints. It should be noted, however, that there is also a particularly strong case to be made for attention in the LDC's to human capital constraints by social scientists. There is also a strong case for overcoming biological and physical capital limitations in LDC's though, the self generation and utilization of such capital is often constrained by institutional deficiencies to which attention must first be given.

This paper is organized as follows: first the transaction costs/institutional approach to businesses and institutional history will be presented; second, the transaction cost/institutional analysis will be used to interpret what has and is happening to agricultural institutions in the DC's, NIC's and LDC's around the world and third

*LDC = less developed countries; NIC = newly industrialized countries; DC = developed countries.

conclusions and speculations will be presented about changes in agricultural institutions including opportunities to research such changes.

The Transaction Costs/Institutional Analysis of the Firm and Interpretation of Agricultural History

The institutional constraints on agriculture considered in my opening remarks are fascinating and crucially important in the affairs of all agricultures -- those of the DC's NIC's and LDC's alike. These institutional deficiencies cry out for research to permit us to promote adjustment and development and to see and better understand the future of our agriculture's. General economists and economic historians are now making considerable progress on what they term the "transaction costs/institutional" (TC/I) approach to institutional change. This approach has potential for helping us interpret, understand, overcome and adjust to the institutional constraints. In this part of this paper the TC/I approach is briefly described and examined.

Important names in the development of the TC/I approach include those of O. E. Williamson [1985], Douglass North [1981], William Baumol [1986] and Allen Buchanan [1985]. Williamson and Baumol work as economists, North as an economic historian and Buchanan as an economic philosopher. My own acquaintance with this literature is too recent and meager for me to be confident I have mastered it and am not neglecting important contributors. I also note that writers in this area describe their work as in its infancy and that they are continually culling, extending and otherwise modifying their approach. Baumol is mentioned above as he feels [1986] that Williamson unduly differentiates the TC/I approach from the neoclassical, market adjustment approach of economists to markets conceived broadly to include political processes in such a way as to accommodate the induced institutional change hypothesis of Ruttan [1971] and others. I tend to agree with Baumol about the differentiation but believe that the TC/I analysis can materially improve the induced institutional change hypothesis.

In his The Economic Institutions of Capitalism, E. O. Williamson [1985] examines how firms act and create institutional arrangements to obtain the benefits of progress while minimizing the costs of errors arising from imperfect knowledge and transaction costs. According to Williamson, transaction costs place firms in danger of making costly mistakes in the presence of asset specificity (I would use the term "asset fixity" [G. Johnson, 1958; Edwards, 1959, Johnson and Quance, 1972]), imperfect knowledge and malevolent exploiters waiting for an opportunity to take advantage of those making mistakes. In the absence of these conditions, the market mechanism (including contractual arrangements) is viewed by Williamson as capable of adequately governing the economic activities of society. In their presence, (1) transaction costs make it necessary for businesses to develop institutional arrangements to help control transaction costs and their impacts and (2) market failures are to be expected. Many of the institutions of capitalism reduce losses (both public and private) associated with transaction costs, imperfect knowledge and asset specificity.

Though Williamson views transaction costs mainly from the standpoint of management as the governance unit of a business or corporation, they can also be viewed from the standpoints of parastatal or socialized enterprises. He asserts, in general agreement with Knight [1941], that without transaction costs, imperfect knowledge and the possibility of consequent errors, a business is merely a producing unit -- a production function if you please -- devoid of management and managerial processes and adjustments and the need for institutional arrangements to manage transaction costs. In Williamson's analyses, transaction costs become important when a business uses

specialized assets in which investments can be mistakenly sunk (because of imperfect knowledge) under circumstances that offer others an opportunity to take advantage of mistakes at the expense of the management unit making the mistake. Imperfections in knowledge arise in part from inappropriate perceptions of physical, political, social and other realities some of which may be ideological in nature.

Williamson's analysis helps explain why imperfectly informed businesses (and socialized farm production units) create institutional arrangements within and among themselves to alleviate the adverse effects of the transaction costs they encounter in organizing production to acquire the gains made possible by better technologies and other improvements. It also helps explain why farmers organize themselves relative to government to induce governments to make institutional arrangements to alleviate the adverse effects of transaction costs [D. Gale Johnson, 1947].

