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*The Anatomy of Agricultural Product Markets and
Transactions in Developing Countries*

Erik Thorbecke

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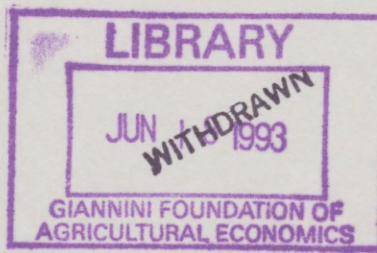1400 16th Street, NW / Suite 350
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The Anatomy of Agricultural Product Markets and Transactions in Developing Countries
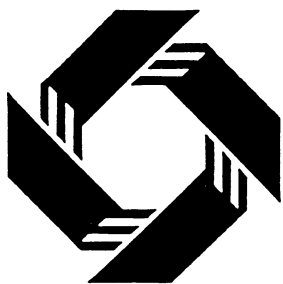
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July, 1992

Numerous case studies have demonstrated that markets are significantly less integrated and operate more imperfectly in the developing than in the developed world.

The prominence of transactions costs resulting from the uneven endowment of actors (particularly of land), asymmetrical information and a whole constellation of institutional and structural constraints leads to a variety of exchange channels and transactions. An approach is developed in this paper that highlights the importance of key elements (characteristic of actors, of the item exchanged and of the physical, technological, cultural and policy environment, respectively) in shaping distinct exchange configurations and corresponding transactions.

In Section II it is shown how specific characteristics of elements influence the prevailing exchange channels and transactions in agricultural commodity systems. Three types of foodgrains' market segmentation are identified, i.e. parallel, spatial and dual and related to the specific elements (such as government intervention and poor infrastructure) that give rise to them. A comparative evaluation is undertaken of the degree of market integration prevailing in Africa vs. Asia and of the elements giving rise to different types of exchange configurations.

Section III focusses on the Pakistan wheat market chain and its decomposition into distinct configurations and transactions. The performance of the whole commodity system and of the configurations constituting it, is evaluated on the basis of efficiency and equity criteria.

Acknowledgements

EXECUTIVE SUMMARY
THE ANATOMY OF AGRICULTURAL PRODUCT MARKETS AND TRANSACTIONS IN DEVELOPING COUNTRIES
by
Erik Thorbecke

Numerous case studies have shown that markets are significantly less integrated and operate more imperfectly in the developing than in the developed world. The prevalence of market fragmentation--particularly in foodgrains and cash crops' markets--complicates the design of appropriate policies and institutional reforms.

Given the prominence of transactions costs resulting from the uneven endowment of actors (particularly of land), assymetrical information and a whole constellation of institutional and structural constraints (e.g. restrictive measures affecting the exchange process and backward infrastructure, the neoclassical paradigm has to be complemented by an analytical approach that can explicitly incorporate these constraints. An approach is developed in this paper that highlights the importance of interaction among key elements (characteristics of actors, of the item exchanged and of the physical, technological, cultural and policy environment, respectively) in shaping distinct exchange configurations and corresponding transactions. Exchange configurations are shaped by specific combinations of elements and can give rise to market or non-market exchange channels. In turn, actors operating within a given configuration chose the form of transactions that minimizes transactions costs.

Two potentially important implications follow from the above approach. First, it explains why relaxing a particular policy or institutional constraint (such as the policy prescription of getting prices right), while a necessary condition, is hardly ever a sufficient condition to improve the performance of agricultural product markets. This is because other binding elements (e.g. lack of collateral by some actors, poor infrastructure) may prevail in that configuration. Second, the scope for generalizations and blanket policy recommendations is limited by the context-specific nature of the particular characteristics of the elements defining a particular configuration. This feature is extensively illustrated with examples drawn from Asia and Africa.

The paper is divided into two main sections followed by some policy conclusions. In Section II it is shown how specific characteristics of elements influence the prevailing exchange channels and transactions in agricultural commodity systems. In particular, three types of foodgrains' market segmentation are identified. Government intervention affecting price, quantity, or movement of the item transacted encourages the development of <u>parallel markets</u>. An

inimical physical environment (e.g. backward infrastructure system) combined with certain types of policies impeding the free flow of commodities interregionally lead to <u>spatial segmentation</u>. Finally, in those settings where government follows a bimodal strategy in agriculture, commodity systems and their <u>markets tend to be segmented along dual lines</u>. Section II ends with a detailed comparative evaluation of the degree of market integration prevailing in Africa as opposed to Asia and of the specific characteristics of elements giving rise to the different types of market fragmentation and exchange configurations.

Section III focusses, more specifically, on the Pakistan wheat marketing chain and proceeds to decompose the latter into a number of distinct configurations and types of transactions. This decomposition provides a good illustration of the applicability of the configuration approach to a concrete case study. The performance of the whole commodity system along the wheat marketing chain, as well as within the various configurations constituting it, is evaluated on the basis of efficiency and equity criteria.

In the brief concluding section, it is argued that the methodology based on the "configuration" concept appears operationally useful in suggesting appropriate concrete and context-specific policies and institutional reforms-- including the proper sequencing of these measures--to improve the performance of foodgrain and cash crops markets in different Third World settings.

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I. INTRODUCTION[1]

A key--if not the key--question in the policy debate on liberalization in developing countries relates to the functioning of markets. Numerous case studies have shown that markets are significantly less integrated and operate more imperfectly in the developing than in the developed world. The prevalence of market fragmentation--particularly in foodgrains and cash crops' markets-- complicates the design of appropriate policies and institutional reforms.

The neoclassical paradigm based on full information and costless exchange, faces shortcomings in explaining fragmentation and the resulting exchange process. Given the prominence of transactions costs, resulting from the uneven endowment of actors, asymmetrical information and a whole constellation of institutional and structural constraints (e.g. restrictive measures affecting the exchange process and backward infrastructure), the neoclassical paradigm has to be complemented by an analytical approach that can explicitly incorporate these constraints. Such an approach--highlighting the importance of interaction among elements (characteristics of actors, of the item exchanged and of the physical, technological, cultural and policy environment, respectively) in shaping distinct exchange configurations and corresponding transactions--was developed in earlier chapters of a volume being prepared under the auspices of the Institute for Policy Reform (see Cornelisse and Thorbecke, 1991, chapters 1-3). Exchange configurations are shaped by specific combinations of elements and can give rise to market or non-market exchange channels. Transactions, in turn, are determined endogenously within a given configuration.

Two potentially important implications follow from the above approach. First, it explains why relaxing a particular policy or institutional constraint (such as the policy prescription of getting prices right), while a necessary condition, is hardly ever a sufficient condition to improve the performance of markets. This is because other binding elements (e.g. lack of collateral by some actors, poor infrastructure) may prevail in that given configuration. Secondly, the scope for generalizations and blanket policy recommendations is limited by the context-specific nature of the particular characteristics of the elements

defining a particular configuration. This feature will be amply illustrated in the subsequent analysis of examples drawn from Asia and Africa.

This paper is divided into two main sections followed by some policy conclusions. Section II discusses in some detail the key elements affecting food and cash crops market and non-market configurations. An attempt is made to show how the characteristics of the various elements (the item, actors, the physical environment, technology and form of organization, and the political and institutional environment) influence the prevailing exchange channels and corresponding transactions. It is shown that different types of market segmentation result from different combinations of key elements. The section ends with a comparative evaluation of the degree of market integration in Africa as opposed to Asia.

Section III focusses, more specifically, on the Pakistan wheat marketing chain and proceeds to decompose the latter into a number of distinct configurations and types of transactions. This decomposition provides a good illustration of the applicability of the configuration approach to a concrete case study. The performance of the whole commodity system along the wheat marketing chain, as well as within the various configurations constituting it, is evaluated on the basis of efficiency and equity criteria.

The final section (IV) offers some conclusions and policy recommendations based on the analysis of the anatomy of agricultural product markets, mainly in Asia and Africa. The methodology based on the "configuration" concept appears operationally useful in suggesting appropriate policies and institutional reforms to improve the performance of foodgrain and cash crops markets in different Third World settings. In particular, the issue of the proper sequencing of policy reform is addressed.

II. KEY ELEMENTS AFFECTING FOOD AND CASH CROPS CONFIGURATIONS

In this section an analysis is undertaken of the characteristics of the key elements affecting the functioning and performance of food and cash crops markets in different parts of the Third World. At this stage, the discussion is general and uses comparative evidence from a variety of different country and regional settings. At a later stage (in section III) a specific example is scrutinized in great detail (i.e. the anatomy of the wheat market in Pakistan) to show how its operation and performance can fruitfully be studied within our analytical framework and based on key elements shaping distinct configurations within which transactions are endogenously determined.

The first point to make is that markets are centered on specific items to be exchanged such as wheat, rice, or maize, among foodstuffs; and rubber, tea, and coffee among cash crops. Each item possesses its own set of characteristics, actors and environmental setting. Since the marketing chain between initial producers (farmers) and ultimate consumers may involve many intermediaries, it is useful to think in terms of specific commodity systems. During the marketing process, agricultural commodities gain in value as they are moved through space (e.g. transported from the farm to a retail outlet); held over time (e.g. storage between harvest season and lean season); and transformed (e.g. through processing and packaging).[2]

Each commodity system has its own particular marketing chain and network and set of transactions corresponding to the various functions performed by different actors as a commodity progresses from producer to final consumer. In fact, as is discussed in detail in Section III, a given commodity system can be broken down into a hierarchical and sequential set of configurations embracing the different intermediate functions occurring between production and ultimate consumption. In this way the distinct transactions taking place along the marketing chain can be determined and evaluated within the specific configuration in which they are shaped. It is the attributes and endowments of the actors

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[2]For a good discussion of these issues, see USAID, January 1991. A commodity system approach encourages analysts to think in terms of the value added at each stage of the marketing process.

together with the characteristics of the environment that determine the specific channels (i.e. configurations) obtaining along a commodity chain. Thus, a commodity system-cum-marketing chain can be thought of as being constituted by a series of configurations consisting of their own respective actors with their attributes and underlying environmental constraints focused on a specific item that gains value as it moves along the chain.[3]

Each configuration can be conceived as a node in the marketing chain. Depending on the characteristics of the elements, a commodity (chain) system can be decomposed into a variable number of configurations--the lower limit being one which would be approximated by the American Supermarket Model, where all functions from production to consumption are vertically integrated into one giant corporation. In contrast the chain may be very long and consist of many distinct configurations. Some of these configurations may be market configurations, while others in the same commodity system may be non-market configurations yielding, respectively, distinct market and non-market transactions.

A thorough discussion of the various prototype food crop configurations broken down between market and non-market configurations (i.e. farm cooperatives and other types of group organizations, the farm household, the Nucleus Estate System, and sharecropping, fixed rent and wage contracts) is contained in Thorbecke (1992). The link between the characteristics of the elements and the choice of configuration and contract is made explicit in that source. Thus, it is shown, for instance, under what set of key characteristics of elements landless workers and landlords may enter into, respectively, a sharecropping or fixed rent contract; and the extent to which small farmers will engage in intra-farm household transactions as opposed to market transactions (it has often been observed that the proportion of production for own consumption--a nonmarket transaction--is inversely related to the size of the farm which itself is

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[3]For example the successive activities and transactions occurring along a wheat marketing chain could take the form of coarse wheat exchanged at the farm gate, wheat moved from one location to another by traders, the consolidation of small batches into larger batches by commission agents, the milling of the grain into flour, and the packaging and selling of the flour to consumers in retail outlets. In Section III the Pakistan Wheat Market is decomposed into a series of specific configurations and transactions to illustrate the applicability of the configuration concept to a specific and concrete case.

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correlated with many of the attributes of actors discussed above such as information, access to credit and insurance).

In the present paper, a somewhat different set of questions is raised. Within a commodity system and its corresponding marketing chain, how do characteristics of the items exchanged, the actors and the environment affect the choice of configurations and exchange transactions along the chain? For example, different classes of farmers are observed to sell their marketed surplus through a variety of configurations ranging from direct sales to village store keepers or village consumers (typically by small farmers), to sales to retail outlets in urban areas (typically by the largest farmers) who in that case integrate vertically a number of intermediate activities into one farm enterprise or cooperative organization. What are the key elements determining the number of distinct configurations within a commodity system? Why are some marketing chains long and consisting of many different intermediaries specializing in specific functions, while other chains are short and marked by significant vertical integration? These are some of the questions we try to elucidate, first, at a more general level and, then, more specifically and concretely, through an analysis of the anatomy of the wheat market in Pakistan.

1. CHARACTERISTICS OF FOODGRAIN AS AN ITEM

There are some key characteristics of food and cash crops that distinguish them from other items exchanged, i.e. 1) food plays a vital part (literally!) in the consumption pattern of households and is the main basic necessity and determinant of material well being and health; 2) staple production and cash crop production by smallholders provide employment and a livelihood to a large share of the population; 3) foodstuffs and cash crops are major tradeable items; and, 4) these crops are subject to a high degree of risk and seasonality. For these reasons a very high degree of government intervention can be expected in these commodity markets. This means that the policy and legal environment is absolutely crucial in affecting the functioning of these markets as is discussed subsequently.[1]

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[1] See Cornelisse-Thorbecke (1991) for a thorough discussion of the policy and legal environment as a major element.

Even though there are significant differences in the characteristics of the key elements shaping the markets for food crops relative to cash crops, the distinction between subsistence and cash crops as items can be overdrawn. Even the smallest farmer needs to generate a marketable surplus to satisfy his cash needs. Often both staple food and cash crops are produced by small and large farmers, alike, and are, in some instances, simultaneously intercropped. All farmers respond to an existing effective demand which can be for exports, to satisfy urban consumers, village level consumers, and farm households' own consumption needs. What matters then is to explain the operation of the various commodity systems, which configurations different farmers participate in, and the degree of their market orientation. For program or project design, or policy evaluation and recommendations, the commodity system analysis should focus on 1) market structure (number and kind of market participants); 2) market conduct (behavior of market participants); and 3) market performance (the degree of efficiency of the market participants, equity and market adaptability).[5]

2. CHARACTERISTICS OF ACTORS

The actors and their attributes constitute the next key set of elements. They include all the participants along the marketing chain. The chain includes a number of sequential activities starting with agricultural production (or even with the provision of inputs as a prior stage to production) followed by transportation, transformation and packaging, processing, wholesaling, retailing and ending with final consumption. The corresponding typical actors operating along the various links of this chain include small farmers, tenants, hired workers paid in kind, large farmers, private and state owned and operated plantations and enterprises such as collective farms, village store keepers, various traders providing transportation and transformation services, processors, wholesalers, retailers, and ultimately consumers.

How do the characteristics of the private actors affect the choice of configurations, the type of exchange transactions, and the performance of the

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[5]See USAID, (1991), p. 22.

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commodity systems?[6] Starting at the production end of the chain, a first crucial determinant of the exchange behavior of farmers is their resource endowment. In many parts of the Third World land distribution is very uneven, giving rise to distinct groups in agriculture such as landless, small farmers, and large farmers. The landless households have as their main, if not only, asset their own family labor, while small farmers possess a disproportionately high ratio of family labor to land and other capital and vice versa for large farmers.

The fact that small, and near landless, farmers are poorly endowed with land and other assets, such as agricultural equipment and draft animals, signifies that they are deprived of the necessary collateral to borrow in the formal credit market. In fact, this class of actors is sealed off from that particular market configuration and is forced to enter into alternative credit configurations, contracts and transactions, such as borrowing from money lenders in the informal unorganized market, or from landlords or storekeepers, in essentially non-market configurations--giving rise to interlocked transactions. Furthermore smallholders, typically, face missing or more incomplete markets for insurance futures than do better endowed farmers. Different size producers differ also in their attitudes vis-a-vis risk and in their capacity to bear risk. Larger farmers, possessing collateral, may be in a better position to bear risk than smaller farmers. Finally, one can expect larger farmers to have better and cheaper access to information than their poorer counterparts. The following quote makes this point cogently

> "A person involved in many or a regular flow of transactions can more effectively use an item of information pertinent to those transactions than a person involved in occasional transactions only. Given the "fixed cost" nature of acquiring information, the small transactor faces a much larger opportunity cost than the large transactor and is thus likely to be much less informed."[7]

This leads to "asymetric information", where one group of participants involved in the exchange of a particular commodity has better access to information and resulting bargaining power than another group.

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[6]The impact of the state (as a public actor) through direct and indirect government intervention is discussed subsequently (see 3.3 and 4.1).

[7]Smith and Thompson, 1991, p. 13.

The above differences in the characteristics of small vs. large farmers in terms of resource endowment; access to credit, insurance and information; and size of marketed surplus affect in a crucial way their choice of configurations and the resulting nature of transactions and exchange contracts. This choice is, of course, further influenced by the underlying environmental elements (physical, technological, cultural and policy) confronted by the producers in different settings, as is discussed subsequently in 3.

Many of the same attributes that influence the exchange behavior of producers (farmers) affect, likewise, the behavior of traders and other intermediaries. Individual traders involved in the marketing system are exposed to a variety of risks. They face the same constraints as producers do in terms of incomplete or missing credit and capital markets, and the lack of well functioning insurance or future markets. As Smith and Thompson (1991, p. 24) have noted

> "Incomplete capital and credit markets do not just create problems of risk bearing, they also create problems for financing marketing operations. Although these two sets of problems are theoretically separate, in practice their effects become intertwined, so that differential access to capital and credit is a major factor affecting the structure and functioning of agricultural and food marketing systems in low income countries."

They further argue that

> "The transfer of produce from producers to ultimate consumers takes time. Marketable produce is therefore an item of capital that must be financed during the marketing process. The textbook role of "middlemen" is to purchase produce from farmers and add value to it by transforming it in time, space and form before selling it to the next person in the marketing chain or to the ultimate consumer. Implicit in this scenario is the assumption that the middlemen have unlimited access to capital, their main constraints being their managerial ability, the availability of supplies at prices that allow them to make an expected profit on their transactions and their degree of risk aversion to the possibility of making a loss on their transactions. But what would happen if capital or credit for marketing transactions were limited?" (Smith and Thompson, 1991, pp. 24-25)

The rate of turnover of the product is largely a function of access to credit and capital, particularly as it is embodied in storage capacity. It will be seen subsequently, that small traders lacking in credit and storage capacity have to operate within a configuration consisting typically of only one link (function) in the marketing chain and allowing a high rate of turnover of the

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commodity.

Information relevant to marketing decisions is generated largely as a by-product of engaging in trading activities. Larger traders are involved in many more, larger and more continuous transactions than their smaller counterparts and thereby generate a much greater flow of information. This is further compounded by the fixed-cost nature of information gathering leading to scale economies favoring the large transactor.

Access to information brings about greater bargaining power; it can be collected and property rights attached to it. Information can, in turn, be shared with others in a mutually beneficial fashion. Since information is valuable, it pays to internalize its benefits. In this context, it has been observed that small groups linked by kinship, caste, tribe or nationality--all characteristics subsumed under our element "cultural environment"--tend to monopolize the dissemination of the available information. (Smith and Thompson, 1991, p. 41). Thus for example, notable among such groups are the Lebanese communities of West Africa, the Asian communities of East and South Africa, and the Chinese communities in Southeast Asia. As USAID (1991, Annex A, p. 19) indicated, "A large number of diverse cultural and linguistic groups within those countries and the importance of trust, credit and the enforceability of contracts and economic transactions has contributed greatly to the formation of ethnic monopolies and traders' association." Often commonly shared information is the cement holding these associations together.

3. CHARACTERISTICS OF ENVIRONMENTAL ELEMENTS

After having analyzed the impact of attributes of private actors on exchange behavior, the next step is to explore briefly the effects of key environmental elements (in particular physical, spatial, locational; technological and organizational, cultural, and policy and legal framework) on the agricultural marketing process.[8]

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[8]For a thorough identification and discussion of the major types of environmental elements, see Cornelisse and Thorbecke (1991, in particular Chapter 2).

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3.1   Physical Environment

The key dimension of the <u>physical</u> environment influencing the movement of goods is the quantity and quality of infrastructure and particularly the road network. Very large interregional and intercountry differences in the extent of transport infrastructure can be observed. For example, as Ahmed and Rustagi (1984) have documented, African countries have developed road networks to the extent of 0.01 to 0.11 kilometers per square kilometer of land area compared to 0.30 to 0.45 kilometers of road per square kilometer of land area in Asian countries. Furthermore, as of the early eighties, only about ten percent of the road network in African countries consisted of paved roads compared to about 35% of the road network in Asia being paved. The relatively poor state of physical infrastructure in much of Africa compared to Asia is directly related to another characteristic of the physical environment, namely, a much lower population density in the former. Asian countries are likewise significantly better off in terms of railways and river transport networks.[9] Because of greater reliance on trucks and railways in Africa, the import content of transportation marketing costs in Kenya and Tanzania, for example, is about 50% compared to an estimated average import intensity of only 17% in Indonesia and Bangladesh. (Ahmed and Rustagi, p. 4.3) The absolute transport cost in marketing was also found to be about twice as high in Africa compared to the selected Asian countries.