There are transaction costs involved in changing the internal institutional structure of a production unit. In the presence of such costs, institutional arrangements also become incorrectly fixed because of errors originating in imperfect knowledge of management. The Williamson analyses shows how management units, including those of farms, seek the gains of development by devising institutions to control (1) transaction costs as the sum of assembly (or installation) and dismantling costs, and (2) the adverse consequences of making mistakes.

The transaction costs involved when a farm firm acquires or disposes of specialized productive assets such as land, machinery and livestock establish a differential between what I call elsewhere [Johnson, 1958; Edwards, 1959; Johnson and Quance, 1972] the replacement or acquisition cost and the salvage value of an asset. It should be noted and emphasized that in market controlled economies, competitive farm firms invest in highly specialized and durable assets in unstable, almost unknowable, changing environments surrounded by a competitive market that opportunistically but not malevolently takes advantage of the investment mistakes of farmers. It is also noted that the managers of socialist farm units and agricultural systems, like their counterparts in privately managed agricultural sectors, encounter transaction costs in using specialized agricultural inputs in which they, too, often erroneously sink large investments because their knowledge is also imperfect under circumstances that give others in their bureaucracies an opportunity to take advantage of their mistakes.

In his book entitled Structure and Change in Economic History [1981], Douglass C. North stresses the cost of changing institutions in interpreting history. A rather concise summary of his argument is to be found in the Journal of Economic History [North, 1984] entitled "Government and the Cost of Exchange in History." In a still more recent article entitled "Institutions, Transaction Costs and Economic Growth," North points out [1987, pp 255-256] that economists commonly ignore transaction costs and imperfect knowledge. The extensive use of this approach by economic historians in the years before 1984 led them to neglect the institutions society develops to handle transaction costs. North argues that economic historians must now use the TC/I approach in interpreting history to go beyond the economic analyses commonly taught to undergraduate and graduate students and used by economists.

Whether North's criticisms apply to the analyses of all economists is not particularly relevant here as it certainly applies to the work of many. I have pointed out long ago and elsewhere that many economic analysts ignore acquisition cost/salvage price differentials for investing and disinvesting in durable productive assets [Johnson, 1958; Johnson and Quance, 1972]. These differentials are determined by transaction

costs. In my analysis, such differentials combine with imperfect knowledge to help explain asset fixity, changes in length of run, irreversibilities in supply and input demand functions, opportunity costs, private and social losses on sunk costs, and the like.

North is concerned with changes in public institutions. He argues that four variables must be taken into account in understanding institutional change and lack thereof. The four variables are first, the cost of measuring the goods and services exchanged and the performances of persons and agencies. Second, the nature of the exchange process, that is whether it is personal or impersonal. The third is enforcement of agreements in order to avoid cheating, opportunism and shirking. The fourth includes ideological attitudes and irrationality. North's list is related to William's list that includes asset specificity, imperfect knowledge and opportunism.

Both public and private institutions to control transaction costs are put in place at a cost and, in turn, can generally be dismantled only at a cost. In this sense institutions are like tractors, irrigation systems, breeding herds and orchards. Governments and/or businesses incur transaction costs in establishing and dismantling institutions much as firms encounter transaction costs when investing and disinvesting in lumpy durable factors of production. Institutions are both informal and formal, the former being illustratable by credit ratings among businessmen well known to each other and the latter by the acreage diversion program of the USDA. Transaction costs are involved for both kinds of institutions. For the remainder of this paper, I shall refer to the costs of establishing and dismantling both kinds of institutions as "institutional transaction costs" and to the costs of putting durable productive assets in place and of dismantling them as "production transaction costs." This terminology goes beyond that of North and Williamson to provide us with words to describe more adequately the institutional and investment constraints facing agriculture around the world.