3.2   Technology and Form of Organization

In many parts of the developing world significant differences in agricultural <u>technology and form of organization</u> are observed that are highly correlated with farm size. The structure of food production and, to some extent, cash crops can range from strongly dualistic and bimodal, to unimodal in terms

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[9]Ahmed and Rustagi (1984, p. 4.3) note that
"The wider dispersion of production centers and the longer distances to be covered in shipment of agricultural products in Africa compared to Asia, have their implications for modes of transportation and cost of marketing. Generally speaking, collection of goods in the primary markets is done through headloads, donkeys, bicycles and to a lesser extent animal-drawn carts in Africa, whereas headloads, animal carts, boats, rickshaws, buses and pickups constitute the modes of transport in primary markets in Asian countries."

of type of technology adopted and form of enterprise.[10] In many developing
countries, part of the agricultural production is supplied by the traditional
sector and part by the modern sector. The traditional subsector consists
typically of small farms cultivated by owners, tenants and sharecroppers, or
communally-cultivated land tracks (such as the Ejidos in Mexico) producing food
for subsistence (self-consumption), while selling or disposing of the rest of
their production on the commercial food market. The prevailing technology tends
to be highly labor-intensive, relying on traditional methods and traditional
varieties. The form of organization, in turn, is the family farm (as owner-
cultivator) or, alternatively, a tenancy or sharecropping arrangement.

On the other hand, the modern subsector tends to be constituted by large
holdings that are commercially managed, often as incorporated enterprises, using
relatively capital-intensive techniques, chemical inputs, high yielding varieties
and producing mainly for the market (often for exports). This bimodal structure,
which is found in many Latin American and African countries, is largely a
heritage of the colonial period that fastened a very uneven land distribution and
institutions favoring the colonial settlers at the expense of the indigenous
population.[11]

In contrast to the above bimodal structure of food production, the latter
can be unimodal. Countries such as Taiwan, South Korea, Japan (during the Meiji
period), Sri Lanka and, to some extent, Indonesia, display a relatively very even
distribution of land--with a more or less unimodal farm size. In these
countries, the successful implementation of an initial land reform allowed the
land to be more evenly distributed among the rural population and tended to
convert tenants and landless households into owner-cultivators. In addition,
these countries established institutions and followed policies designed to
achieve the gradual development of traditional agriculture from "the bottom up"
as it were.

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[10]See Johnston and Kilby (1975) and Pyatt and Thorbecke (1976) for a
thorough discussion of unimodal vs. bimodal agricultural structures.

[11]Surprisingly, many new developing countries continue to follow an
essentially bimodal agricultural development strategy after independence.

3.3 Political Environment and Role of the State

Next we address how the characteristics of the political and legal environment, as a key element, affect the functioning of commodity systems. Government intervention can take a variety of forms, from price control policies and subsidies designed to provide cheap food to mainly urban households, to price support policies designed to encourage domestic production and benefit farmers. In addition, the State tends to use a whole set of instruments affecting interregional and international trade in foodstuffs and in cash crops, often through marketing boards that have a monopsony power in buying and a monopoly power in exporting or selling domestically. In short, food and cash crops are critical commodities from a developmental standpoint that affect, either directly or indirectly, the structure and growth of agricultural production, the pattern of employment and income distribution of the labor force, the nutritional status and health of the population and the balance of payments. In all of these dimensions, it invites state intervention.

The State, as a key actor, can influence, directly or indirectly, the operation of a commodity system and market at any and all links (levels) of the marketing chain. It can produce food and cash crops directly on collective farms or state enterprises, reserve for itself intermediate marketing activities, such as processing--through the institution of a public monopoly--and run public retail outlets including ration stores. Indirectly, the state can influence commodity systems through the various policies and institutions just referred to.

Three fundamental interrelated questions have to be raised at this stage, i.e. what are the objectives of the government, how are they formed, and what is the degree of control the State possesses in designing and implementing new policies, institutions and programs. Let us review briefly some alternative approaches to this question. In a simple Tinbergen (1956) world, the policy maker has clearcut objectives which can be expressed in quantitative terms (through the so-called target variables) and controls policy measures (through the instrument variables) subject to a set of constraints. In this naive domain of quantitative economic policy, models can be solved for the values of the instruments which satisfy the predetermined values of the desired targets.

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Tinbergen recognized that the degree of control which the state possesses over what he called "structural changes" and "reforms" (in other words, institutions) was much more limited and required moving from the domain of quantitative economic policy to the much more murky domain of qualitative economic policy.

At the other extreme, in the Buchanan world and the public choice literature, objectives, policy measures and, to some extent, institutions, are largely endogenously determined through collective action and the lobbying activities and strengths of different power groups. Politicians are captives of their constituencies. The concept of a benevolent state seeking some consensus national interest loses all relevance in this approach. In fact, powerful groups representing strong lobbies can push through policies and manipulate rules and regulations affecting markets in such a way as to benefit from the resulting distortions and artificially contrived rents.[12]

Even if one ascribes some degree of control over the choice of policies to some relatively "independent" state, reflecting some form of national interest, the pure rational expectations school would argue that market actors can always undo the planned outcomes of these policies (Lucas, 1980). Still another, but related, approach is the so-called "political economy of macroeconomic policy" which takes institutions as largely given exogenously and argues that actual policies tend to be determined endogenously within a specific institutional context (Persson and Tabellini, 1991). The implication is that policy makers have only very limited control over actual policy instruments. To control these instruments would require changing the underlying institutions, a very difficult and time-consuming process under most circumstances.[13]

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[12]Various approaches to the role of the state and to its impact on markets are discussed in 2.2.4.4 of Cornelisse and Thorbecke, 1991.

[13]It appears that so far this approach has been mainly applied to developed countries. However, in a very interesting recent study, Edwards and Tabellini (1991) build on the above theoretical approach and test a number of hypotheses empirically on the basis of a large sample of developing countries. They attempt to identify empirically the social and political determinants of particular fiscal policies by different governments. This is a novel departure for mainstream thinking on stabilization and structural adjustment which has hitherto taken fiscal policy has something that can be exogenously determined. The main proposition is that political determinants have to be invoked to explain cross-country differences in inflation, budget deficit and devaluation episodes. To

But can institutions really be changed at will or, more accurately, what are the constraints which affect the modifications of existing institutions and the creation of new ones? An answer to this question goes far beyond the scope of the present paper. It should, however, be noted that many, if not most, institutions are path-dependent and influenced by "hysterisis effects-- persistence of an altered state when the force that caused the alteration has abated--in the dynamic response to exogenous shocks and policy interventions." (David 1988, p. 4) To quote David again

> "In order to foretell how things will change between today and tomorrow, it is insufficient just to know how they are today, and knowledge about some yesterdays will be of help. Where this form of path-dependence is found, the motion of the system at any time is governed not only by "where it's at"--if I may express myself thus, colloquially--but, also by "where it's coming from". More precisely stated, the outcomes of economic resource allocation processes--or, the states attained by individual economic agents and systems of agents--can be predicted only from observations on more than one of the states in the sequence antecedent to the outcome in question." (David 1988, p. 20)[14]

We need not resolve here the issue whether the state 1) seeks to maximize social welfare; 2) attempts to establish a framework for a) more efficient trade (North, 1981) or, alternatively, b) for securing collective advantage (Bates, 1981); or 3) represents, and is an agent of, a group in society that it rewards by raising revenues (North, 1981), and through expropriation (Bates, 1981). In any case, it is very likely that at different times, and in different settings, each of the above scenarios obtains in one form or another. An eclectic approach appears to be most fruitful in analyzing the impact of the state and civil institutions on different markets. In this sense we can agree with Streeten (1991, p. 12) that

> "governments sometimes create rents and encourage rent-seeking; at

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my knowledge, this approach has not yet been applied to specific rural and agricultural markets in developing countries.

[14]One can also agree with the following recommendation

> "Operationally, ... path-dependence means that a good applied economist must at least be prepared to practice economic history, because current phenomena sometimes may not be adequately understood without a knowledge of how they have been shaped by past events, some situated in the remote past." (David 1988, p. 16)

other times they destroy rents and reduce wasteful competition in their pursuit. The private sector also creates and seeks rents. Some government officials act sometimes in their selfish interests; the same and others are at other times, or want to be seen as, moral agents, acting in the common interest. Some pressure groups, individual or collective, domestic or foreign, are motivated by reason, humanitarianism, and morality....(The state) compromises, attempts to resolve conflicts, manages bargaining between groups, and occasionally leads."

Traditionally, marketing boards have been the principal form of government intervention in cash crop markets and, to a somewhat lesser extent, in staple food markets. Commodity boards fulfill two main objectives, 1) price stabilization; and 2) revenue raising and surplus extraction. However, in the great majority of the cases, the real objective of commodity boards is not price stabilization per se but the extraction of the agricultural surplus (Bates, 1981; Lecaillon, Morrisson, Schneider and Thorbecke, 1987). Marketing costs in parastatals are generally considerably higher than those incurred by private traders. In particular, parastatals rely extensively on relatively expensive educated and skilled labor in contrast with the private sector where much of the labor is unskilled and the necessary trading skills are "learned by doing". Marketing boards are often seen as useful employers of last resort and outlets for beneficiaries of political patronage. Green (1987) presents an extreme example of overemployment in the case of the Ghana Cocoa Marketing Board in the early eighties. He estimated that employment stood at around 100,000--equal to the entire private enterprise sector. Bloated employment rolls within commodity boards and other parastatals is clearly a major cause of inefficiency.

In staple food markets, various instruments, including commodity boards, are used to keep food prices down to help capture the agricultural surplus, and, simultaneously, provide "cheap" food to the urban population (an important constituency of many governments) on equity grounds and to "buy" their political support.[15] Low food prices act as a disincentive to production so that many

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[15]The extent of policy intervention and discrimination against food crops in favor of industry in developing countries is clearly reflected by international comparisons of prevailing nominal protection coefficients revealing a measure of the disparity between domestic and international prices. Domestic prices for foodstuff tend to be significantly below world prices in poor developing countries, while the opposite phenomenon (substantial overvaluation) is characteristic of industrialized countries.

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countries have experimented with a two-price system to satisfy the twin objectives of subsidizing consumers and motivating farmers to produce more. These schemes have, in general, proven to be extremely expensive--the government having to absorb the difference between the producer price (or world price) and the subsidized consumer price.[16]

4.   MARKET SEGMENTATION AND INTEGRATION

4.1   Government Intervention and Types of Market Segmentation

Three interrelated types of market segmentation result from government interventions affecting the price, quantity, or movement of the item transacted. First, artificially low food prices in the official market create excess demand and encourage the development of <u>parallel markets</u>. The greater the degree of intervention, the greater the scope for parallel markets. The differential between the parallel price and official price for key staple foodstuffs can be enormous; in Tanzania the ratio between these two prices reached eleven fold, in the seventies (Lecaillon, et al., 1987). The official and parallel market configurations are intrinsically linked. Roemer (1986) has shown that parallel markets are likely to compensate for the bulk of the reduced sales in controlled markets and, at the limit, can fully compensate if they are efficient and not too risky. Consequently,

> "liberalization of grain markets may not elicit much, if any, additional production, as some advocates claim, but is likely to improve overall marketing efficiency....The more liberalization lowers marketing costs, the more likely it will also increase marketed quantities." (Roemer, 1986, p. 433)

Secondly, any rules or regulations or fiscal scheme impeding the interregional movement of commodities (such as bans or barriers to interdistrict trade in staple of foods) lead to <u>spatial segmentation</u>. Many relatively self-contained regional markets obtain instead of one relatively integrated national market. (Of course, as is discussed subsequently, natural obstacles to interregional trade such as a backward infrastructure system contribute to regional fragmentation.)

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[16]Thus, for example, in Egypt, Korea and Sri Lanka, food subsidies accounted for as much as one fifth of total government expenditures in the late seventies which forced these and other countries to abandon such schemes.

Thirdly, in those settings where governments follow a bimodal strategy in agriculture by favoring the modern large scale sector, through such measures as a disproportionate concentration of a) public investment in agricultural infrastructure (e.g. irrigation schemes and road network); b) price and credit policies; and research and extension services benefiting the large commercially-oriented farmers, commodity systems and their corresponding markets tend to be segmented along dual lines. In contrast, where the government adopts a unimodal agricultural strategy by allocating infrastructure, inputs and services relatively evenly among farmers, a more integrated market is likely to prevail.

4.2   Market Efficiency and Market Integration

Market efficiency and market integration are two different concepts that are often used more or less synonymously. An inappropriate inference which is often made implicitly is that if a market is integrated, it is also efficient. Market efficiency implies that within each configuration along the marketing chain, competitive conditions prevail with marketing margins just covering all actors' costs without excess profits being made by any of the actors. Market integration, in turn, can take at least three forms: i) spatial integration of different regional markets for the same product (for example, as between a central market and radial markets); ii) intertemporal integration, or the extent to which contemporary markets for given commodities are influenced by the past history of these markets; and iii) intercommodity market integration (i.e. how does the market for a given commodity respond to prices and other signals originating in markets of related commodities).

In the present discussion, the emphasis is on spatial integration. A market is spatially integrated when price differences between any two regions (or markets) that trade with each other just equal transfer (mainly transportation) costs. Alternatively, markets will be spatially segmented if the interregional price differences are less than their transfer costs. Integrated markets have been defined as "markets in which prices of differentiated products do not behave independently." (Monke and Petzel, 1984, p. 482); the assumption being that identical products are differentiated by location. There are many tests of market integration based on various forms and degrees of price interdependence

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interdependence (Alderman, 1991). Most of these tests have been criticized on various methodological grounds (Harriss, 1979 and Faminov and Benson, 1990).

For a given product, the market(s) can be efficient but not integrated because of e.g. transport costs and government measures impeding interregional trade. Alternatively, the market can be integrated but not efficient. Finally, markets can display both or neither characteristics simultaneously. The next subsection explores the extent of market integration in Africa and in Asia. Subsequently in III.6 an attempt is made at analyzing in some detail the efficiency and integration of the wheat marketing chain in Pakistan.

4.3 Comparative Evaluation of Extent of Market Integration in Africa and Asia

In evaluating the extent of market integration and the efficiency along a commodity system (marketing chain) and interregionally, two types of price spread indicators suggest themselves. The price spread between the producer and consumer end of a commodity system represents the overall marketing margin. Its relative magnitude, as well as its decomposition among components, yield insights about the efficiency of the product market and the degree of integration among the various configurations constituting the marketing chain. A second category of price spreads, i.e. spatial price spreads, reflects the differences in prices obtaining in various regional markets at a particular time. As Ahmed and Rustagi (1984, p. 3.2) observed,

> "Marketing margin and spatial price spreads are synonymous where the two price points are integrated by a functioning market or trade link. Spatial price spread could represent the price difference between two points having no functioning market or trade link between them. This is what we know as non-integrated markets. Therefore, the regional price spreads are in some respect a sort of indicator to the extent of market integration when read in combination with marketing margins."

These two types of price spreads in food grain markets were estimated for five African and four Asian countries, respectively, by Ahmed and Rustagi (1984).[17] Three major empirical findings emerge from an analysis of the data: 1) average producer prices expressed as a percentage of final consumer prices in

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[17]Their results are summarized in their Table 2, p. 3.4 and cover the following countries: Nigeria, Malawi, Tanzania, Kenya, Sudan, Indonesia, India, Bangladesh, and the Philippines. Depending on the country, the following food grains were used: maize, rice, sorghum, and wheat.

the African countries ranged from 30% to 60%; whilst in Asia they ranged from 75% to 90%. Thus, African farmers received a significantly smaller proportion of final consumer prices of marketed food grains than did their Asian counterparts; 2) the regional price differences <u>within</u> each country were also substantially larger in Africa than in Asia; in some African countries the lowest price in one region was only one-fourth to one-third that of the highest price in another region. In contrast the corresponding ratio in Asia ranged from 64% to 83%; and, 3) the absolute size of the regional price spread in Africa was significantly larger than the marketing margin, (i.e. the producer/consumer price spread). From the above quantitative analysis, the authors conclude that

> "Many markets may not be linked with one another in African countries because of high transport costs resulting from poor transport and communication infrastructure or government restrictions. In the Asian countries, the regional price spreads are quite close to the marketing margins, which indicates that the markets scattered over various regions are probably well integrated with one another".[18] (Ahmed and Rustagi, 1984, p. 109)

However, the producer/consumer and interregional price spreads are not only determined by transportation and marketing costs, they are also influenced by government taxes, profit margins of parastatals and private traders and transaction costs. Table 1 shows 1) the absolute average food grain marketing margins for the above four components obtaining in five African countries and four Asian countries, respectively; and 2) the relative shares of the components accounting for the total difference in the absolute marketing margin between the two continents. Whilst the absolute margins of each factor are larger in Africa than in Asia (by an average ratio of about 2 1/2:1), transport and associated marketing costs accounted for 39.1% of the overall difference, taxes for 9.4%, profit for 24.5%, and transaction costs (computed as a residual) for 27%. Thus, almost two-thirds of the larger marketing costs in Africa compared to Asia are accounted for by transport and transaction costs. The latter reflect the greater degree of government intervention in grain marketing in Africa, through such measures as bans on the interregional movement of commodities by private traders and a variety of licensing schemes imposed on these same traders.

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[18]For a good discussion of these same issues, based largely on Ahmed and Rustagi (1984), see FAO, 1992.

Table 1: Shares of causal factors in differential foodgrain
marketing margins between Asian and African countries

Factors	Absolute Margin (points)			Shares of the Factors in the Difference(%)
	Asia	Africa	Difference	
a) Taxes	0.6	3.9	3.3	9.4
b) Transport & associated costs	13.8	27.5	13.7	39.1
c) Profit	4.0	12.6	8.6	24.5
d) Transaction costs (residuals)	1.6	11.0	9.4	27.0
Total	20	55	35	100.0%

Source: Estimated on the basis of information from Bangladesh
and Indonesia in Asia and Kenya and Malawi in Africa.

Source: Ahmed & Rustagi (1984), p. 4.10.

4.4   Elements Influencing Market Integration

A number of factors have been identified as being responsible for Africa's relatively low levels of market infrastructure development and market integration compared to Asia, and the associated marketing inefficiencies and significantly greater price spreads. (See Ahmed and Rustagi, 1984; and FAO, 1992, particularly p. 226). These factors are 1) the much lower population density in most African countries (15 to 30 persons per square kilometer compared to 500-750 persons per square kilometer in Asia), resulting in a wider dispersion of production and consumption centers in Africa; 2) road, railway, and river transport systems are generally much less developed in Africa compared to Asia, as some of the earlier statistics indicated; 3) transport modes in Africa are less diversified and more import intensive; 4) some African countries generate a small volume of marketable surplus in food grains because of the predominance of subsistence production which reduces the scope for scale economies in transport and marketing; 5) a bimodal structure in agriculture is typical of many African countries which results in market dualism (this point is taken up in more detail subsequently); 6) economies of scale in Asian marketing have enabled separate specialization in transport services and grain trade, whereas in Africa the more typical pattern is for truckers to combine transport services with wholesaling and retailing; 7) the more extensive spread of rural electrification in Asia allows more small scale milling and processing to occur close to the production location with concomitant lower transportation costs.

The above factors are, in fact, characteristics of specific elements or composites of characteristics of different elements. Thus, low population density (factor 1) is a characteristic of the physical and locational environment; the poor transport network (2) and limited rural electrification (7) reflect limited infrastructure and are, likewise, dimensions of the physical environment; less diversified transport modes in Africa (3) combine characteristics of technology and physical environment; the small volume of marketed surplus (4) is influenced by a combination of actors' characteristics (a predominance of smallholdings) with technological characteristics; market dualism (5) is shaped by uneven land endowments among different categories of

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farmers, correlated with differential technologies used, and a significant degree of policy intervention; finally, the prevalence of scale economies in marketing in Asia (6) is a characteristic of the technological environment.

We can now return to our elements and see how they impinge on the operation of agricultural markets in Africa compared to Asia. Three sets of key elements have been identified as contributing to the more pronounced segmentation of markets in Africa in contrast with most of Asia. The first set derives from the prevailing bimodal structure of agriculture leading to a sharp division of farmers into two distinct groups (small and large). The other two sets are the backward nature of infrastructure--particularly farm to market roads--faced by small farmers and the restrictive policies discriminating against traditional agriculture.

The bimodal distribution of land implies a lack of collateral for small farmers who are thereby sealed off the formal markets for credit and insurance. Facing missing or incomplete markets for these items, they are relegated to a variety of non-market exchange channels (i.e. configurations) characterized by personalized and interlocked transactions.

Furthermore, another manifestation of dualism is the enormous difference in the proportion of output that is marketed by large relative to small farmers. Large scale, mechanized farms in Africa market, on average, 70 to 75 percent of their output. In contrast the marketed surplus of small farms may vary between 10 and 20 percent of production. The volume of individual transactions small peasants engage in tends to be very small, and low trading volume leads to high transport costs per unit. Low trading volume is also associated, as was seen previously, with limited access to market information and poor bargaining power. The number of transactions required to move a small quantity of products through the marketing system tends to be very large.