At this point in the discussion, economists may argue that all that is required to explain institutional changes is to broaden the usual concept of markets to include political "markets" to include the "induced institutional change hypothesis". North would object, however, as such explanations leave out institutional transaction costs and the roles that imperfect knowledge, irrationality, mistaken choices, ideological commitments and opportunistic use of political, military and other kinds of power play in forming governmental institutions [North, 1981]. He argues that "political systems have an inherent tendency to produce" institutions involving "inefficient property rights or decline" [North, 1981, p. 422]. By contrast the induced institutional change hypothesis can generate only correct improvements when transaction costs are treated as zero and knowledge is regarded as perfect [Ruttan, 1971, 1984]. In North's analysis transaction costs and imperfect knowledge lead to the establishment of mistaken institutions. Thus, North's analysis provides a much better explanation of how the present mistaken price support, subsidy and import protection institutions of Japanese, Western European, North American, Korean and Taiwanese agricultures came about. North's analysis is also useful in understanding the roles past mistakes have played in creating the agricultural institutions of mainland Chinese, the Soviet Union Eastern European socialist countries, Tanzania and Cuba [Csaki, Boyev, Li, Symp. Papers]. It also helps us understand the difficulties encountered in overcoming the institutional shortcomings of less developed African, Latin American and Asian countries. It should also be noted that economists commonly ignore the gains and losses of investments mistakenly sunk in durable biological and physical capital.

North and Williamson certainly make a valid point in calling our attention to (1) how dangerous it is for historians (and economists) to disregard transaction costs,

imperfect knowledge, irrationality and ideology and power in analyzing institutions and (2) the value of the TC/I approach in studying history.

Insights from the Transaction Costs/Institution
Analyses About Institutional Changes in the Agriculture
of the LDC's, NIC's and DC's Around the World

In this section I draw heavily on two recent conferences: one in Beijing last November on Rural Development Strategies that was sponsored by the International Association of Agricultural Economists (IAAE) and the Chinese Society of Agricultural Economists (CSAE) and another in Taipei in January of this year on directions and strategies in the Asian Pacific region. Over 50 papers were presented at the first and another 26 at the second. Both conferences placed heavy stress on institutions and institutional changes. I also draw on my own U.S. [Johnson and Quance 1972], Nigerian [Johnson et.al. 1969] and Korean [Rosemiller et.al. 1972] studies as well as studies by others including those on growth and equity that were summarized at the Jakarta Conference of the IAAE [Johnson, 1983].

Institutional transaction costs (both when high and low) have been important for the agricultural decision makers of mainland China and the Asian NICs. High institutional transaction costs (including those of a civil war) were paid by mainland China to change land tenure institutions and redistribute the ownership of land from feudal landlords to peasants. Transaction costs short of war were also incurred in reforming the land tenure institutions of Taiwan, South Korea and, earlier, Japan. Further, large institutional transaction costs were incurred in dismantling the original land reform of socialist China so as to reconcentrate land ownership in the hands of the state under the control of the Communist Party of China. Subsequently, in the late 'seventies both institutional and production transaction costs were incurred in dismantling a substantial part of the state farms and communes as production institutions in order to pass control, if not ownership, of land back to individuals and families under the "responsibility system." Investments in both biological and physical capital in the agriculture of socialist China were low during the cultural revolution -- so were earnings on these investments; consequently, the dismantling and disposal of production durables done at the end of the cultural revolution did not involve much loss of productive value. This helps explain the exceptional volatility of China's agricultural institutions since the end of the cultural revolution. In post-1978 socialist China, agricultural reforms have been and are being sought to alleviate difficulties related to North's four variables: performance measurement, exchange processes, enforcement of agreements, and ideologies and irrationality.

I turn now to Japan, South Korea, and Taiwan. Their institutions have long been favorable for agricultural production. South Korea has now found that her earlier land reform institutions fragmented land ownership and control so much that farmers do not now have units large enough to produce incomes comparable to those being received by industrial workers. Thus, like socialist China, South Korea is now encountering the institutional transaction costs involved in partially dismantling her earlier land reform. Japan and Taiwan are also encountering dismantling costs in partially changing their land tenure institutions. More fundamentally all three attained high degrees of food self-sufficiency and security by heavily subsidizing their agricultures and/or granting them high and tight import protection. In agreement with Williamson, I have argued and presented supporting empirical work elsewhere [Johnson, 1958; Johnson and Quance, 1972] that asset specificity and imperfect knowledge of continuous change (technical, institutional and human) create problems for farm entrepreneurs involving the transaction costs that make up the differences between acquisition costs and salvage