The underdeveloped state of infrastructure affects small peasants more negatively than it does larger farmers. Lack of storage facilities and poor roads restrict the geographical exchange area open to small operators. Larger farmers, within limits, can build their own infrastructure, such as storage and internal road network to supplement the relatively favorable (relative to

smallholders) public infrastructure system they already enjoy.

The policy environment limits further the size, scope and area within which small farmers can transact through such restrictions as minimum size batches government procurement centers will purchase from producers, a variety of licensing requirements, sales taxes and bans on interdistrict trade.

For all of these reasons thin and unstable markets predominate in much of Africa. The combination of missing or incomplete markets for credit and insurance, poor information, inadequate infrastructure and a discriminating policy regime encourages small farmers to become independent of (or at least less dependent on) the market. This takes the form of retrenching into essentially non-market, or partial market, configurations such as the farm household, sharecropping and the advance sale of product to village traders who provide credit in the lean season resulting in a typical set of interlocked transactions.

In the next section concrete examples are presented of the types of configurations in which small and large farmers participate along the marketing chain of a given commodity system. It will be seen, among others, that larger farmers are in a much more favorable position to a) operate within configurations that integrate vertically some marketing services with production; b) take advantage of scale economies; and, c) profit from beneficial policies and institutions.

III. DECOMPOSITION OF PAKISTAN WHEAT AND OTHER FOODGRAIN MARKETS INTO DISTINCT CONFIGURATIONS

The main objective of this section is to analyze in some detail the anatomy of a specific marketing-chain (i.e. the wheat market in Pakistan)--as a concrete illustration of the applicability of the configuration framework. The reason for choosing this particular example is that the Pakistan wheat market has been thoroughly studied and is reasonably representative of the functioning of wheat and other foodgrain markets in developing countries.[19] Examples of foodgrain markets from other countries (e.g. Bangladesh) will be used whenever relevant to bolster and attempt to generalize inferences drawn from the Pakistan case study.

The analysis of the Pakistan wheat market proceeds as follows: i) relative importance of the wheat market in the domestic economy; ii) main actors along marketing chain and their characteristics; iii) trade pattern along marketing chain; iv) decomposition of marketing chain into distinct configurations and transactions; v) evaluation of performance of wheat market.

1. RELATIVE IMPORTANCE OF WHEAT MARKET IN DOMESTIC ECONOMY

Wheat is Pakistan's most important crop. In the 80's value added generated by wheat production constituted 7% of national income. Land devoted to wheat occupies about 35% of the total cropped area in Pakistan. Expenditures on wheat and flour made up on average almost 10% of household budgets and over 18% of food expenditures. A large part of the wheat harvest (about 40 percent) is used by farmers for own consumption and another part, about 10 percent, is paid to agricultural workers as wages in kind. The remaining part is "mostly sold and eventually reaches other consumers after a series of transactions in various trade channels" (Cornelisse, 1984, p. 65).

In contrast with many other developing countries Pakistan achieved near self-sufficiency in wheat at the beginning of the eighties. A State monopoly on

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[19]Key studies of the Pakistan wheat market are P.A. Cornelisse and S.N.H. Naqvi (1987); Government of Pakistan, (1990); S.N.H. Naqvi and P.A. Cornelisse (1986); P.A. Cornelisse (1984); P.A. Cornelisse and H. de Kruijk (1985); and, F.M. Faiz (1985). Because these benchmark studies were undertaken mostly in the eighties, the data and stylized facts presented in this section refer likewise to the situation as it prevailed in the eighties. The government changed some of its wheat policies in 1987; in particular, the flour ration system was abolished.

wheat imports and exports insulates the domestic market from the international market. The government plays a dominant role in the wheat market. A network of procurement depots allowed procurement of the great bulk of the marketed surplus, i.e. 68% in 1982. Public purchases of wheat served three major outlets a) contributing to the buffer stock; b) processing and distribution among ration shops, where the flour is sold to ration-card holders at subsidized prices; and c) off-season sales in the open market to dampen seasonal price fluctuations. (Cornelisse and de Kruijk, 1985).

Clearly as Cornelisse and Naqvi (1987) concluded in their comprehensive evaluation the government occupies the "commanding heights" in the wheat market. The procurement price acts as an anchor and sets an upper limit to the prices paid to farmers by private traders, while the subsidized price of ration flour has a depressing effect on the price that consumers are willing to pay on the open market. Periodic releases of wheat from the State buffer stocks maintain the market price within reasonable limits even in wheat deficit provinces and in the post-harvest period. As will be seen shortly the procurement price leads to a retrograde price formation system as one moves backwards along the marketing chain towards the producers. Given the predominant role of the government the function of private traders is circumscribed. It consists mainly of collection, transportation, and enlargement of batch sizes. The contribution by private traders to the formation of prices is limited as transaction prices are determined mainly by deducting a margin from the procurement price that varies negatively with batch size and positively with distance to the nearest depot.

2.   MAIN ACTORS AND THEIR CHARACTERISTICS

The main categories of actors along the wheat marketing chain consist of farmers; village shopkeepers, beoparis (i.e. relatively small itinerant traders); commission agents; wholesalers; institutional buyers (in particular government procurement centers); processors; and ultimate consumers.[20]

Farmers

Estimates of the ratio of marketed surplus to total wheat production vary

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[20]This subsection relies on the description of actors contained in Cornelisse and Naqvi (1987) and Government of Pakistan (1990).

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from 40 percent (Cornelisse and Naqvi, 1987) to 46 percent (Government of Pakistan, 1990)--based on two different surveys undertaken, respectively, in the early and late eighties. Even though the land distribution is much less bimodal than in many African or Latin American countries, farmers in Pakistan fall into fairly distinct categories according to farm size. The share of marketed surplus to output varies directly with farm size. The corresponding ratios for small, medium and large farmers were 35, 40, and 52 percent respectively (Government of Pakistan, 1990).[21] Conversely the share of own consumption was 42 percent for small farmers and only 20 percent for large farmers. Because large farms tend to have a larger marketed surplus than small farms do and because the former occupy a significantly larger area of agricultural land than small farms, the amount of wheat traded in the market originates to an overwhelming degree in large and medium farms.[22] The average storage capacity was found to be directly correlated with farm size and the GOP (Government of Pakistan, 1990) study indicates that larger growers tend to sell a greater share of their output in the post harvest season.

Because of significant differences in endowment between small and large farmers, the former depend mainly on shopkeepers and village beoparis for their sales while the large producers deal mainly with commission agents and government procurement centers. The question of how exchange channels and corresponding configurations are influenced by the characteristics of actors and environmental elements is taken up subsequently in detail in subsection III.4.

Village Shopkeepers

The village shopkeeper buys and sells agricultural produce and grocery items in the village. Wheat trade is only a sideline activity for them. They often engage in interlinked product-credit transactions with local farmers wherein they lend credit to the peasants in return for product at a prespecified agreed upon price at harvest time. Consequently, as is shown subsequently, they

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[21]In that study the average size farm of the three groups was, respectively, 10, 23 and 79 acres (Government of Pakistan, 1990, p. 81).

[22]It was estimated that between 75 and 80 percent of marketed surplus is supplied by farms over 12.5 acres.

pay substantially lower prices for wheat than other traders. Other characteristics of village shopkeepers and of other categories of traders are shown in Table 2 which is discussed in more detail in III.4.

Beoparis

These are itinerant traders--operating in the first stages of the wheat-marketing chain. They buy mainly from farmers. In contrast with village shopkeepers who buy mainly from small producers, beoparis purchase also from medium and large producers. They assemble the local produce from shopkeepers and farmers into larger lots which are then transported and sold in the nearest wholesale markets.

Commission Agents

They mediate between buyers and sellers without becoming owners of the goods they handle. Their services are remunerated generally by the sellers through the payment of commission which is fixed as a percentage of the sale proceeds. They handle large batches, operate generally at the mandi (market town) level but a considerable number of them (particularly the smaller commission agents) operate in villages as well. The bulk of their purchases is from large farmers and they sell primarily to procurement centers.

Wholesalers

Their main function is to collect wheat from other dealers, store it, and sell it primarily to the millers. They also engage in enlargement and reduction of wheat lots and transhipment of the produce to different regions to meet spatial requirements. They occupy a position towards the farthest end of the wheat-marketing chain.

Institutional buyers

Provincial food departments and the Federal Public Sector agency (Pakistan Agricultural Storage and Services Corporation Limited) have set up procurement centers in major producing areas. The centers perform the function of procuring wheat from larger farmers and traders at prices fixed by the government. Procurement centers sell mainly to government mills.

Processors

There are three types of technologies that are used to convert wheat into

Table 2

Summary of Characteristics of Village Shopkeepers, Beoparis,.
Commission Agents and Wholesalers, 1982[a]

Characteristics	Shopkeepers	*Beoparis*	Commission Agents	Wholesalers[j]
Volume Traded	approximately 100 maunds	> 1,000 maunds	approximately 10,000	approximately 10,000 maunds
Purchases/Inflow	farmers	farmers, shopkeepers[e]	farmers, *beoparis*[f]	commission agents, farmers
Sales/Outflow	*Beoparis*,Commission agents	procurement centres, commission agents	procurement centres, mills	procurement centres, millers
Purchase lot	1–10 maunds	approximately 100 maunds	approximately 400 maunds	> 2,000 maunds
Sale lot	approximately 20 maunds	up to 400 maunds	500–2,000 maunds	varying widely
Purchase price	Rs 48–54 per maund[b]	Rs 54–56 per maund[b]	Rs 57–75 per maund	Rs 56–74 per maund
Sale price	Rs 53–58 per maund[c]	Rs 58–64 per maund[c]		Rs 58 to 78 per maund
Workers	Owner only	owner, family member, permanent worker	owner, family member	owner, family meml other workers
Investment per maund of wheat traded	large variance	around Rs 7 per maund[g,h]	below Rs 25 per maund	between Rs 4 and Rs 20
Functions	collection, some credit, small-scale transportation, enlargement of lot size[d]	collection, transport, enlargement of lot size[i]	some transportation, enlargement of lot size credit[i]	transportation, enlargement and reduction of lot size, storage, some price formation

Source: Cornelisse and Naqvi, 1987, pp. 40–1.

Notes:
[a]The table reflects primarily the situation observed in the Punjab and in Sind. In the NWFP private traders tend to have different characteristics. Mc of them are described in the other footnotes.
[b]Purchase prices in the NWFP are 25–35 percent higher than in the Punjab or in Sind.
[c]Also sale prices tend to be 25–35 percent higher in the NWFP.
[d]Shopkeepers in the NWFP maintain small stocks of wheat.
[e]In the NWFP *beoparis* buy wheat also from other *beoparis* and through commission agents.
[f]*Beoparis* in the NWFP sell wheat also to other *beoparis* and through commission agents.
[g]In the Punjab the value is between Rs 3 and Rs 7 per maund and in Sind between Rs 7 and Rs 20 per maund.
[h]The value in the NWFP is, on average, as high as Rs 100.
[i]In Sind and in the NWFP the storage function is more developed. Therefore price formation is of some importance.
[j]In the NWFP the transactions, organization of business and functions of this group of traders resemble very much those of *beoparis*.

flour: traditional chakkis, modern grinding plants and roller flour mills. Chakkis are commonly employed by private small-scale operators--often at the village level--and are instrumental in meeting a considerable part of the flour needs in rural areas. The modern grinding plants operate on a much larger scale and also perform washing and cleaning tasks. Millers grind wheat on three accounts i) on their own account (to sell in the open market)--this is the most profitable alternative; ii) for private individuals, or parties; and, iii) for ration shops. In this last instance, the government selects the mills and volumes of wheat to be grounded and specifies a "grinding margin" which is often not sufficient to cover milling costs (Naqvi and Cornelisse, 1986, p. 112). Procurement centers sell mainly to millers operating on government account, while beoparis and commission agents sell to own-account processors.

Retailers and Consumers

They constitute the final link between the producer and the consumer. Retailers usually serve a limited locality. They can be either private retailers or ration shops. Both types of private outlets obtain their flour from processors. Ration shopkeepers buy ration flour from assigned mills at a given price and can only sell to holders of a ration card. In principle every head of household can apply for a ration card. However the system is selective in the sense that in order to enjoy the privileges of a ration card, a ration shop must be located near to where the consumers live--a point we return to subsequently. Ration flour is sold at a subsidized price. The quantity of wheat, or flour, covered by the ration is not generally sufficient for a subsistence diet; hence additional purchases have to be made in the open market from private retailers at significantly higher prices.

3. THE WHEAT TRADE PATTERN

Table 3 shows the network of wheat trade in the Punjab. This network appears typical and representative of foodgrain patterns, in general, in the developing world.[23] Examination of Table 3 reveals a crucial stylized fact, i.e.

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[23]Cornelisse and Naqvi (1987) and Government of Pakistan (1990) study the wheat trade patterns in other Pakistani provinces and conclude that they tend to be essentially similar to the present case study of the Punjab. The GOP source describes in detail the provincial trade network for rice and other foodgrains

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Table 3

The Network of Wheat Trade, Punjab: 1982 Harvest

('000 tons)

| | Wheat Traders | | | | | Wheat Users | | | | | |
	Shopkeeper	Beoparis	Small Commission Agent[a]	Large Commission Agent[a]	Wholesalers	Procurement Centres	Govt Milling	Private Milling	Wheat Consumption	Surplus	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Wheat Traders											
1	0	16	12	8	0	0	0	0	1	0	37
2	0	0	135	115	30	579	0	243	31	0	1133
3	0	51	19	171	46	315	0	124	110	0	836
4	0	0	0	0	0	308	0	152	95	0	555
5	0	0	0	0	0	67	0	28	25	0	120
6	0	0	0	0	0	0	829	96	0	1554	2479
Farmers	37	1066	670	261	44	1210	0	107	3561[b]	0	6956
Receipts in Kind	0	0	0	0	0	0	0	0	842	0	842
Total	37	1133	836	555	120	2479	829	750	4665	1554	12958

Notes: [a]"Small" and "large" commission agents display different trade patterns. The quantity of 35,000 maunds as the amount of wheat handled distinguishes "large" from "small" commission agents.
[b]Mainly own consumption, but includes some sales by farmers to consumers and retained seed and feed.

Source: Cornelisse and Naqvi (1987), p. 49.

27a

the triangularity of trade observed amongst wheat actors in Pakistan. This fact is the central focus of the present analysis. The triangular trade pattern reflects the strong specialization among categories of traders which gives each one of them a specific position in the wheat marketing chain. Moreover, there is a hierarchy implicit in the network, in so far as each group obtains or buys from the group of traders preceding it in the chain and sells to group(s) following it in the chain. The transaction price and the volume exchanged increase as one moves along the chain. This comes out clearly in Table 2 which shows the average purchase and sale prices and volumes of sale lots of transactions by, respectively, shopkeepers, beoparis, commission agents and wholesalers. Purchase prices along the marketing chain range from Rs. 48 to 74 per maund (-81 lb); sales prices range from Rs. 53 to 78 per maund; and lot sizes go from a minuscule 1-10 maunds (typical of shopkeepers purchases) to above 2000 maunds for wholesalers.

Besides the price and volume progression along the chain, there are various implicit aspects of the transaction, such as credit ties, timing and turnover speed which differ significantly at different links along the chain. These and other actors' and transactions characteristics are summarized in Table 2. The impact of actors and environmental characteristics on the shape of configurations and the endogenous determination of transactions within these configurations is discussed in the next subsection.

A schematic representation of the trading network for wheat in the Punjab is presented in Figure 1. It is limited to commercial transactions (i.e. the disposal of the marketed surplus) and shows the relative importance of the various marketing channels. Thus, it indicates, for example, that 47% of the marketable surplus is purchased by beoparis.[24] Essentially similar diagrams have been derived for the wheat trade in other Pakistani provinces as well as for the

which resembles closely the Punjab example. Finally a study of the rice market in Bangladesh (B. Crow, 1989) reaches very similar conclusions.

[24]Figure 1 is based on a more recent survey and source than the data appearing in the network of wheat trade on Table 3 so that these two pictures are not totally comparable. The purpose of Figure 1 is to provide an approximate sense of the relative magnitudes of different channels.

Figure 1

SCHEMATIC DIAGRAM SHOWING MARKETING CHANNELS

WHEAT
–
PUNJAB
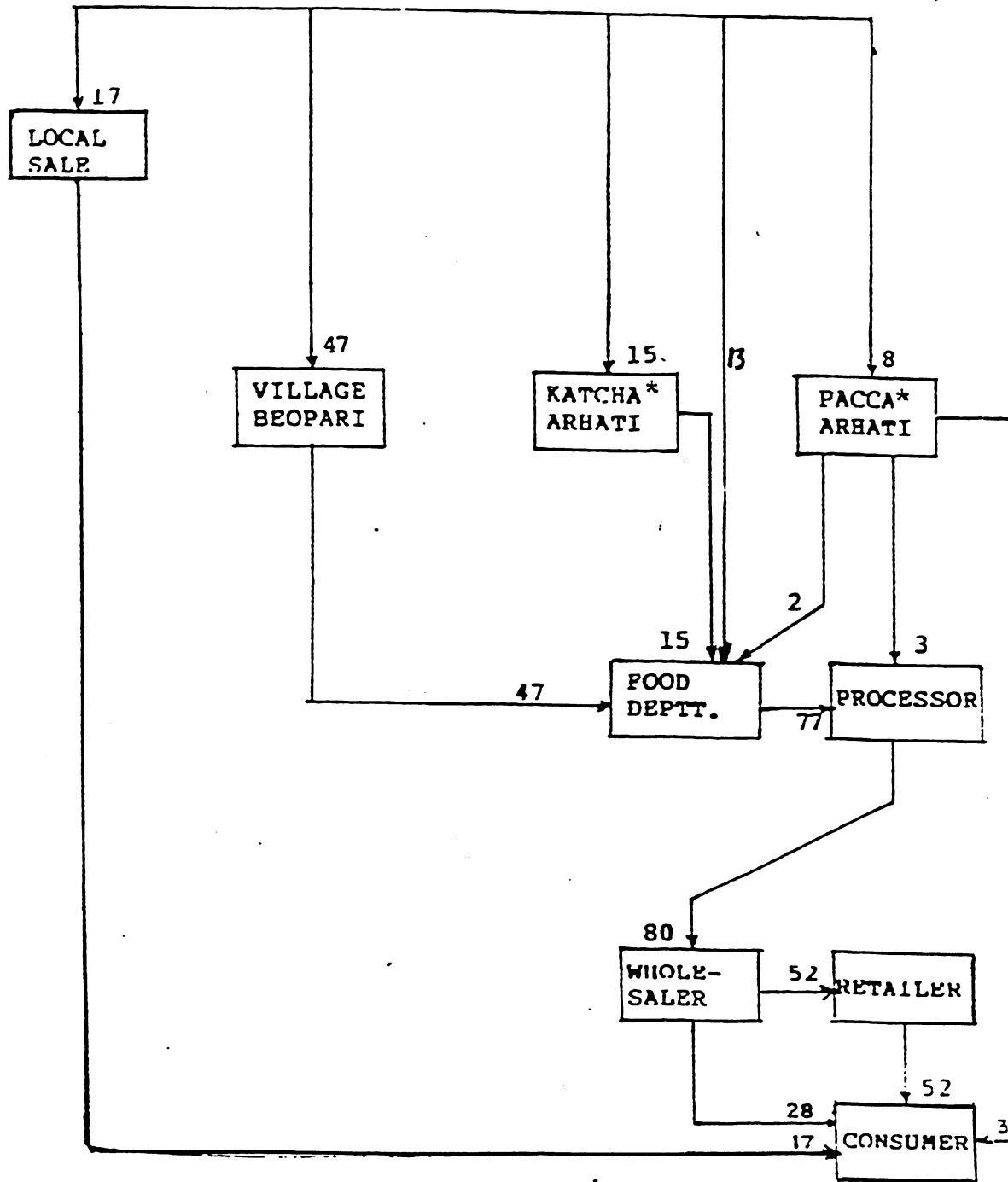
*commission agents

Source, Government of Pakistan (1990) p. 127.

provincial networks of rice trade (see Government of Pakistan, 1990). By way of comparison, Figure 2 indicates the main food grain (wheat and rice) distribution channels in Bangladesh.

4. COMPARISON OF PAKISTAN WHEAT MARKETING CHAIN WITH FOOD GRAIN MARKETING CHAINS IN OTHER DEVELOPING COUNTRIES

At this stage, it appears useful to present very briefly a few selective examples of food grain marketing and distribution channels in three other developing countries: Bangladesh, India and Kenya. Figure 2 indicates the main food grain (wheat and rice) distribution channels in Bangladesh. Figure 3 shows in great detail the structural elements (different types of actors, locations and item exchanged) of the rice circulation system in West Bengal. Finally, Figure 4 captures the horticultural commodity flows and traders involved in some Kenyan districts. Underlying these three diagrams are three very detailed studies of the marketing chain by, respectively, Crow (1989), Harriss (1982) and Dijkstra and Magori (1991). The relevant point to note is that in each of these cases the marketing chain can be decomposed into a set of distinct exchange configurations and transactions. In other words, the decomposition methodology that is undertaken in the next section with respect to Pakistan is fully applicable as well to each of the preceding cases. Of course, because the initial conditions differ in these settings, each case would yield a somewhat different pattern of distinct configurations and corresponding transactions. However, what is remarkable is the apparent similarity among the patterns of configurations characterizing these four different marketing chains.