values of assets. Though Williamson is not very explicit about it, "sunk costs" become problems only when they are in overcommitted resources whose earnings do not cover the transaction costs involved in acquiring them. Nor is he explicit about opportunity user costs that are part of the economics of extracting service flows from fixed durables [J.M. Keynes, 1936; A. Lewis, 1949; Baquet, 1978, pp. 95-122; Robison and Abkin, 1981]. Services from sunk assets earn opportunity costs or shadow prices insufficient to cover original stock acquisition prices. The uses of the services of sunk assets are governed by current shadow or opportunity cost and, sometimes, salvage values (or off-farm opportunity costs); however, capital loss, cash flow, leverage and bankruptcy problems are created by historical acquisition costs of fixed or sunk assets. It is easy to demonstrate, both theoretically and empirically [Edwards, 1959, 1985; Johnson and Quance, 1972, appendix], that random mistakes made as a result of imperfect knowledge when investing in "specific" assets with transaction costs for acquisition and disposal generate a tendency to outproduce effective demand even in the absence of price supports and input subsidies. Since World War I, U.S. agriculture has outproduced effective demand in all but around eight years in the sense of producing so much that market prices did not cover acquisition costs of investments and expenditures. About thirteen of the fifty-two years of overproduction were in years before the present series of production controls and price support programs was established. It should be remembered by those who correctly blame much of our overproduction on price support and subsidy programs that we overproduced before these programs existed and that overproduction currently typifies many farm commodities for which such programs do not currently exist [Johnson, 1985]. The original need was (and the continuing need still is) for programs to help farmers handle transaction costs and the investment mistakes they inevitably make because they are not perfectly informed. What they need is institutional arrangements to do this that do not oversupport and oversubsidize and, hence, add to overproduction problems. With supports and subsidies, it is again easy to demonstrate (both theoretically and empirically) that entrepreneurs tend to overprice land, overinvest in non-land capital, overcommit labor and overproduce the effective demand inherent in the price support and subsidy institutions. Whether or not Taiwan, South Korea and Japan are importers, self-sufficient, or exporters of food and feed grains, their farmers should be expected to overinvest in agricultural production durables, overprice land and overproduce the effective demand they face within their subsidized and protected systems and, of course, relative to international demands.

The subsidies and assistance given to South Korean and Taiwanese agriculture by their respective agricultural institutions are less extensive and less expensive than those for Japan. Japan's agriculture is probably more heavily subsidized and protected than the agriculture of any other developed country [USDA, 1987]. She is followed by the EEC countries. In North America, subsidies for farm products are not as high as in Western Europe. However they are high enough to have created surpluses and raised governmental costs to levels increasingly questioned by U.S. taxpayers. Apparently, subsidies for Canadian farmers roughly comparable to those for U.S. farmers are less obvious to Canadian than U.S. taxpayers and consumers in part because the Canadian costs are paid from provincial as well as federal treasuries. The agricultural products of Oceania are probably less subsidized and protected than those for any developed country [USDA, 1987]. One cannot examine the institutions of the DC's and Asian NIC's without acknowledging the realism of Douglas North's concern about irrationality and mistaken institutions. Many of the North American production control and price supports were designed originally to stabilize production prices and income so as to protect farmers against losses arising from imperfect knowledge and transaction costs. However, North American farmers and politicians went beyond needs for such protection to price support and subsidy levels unjustifiable on these grounds much as their Western European,

Japanese and Asian NIC counterparts went to price support and subsidy levels and import restrictions unjustifiable in terms of food security goals.

The agricultures of the developed western non-socialist countries now have mistaken institutions for subsidizing and protecting agriculture that were put in place at substantial institutional transaction costs. To be included in the costs of establishing these institutions are the costs associated with increases and decreases in the value of farmland [Lowenberg/DeBoer, 1987; Boyne, 1964] and production quotas and over-investments in other assets. If and when such institutions are dismantled in response to taxpayer and consumer dissatisfaction, high dismantlement costs will be incurred. These will be both private and societal in nature. Understanding such costs will be improved if they are researched by rural sociologists, rural political scientists, rural anthropologists and agricultural geographers as well as agricultural economists. Included in dismantlement costs will be the destruction of property values based on the price support, production control, and import protection institutions now in place [Lowenberg/DeBoer, 1986]. But this is not the end of the matter as foreign exchange control and related institutions that protect non-farm producers and laborers are also in place especially in the Asian NIC's, Japan, and Western Europe, some of the most troublesome of which involve governmental deficits and foreign exchange regulation. Deficit financing and exchange controls inflate prices, distort price relationships and redistribute property values particularly in the LDCs and NICs.

At the recent joint conference of IAAE and CSAE economists, Li Renfeng [Symp. Paper] of the Institute of Soviet and East European Studies of the Chinese Academy of Social Sciences presented a very interesting paper entitled "Problems of Rural Reform in the Soviet Union and Eastern Europe." Li's paper stressed the early dominant role of Soviet agricultural development thought in organizing agricultural production in socialist Eastern Europe as well as in the Soviet Union itself. The main defects of the earlier Soviet approach were summed up by Li as those of (1) implementing socialist planned management in an "absolute" way using standard planning indexes to create a plan with the "effect of law" for implementation by all production organizations, (2) ignoring the "active role of commodity production" as if the Marx/Engles assumption that commodity production had disappeared were true when, in fact, it is not, and (3) disregard of benefits for farmers and the need for a certain amount of equality in the distribution of income between farmers and non-farmers in order to motivate farmers, farm laborers and the managers of agricultural production enterprises.

Li indicates that the USSR and Eastern Europe started reforming their agricultural systems away from the original Soviet pattern in the mid-1950s. These reforms reduced the compulsory use of planning indices and the granted more power to local decision makers particularly at enterprise levels, reduced use of compulsory selling systems and raised purchase prices for farm products, reorganized machinery and tractor stations and enterprises for producing farm inputs, and partially shook off rural collectivization in favor of rural cooperatives. Li indicated that agricultures of the USSR and eastern socialized countries, still remain the "weak point in their economies." He did not consider institutional dismantlement costs and sunk production investments as possible explanations of the slow pace of reform in agricultural institutions of Eastern Europe and the Soviet Union but, then, he did not have access to the Williamson/North transaction cost analysis of institutional change.

The TC/I approach is useful in understanding the slowness of rural institutional reforms of the Soviet Union and in the socialist Eastern European countries. Those reforms are encountering considerable resistance to keep agriculture the weak point in

the economies of these countries. Such resistance should not be surprising. In these countries, agricultural institutions and systems have been moderately stable and passably workable for a long while. People have found niches where they collect benefits (rents) that increase with development and specialization. Even urban consumers benefit from low food prices if not from high quality, diversity and quantity. Further, powerful party members and military leaders are conservative Marxists who fear that institutional change may deprive them of power and other benefits. In Poland, both agricultural and non-agricultural reforms have been staunchly resisted by the party and government.

In Hungary, reforms in rural institutions came easier. This makes it appropriate to follow consideration of Li's more general paper about the agricultures of East European, socialist countries with consideration of a well-written, carefully considered paper about Hungary presented at the same conference by Csaba Csaki [Symp. Paper], Rector of Karl Marx University of Economics in Budapest. As one reads Csaki's paper, one can grasp the adaptive conservatism of Hungarian agricultural planners as they made their agricultural reforms. Hungary did not abandon her state and cooperative farms. She did, however, become more flexible and adaptive with respect to them. Her institutional reforms transferred to the managers of state and cooperative farms much decision making power and operational control that had previously been exercised from Budapest. Further, farm product prices and rewards for work and accomplishments were increased and placed under local control. Some land is owned by cooperatives and some by their members. Though the Hungarian government continues to place heavy reliance on large-scale production units operated as state farms or cooperatives, Csaki reports that there are half a million plots and small farms under cultivation. He does not attribute the diversity of Hungary's agricultural production organizations to the supremacy of small-scale farming. Instead, he notes that the large-scale state and cooperative enterprises produce most of the grain, sugar beets, sunflowers and green forages. On the other hand, smallholder operations are important for vegetables, fruit and wine. Livestock production is distributed among both large- and small-scale units with the small-scale producers being relatively more important for pork, eggs and rabbit meat. Even the large-scale farms of Hungary are regarded as dependent on technical assistance. They are served by institutions known as Technically Organized Production Systems (TOPS). In turn, the large farms provide technical assistance to the smaller ones. Csaki reports that Hungary is developing a large number of intermediate organizational structures including a wide variety of "joint" ventures. Some of the joint ventures are cooperatives and some are legally and financially independent enterprises. Joint ventures provide construction, food processing, marketing and other services to the farm as well as the non-farm sector.