In fact, Barbara Harriss (1982) in her case study of the system of circulation of rice in West Bengal uses an approach that has many similarities with the approach to the study of markets followed in this paper. Thus, she identifies the underlying elements of a system of circulation of rice as firms, locations and commodities (Harriss, 1982, p. 162). These elements are essentially a subset of the much more complete list of elements used in the present methodology. Although, Harriss does not develop the concept of an exchange configuration, she comes close to it as the following quote suggests,

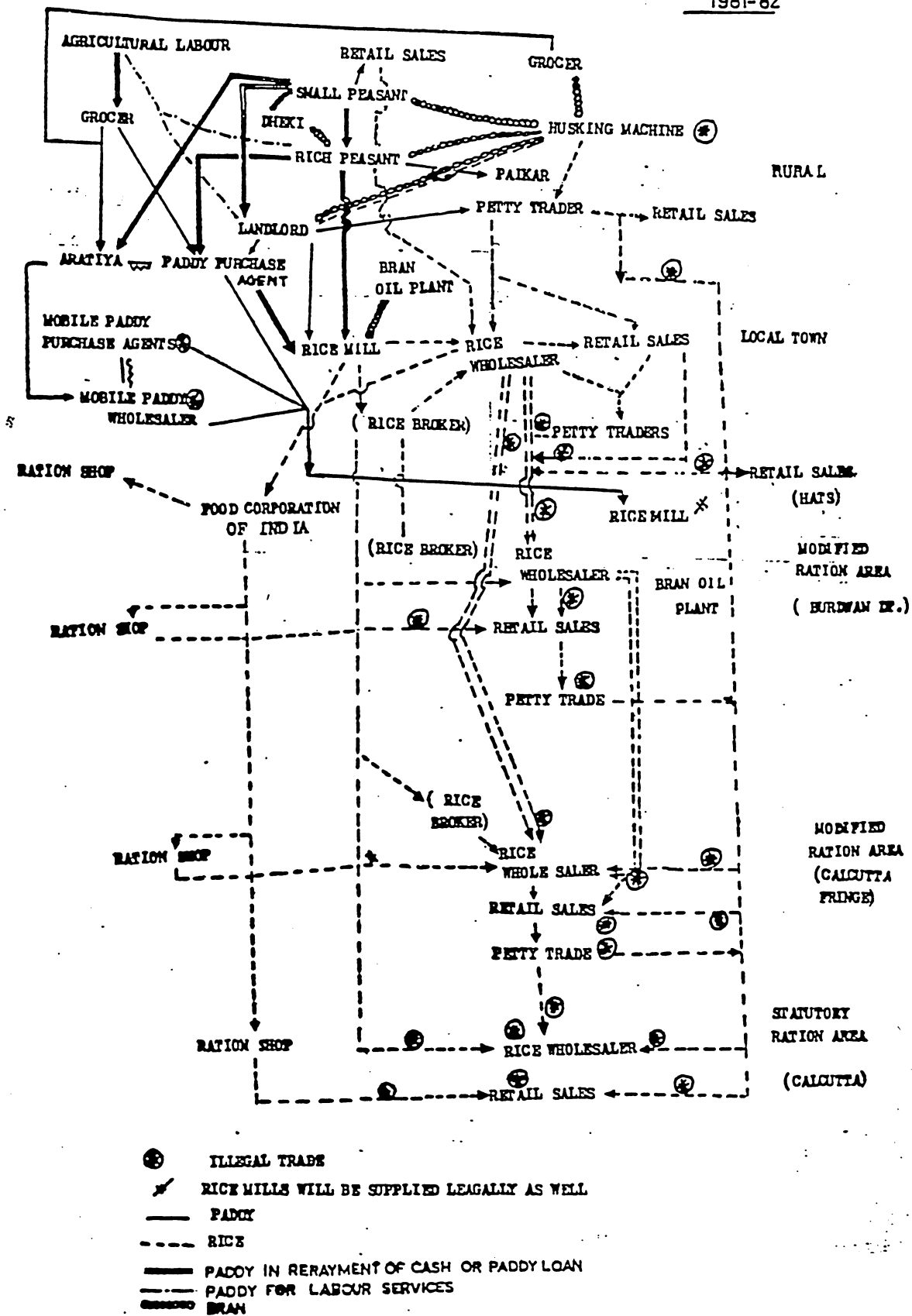"The system of circulation of rice is not simple, nor is it

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Figure 2

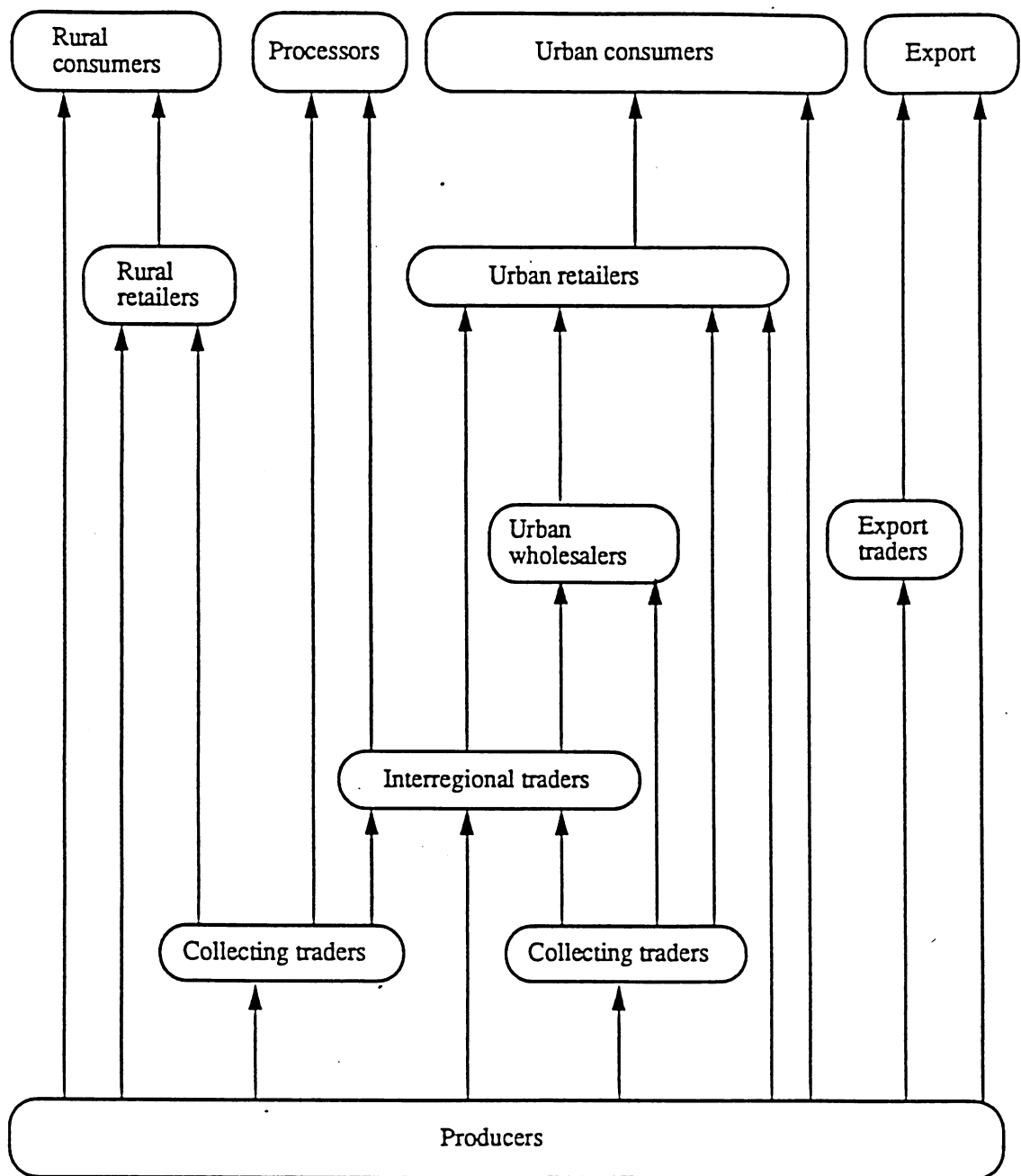Main Foodgrain Distribution Channels
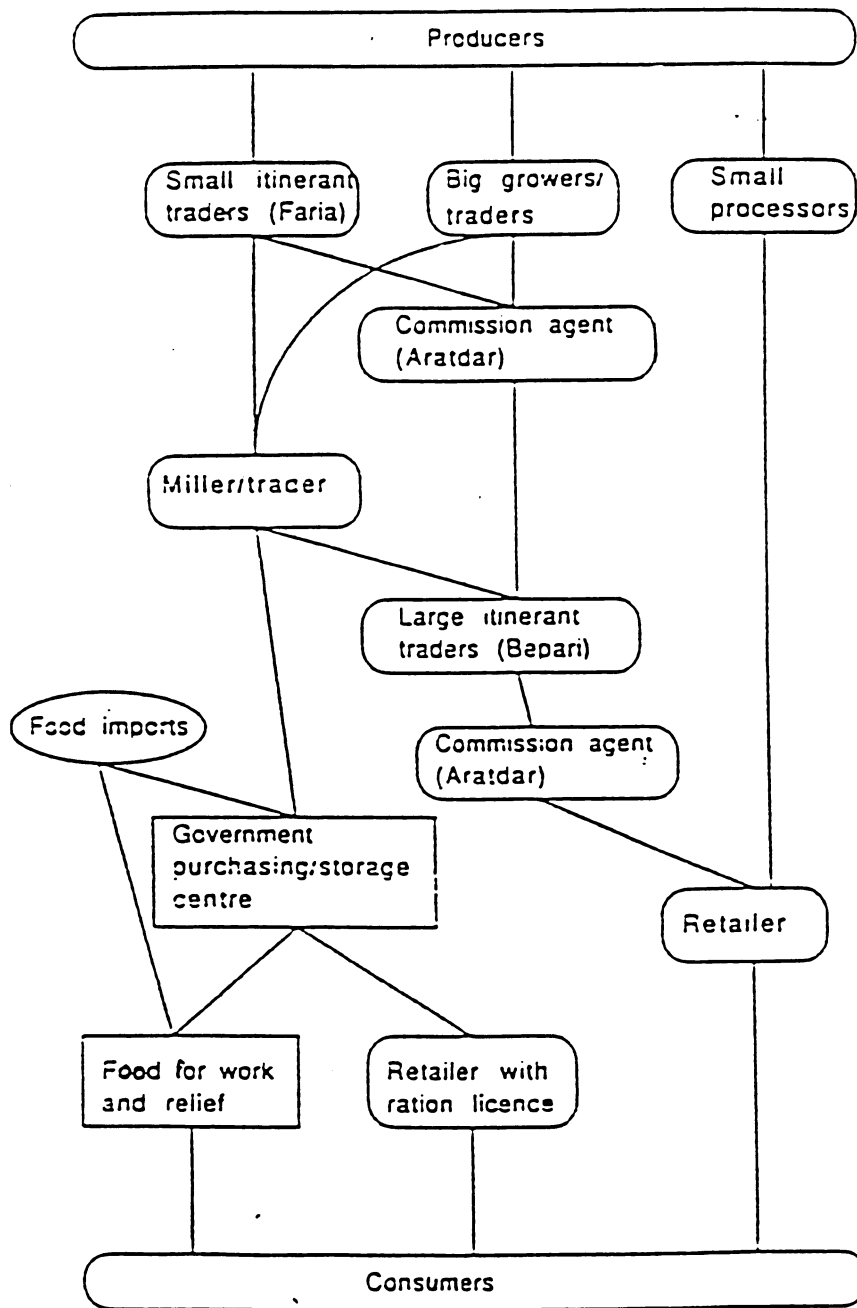
Source: Crow (1989)