Hungarian agriculture is more outward oriented than that of most socialist states somewhat resembling, in this respect, South Korea and Taiwan. A very high proportion of Hungarian land is cultivatable. Because she has virtually no other renewable natural resource to use in earning foreign exchange, it is important that Hungary use her land so as to earn foreign exchange from both within and outside socialist countries. Csaki characterizes Hungary's agricultural institutional reforms as: (1) based on "voluntary gradualness" on the part of decision making units, (2) granting much independence from central control to local decision making units, (3) recognizing a national financial interest in the productivity of agriculture, (4) stressing socialist democracy and (5) requiring substantial state support for Hungarian agriculture. Hungarian policy makers: rely on Hungary's agricultural and food industry to meet all of the increasing demands of its citizens for the products its agricultural system can produce; regard socialist, large-scale enterprises to be the basis for increases in production and the fundamental pillars of the Hungarian agricultural system; rely heavily on agriculture in achieving the socio-economic and financial possibilities of the country; regard small-

scale agriculture as an integral part of Hungarian agriculture; stress the non-agricultural and service activities of its agricultural enterprises; encourage a multiplicity of diverse enterprise types within agriculture; and, lastly, rely heavily on the independence of enterprise managers pursuing their unit's financial material interest to replace earlier more centralized management procedures and institutions. The reforms of Hungarian agriculture seem to have rather carefully taken into account institutional and production establishment and dismantlement costs and to have done so in a manner that has avoided many potential institutional mistakes for Hungarian agriculture.

V. R. Boyev, Director of the All Union Scientific Research Institute of Agricultural Economics, presented a paper entitled "The Strategy of Development of Agro Industrial Complexes in the USSR" [Symp Paper]. Boyev's brief written paper contained little in the way of specific references to reforms in Soviet agriculture. "The general task" he indicated "in agricultural development and development of agro-industrial complexes is to concentrate production in places with the most favorable and natural economic conditions and to carry out a socio-economic policy which can be regarded as fundamental principles for development of agro-industrial complexes." This implies that managerial forms and production organizations must be flexible. In his ad hoc public remarks at the Beijing symposium, however, Boyev placed much greater emphasis on the reforms he described verbally as now being put in effect for Soviet agriculture. He placed even greater emphasis on the importance of successfully carrying out Gorbachev's view of how to manage the Soviet economy in general and its agricultural sector in particular. He also recognized implicitly the high transaction costs and dangers of making institutional mistakes in carrying out these reforms.

Viewed from the perspective of transaction costs, reforming Soviet agricultural institutions is understandably slow. The Soviet system has been in place for decades and the party and the government it controls have vested interests in it. The individuals who manage present Soviet agriculture institutions also have vested interests in those institutions. Further, there are extensive sunk investments in physical capital specific to the needs of the present institutional structure of soviet agriculture -- state farm facilities and the like. Institutional reforms for Soviet agriculture involve more dismantling costs than they did in socialist China and Hungary. Hence, reforms are likely to be marginal, more gradual and much less extensive than those in China since the demise of the "Gang of Four" and probably less significant than the conservative gradual reforms of Hungary.

The U.S. plays a difficult, troublesome institutional role in trade and international finance that is important for the agricultural systems of the world. She is a major country. Her monetary unit, the dollar, denominates most international transactions. Deficit financing by the U.S. government affords many opportunities for other countries and the U.S. itself to engage in what North [1981, p. 36] and Williamson [1985, pp. 31-2] refer to as malevolent "opportunism." The U.S. is now the world's largest debtor nation. For several decades Western European countries, Japan, some of the Asian NICs and the petroleum exporting countries have built up productive capacity, reduced indebtedness and/or built up their dollar reserves from U.S. reconstruction assistance, military expenditures in Europe and Asia, war expenditures and, more recently, by running trade deficits against the U.S. They made their dollar reserves good first by cashing them in against U.S. gold reserves (until those became inadequate in 1971 for this purpose); then by purchasing U.S. securities, stocks and real property; and lately by loaning their dollar reserves to the U.S. Treasury to cover U.S. fiscal deficits. The holders of Euro-, petro- and Asian dollars have suffered losses from depreciation of the U.S. dollar in a number of rather dramatic instances and the U.S. (including its consumers) has opportunistically

taken advantage of such losses. However, it is also true that the two U.S. deficits (fiscal and trade), reconstruction assistance, military expenditures, developmental assistance including concessional loans and sales and, in some instances the general schedule of preferences (GSP) have permitted Japan, Korea, Taiwan and Western Europe to "prime their economic pumps" opportunistically almost since W.W. II in ways that have promoted their growth and prosperity. The U.S. did (or permitted) this in order to help rebuild Western Europe and Japan and to help create the present economies of South Korea and Taiwan as part of a stronger free world. In addition, there has been an almost conscious collusion between those in the U.S. who wanted to use fiscal deficits to fund the domestic, international and military programs of the U.S. and those in Japan, Western Europe, Korea and Taiwan who wanted to run trade surpluses with the U.S. to expand their own economies.

Whether or not the above view of the historical roles of the U.S. fiscal and trade deficits is accurate, it appears that the decades long era of U.S. fiscal deficits and unfavorable trade balances is going to have to end. When it does, there will be major adverse impacts for Asian NICs, Japan and the DCs of Europe that have become highly dependent on benefits from the two U.S. deficits. The recent stock market disaster and the current plunge in the value of the U.S. dollar attest to the major transaction costs that may be ahead as the West European DCs, Japan and the Asian NICs face the necessary adjustments in their fixed investments and institutions. Institutional changes with high transaction costs will be needed.

Socialist China and India are both large LDC's. They also share a history of being internally rather than export oriented. Socialist China now seems to be moving to more of an export orientation. If the above view of the possible impacts of eliminating the U.S. fiscal and trade deficit has any validity, the U.S. is not likely to be willing and able to run trade deficits large enough to bestow on socialist China benefits comparable to those bestowed in the past on Western Europe, Japan, Taiwan and South Korea. The same would also apply to India were she to become as export oriented as Japan, Taiwan and South Korea. Socialist China, India and, indeed, Japan, Western Europe, Taiwan, and South Korea must now consider producing more for their own markets and prepare for more balanced trade with the U.S. It is likely true that Japan, Western Europe, Taiwan and South Korea are substantially overinvested in export-specific assets (automobile factories, steel mills, shipyards and the like) targeted on the U.S. market. These investments may have to be revalued downward and allocated on an opportunity cost or shadow price basis in the future in ways that will impose significant capital losses on their owners.

Generally the agricultures of the LDC's of Africa, South America and the Middle East suffer at least as much from institutional constraints as from lack of technology. They are also severely constrained by lack of human capital. Further, this lack and inadequate (sometimes corrupt) institutions tend to foreclose the self generation and use of much biological and physical capital. The same is true for the effective use of the borrowed capital and capital grants. Some LDC's (Tanzania, Cuba, Angola, and Nicaragua) have followed the earlier Soviet institutional pattern with even less success than the Eastern European socialist countries. Cuba paid high transaction costs to establish her socialist institutions. Such costs were lower in Tanzania (who avoided war) than in Cuba, Angola and Nicaragua. Tanzania, like China after the Red Guard period, now appears to be paying only moderate dismantlement costs in shifting away from some of her least appropriate (and least productive) institutional arrangements. In the rest of Latin America and Africa a difficult quest is on for new institutional arrangements. Unlike Taiwan, South Korea, Western Europe and Japan after W.W.II, some of these

countries lack the human capital required to devise and effectively update their agricultural institutions. Further even if they have the human capital, they are unlikely to be the beneficiaries of the large scale U.S. reconstruction, developmental and, even, military expenditures that helped those countries reconstruct and build. Still further Latin American and African countries face a U.S. that is already absorbing more imports than she is paying for. The U.S. cannot and the historical records of Japan and Western Europe indicate that they are unlikely to open their markets to prime the pumps of Latin American and African LDC's. Like India and China, these LDC's are likely to have to follow the slower route of tailoring their institutions, industries and agriculture to fill their own domestic needs while competing in a subsidized restricted world for limited export opportunities. But that is not the end of the matter -- Japan, Western Europe, and the Asian NIC's are likely to be adversely impacted and in turmoil because of institutional changes (agricultural and other) forced on or taken by the U.S. This turmoil is likely to affect LDC agricultural sector states more adversely than it does those of Japan, Europe and the Asian NIC's.

Unmet Needs for Reforms in Agricultural Institutions Including Research Opportunities

- A. From the above, the following conclusions can be reached:
1. The agricultural institutions of the DC's, NIC's and LDC's are in such disarray that institutional deficiencies impose more important constraints on agricultural production and adjustment than lack of available technologies and biological and physical resources. Human resource limitations are probably less constraining than institutional deficiencies but more constraining than the limitations of technology and bio/physical capital and resources.
 2. The institutional deficiencies for DC and NIC agricultures are such that resolution of the institutional deficiencies of LDC agricultures depends on how, when, and if the DC's (particularly the U.S.) and NIC's resolve theirs.
 3. It is important, therefore, that agricultural institutions be researched to improve our understanding of institutional changes to assist in their modification and improvement. The need for improvement is both domestic and international. Internationally, the need exists at least as much for the DC's and NIC's as for the LDC's. These two institutional worlds are so closely related however that they must be researched together as intradependent parts of a whole.
 4. Without improvements in the agricultural institutions (formal and informal) of the LDC's, the improvement and development of their agricultures will be so limited by institutional constraints that effort to develop their agricultural technologies, physical and biological resource bases and even their people (human capital) will have only limited impact -- nonetheless such efforts should not be curtailed for reasons given in section 7 below.
 5. For researching institutional change, the induced institutional change hypothesis commonly used by Ruttan and Hyami needs to be extended so as to include more fully the Williamson/North transaction costs/institutional approach. So extended it will better explain institutional rigidities and flexibilities, mistaken institutional changes and make us keenly aware that all induced institutional changes should not be expected to be improvements.

- a. Institutional establishment and dismantlement costs make up transaction costs with respect to institutions. Institutions also affect production transaction costs for durable productive assets. Production transaction costs combine with imperfect knowledge to generate costly investment errors. Similar errors are made in establishing agricultural institutions.
 - b. As a consequence of "a", immediately above, "market failures" are to be expected when investments are made in:
 - durable production assets and
 - institutional arrangements.
 - c. Understanding these two "market failures" requires more than economics because both the costs and returns of these failures are not fully understandable if their societal, anthropological, geographical and political dimensions are not researched and investigated.
6. Section 5c above makes cases for rural sociological, rural political science, historical and rural anthropological research as well as agricultural economics research on institutions.
 7. While the world's agricultural situation examined in this paper establishes a very high priority for research, extension, advisory, consulting, administrative and assistance efforts by rural social scientists to understand and improve agricultural institutions, we should not substantially diminish our efforts to improve agricultural technologies, agriculture's natural and man-made physical and biological resources and human agricultural capital. Success in overcoming institutional limitations along with consequent increases in per capita income, and larger populations will lead to a need for better technology, more biological and physical resources and improved human capital in the future as institutions are improved.
 8. In effect, the above calls for additional world wide expenditures on agricultural development, research, extension and administration. Much of the development expenditures can and should be in private sectors. Generating new technology, natural resource development and conservation, the building of bio/physical capital bases, and human development are long term processes not to be curtailed in the short run. This means that for the most part we cannot reallocate research and other resources from other parts of agriculture to institutional research and other efforts to meet the urgent institutional challenge described herein. Either now or after our institutional failures become still more drastic and demanding than they are now, we are going to have to address the failures of our agricultural institutions with many more resources than are now devoted to this end.

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