Figure 3

STRUCTURAL ELEMENTS OF THE RICE CIRCULATION SYSTEM: BIRBHUM DISTRICT TO CALCUTTA 1981-82

Source: Harris (1982)

Figure 4 Horticultural commodity flows and traders involved

Source: Dijkstra and Magori (1991)

homogeneous: It can be divided into a number of subsystems, each affecting others and some interlocking through elements, relationships or disturbing factors, with others. One subsystem has as its elements the members of classes related through agricultural production. Rice circulates in return for cash, as rent, in return for labor services, as a medium for loans to be repaid at a future date in cash, kind or by labor services. It is a medium for barter exchange....Another subsystem of circulation is the sale of paddy for transfer out of the locality. A third subsystem is the "official" system of bulking by purchase agents for rice mills who yield a portion up to the state in exchange for the right to trade the residual more freely. A fourth subsystem is that of petty trade in husking machines for local retail sales or for wholesaling and long distance trade."

5. DECOMPOSITION OF WHEAT MARKETING CHAIN INTO DISTINCT CONFIGURATIONS AND TRANSACTIONS

The triangular nature of the wheat trade pattern, described above, with its various links and intermediaries and very distinct types of transactions, along the chain from producer to consumer, raises a number of fundamental questions. These questions can only partially, and not very satisfactorily, be answered by traditional neoclassical analysis. For instance, why is there such a large number of intermediaries performing diverse functions, what explains the price differentials along the chain, why do traders sell only (or mainly) to specific traders downstream and not to others, how efficient, equitable and adaptable is the commodity system, and how does the system evolve over time?[25]

The actors in the wheat commodity system differ significantly in their characteristics such as endowment, access to information and attitude towards risk. As Bardhan (1989, p. 5) pointed out

"When transaction costs are absent, the initial assignment of property rights does not matter from the point of view of efficiency, because rights can be voluntarily adjusted, and exchanged to promote increased production. But when transaction costs are substantial, as is usually the case, the allocation of property rights is critical."

The separability of equity and efficiency breaks down under the circumstances. The terms and conditions of contracts in various transactions now depend crucially on ownership structures and property relations.

When transactions costs are present, as in the wheat marketing chain discussed here, and foodgrain markets, in general, there is a link between the

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[25]The whole issue of the evolution of markets, in general, is taken up in a separate chapter. Among others, stages of market development will be identified.

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ownership structure (particularly of land), other characteristics of participants, exchange and distribution. The initial assignment of property rights and other actors' characteristics determine what kind of contract is entered into, and the process through which the terms of the contract and the distribution of the gains from the exchange is reached.

A conceptual framework is needed that links ownership pattern, other attributes of actors; the physical environment (e.g. structure of production, technology in use, infrastructure network); and the policy and legal environments to the prevailing exchange channels and transactions. In the configuration framework, three sets of elements (characteristics of the item, the actors and the environment) jointly shape distinct exchange configurations within which transactions are endogenously determined. Given the initial state of the elements, actors chose the exchange channel (i.e. that configuration) which minimizes transactions costs. For many of these actors their lack of assets combined with the characteristics of the environment which they face, greatly circumscribe their choice set. Poor peasants may be, more or less, "restricted" to operate within some non-market configurations.

In what follows the configuration approach is applied to the wheat marketing chain--using the Pakistan example. The objective is to identify distinct exchange channels along the chain. Each channel can be represented by a specific configuration shaped by, and consisting of key elements. Thus, a given configuration includes a set of actors (with ther attributes) operating within a specified environment exchanging particular items. Each configuration gives rise to a specific transaction with its own implicit or explicit contractual terms--agreed upon by the participants.

Returning to the Pakistan case study, it was possible to identify eleven distinct configurations along the marketing chain. These configurations are shown graphically in Figure 5, superimposed upon the marketing chain from original producers to ultimate consumers, i.e.

1. Production of wheat for own consumption by large (1a) and small

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Figure 5. Major Configurations and Transactions Along the Wheat Marketing Chain
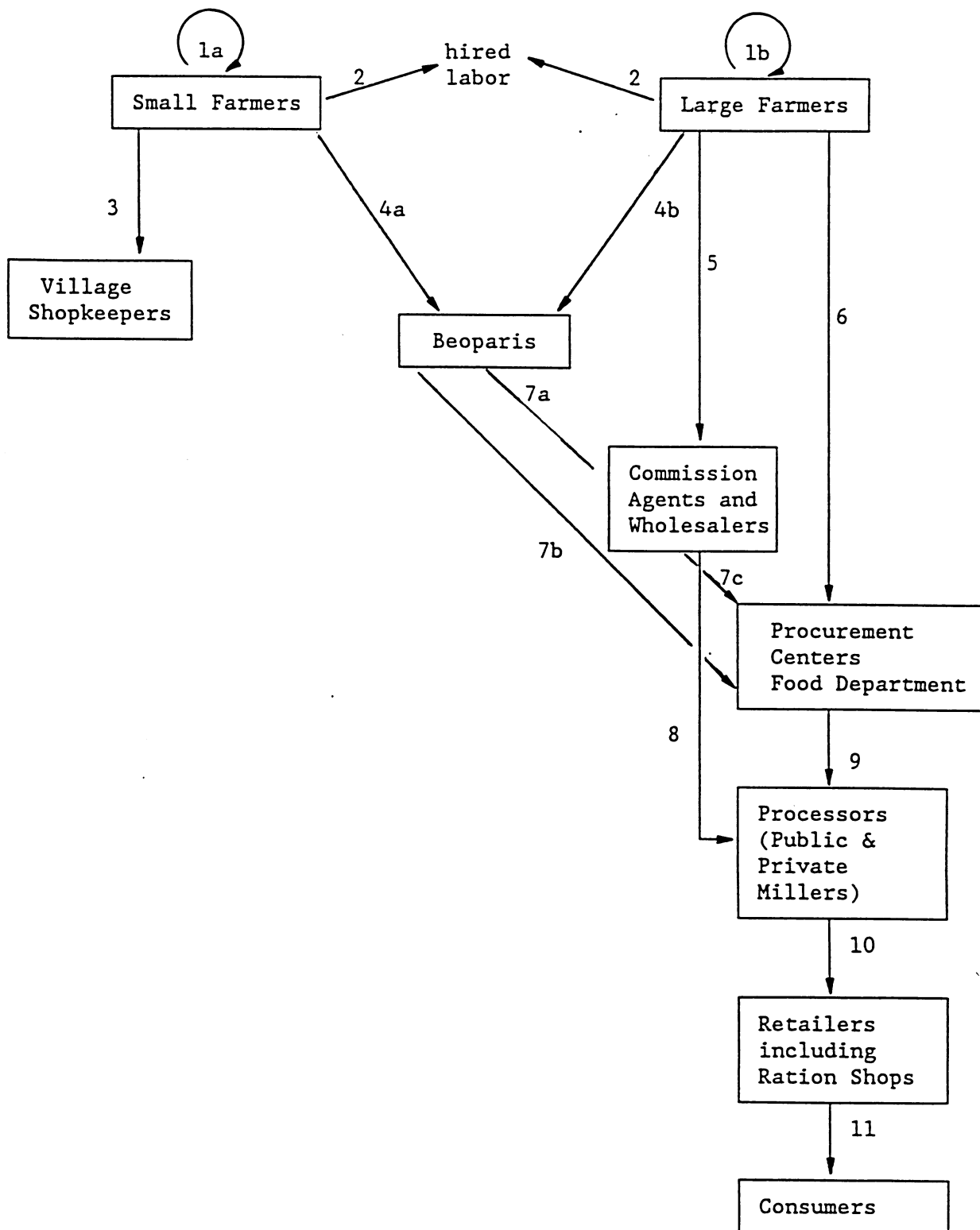
farmers (1b).[26]

    2.   Payment by farmers of wheat in kind to hired labor.

    3.   Sale of wheat by small farmers to village shopkeepers who also provide credit--resulting in an interlocked produce-credit-money transaction.

    4.   Sale of wheat by small producers (4a) and large producers (4b) to beoparis.

    5.   Sale of wheat by large farmers to commission agents and wholesalers.

    6.   Sale of wheat by large farmers to procurement centers.

    7.   Sale of wheat by beoparis to i) commission agents and wholesalers (7a); ii) procurement centers (7b); and sale by commission agents and wholesalers to procurement centers (7c).

    8.   Sale of wheat by commission agents and wholesalers to processors (public and private milling).

    9.   Sale of wheat by procurement centers to processors.

    10. Sale of wheat flour by processors to retailers including ration shops.

    11.   Sale of wheat products by retailers to ultimate consumers.

At each node, and within each separate configuration of the chain, value is added to the item being exchanged. Each set of actors along the chain confer additional time, form and place utility to the product. In some instances parallel channels of exchange co-exist at roughly the same position along the chain--depending on the characteristics of actors and other elements. Only a sample of the more prototypical configurations listed above is scrutinized in more detail next. In each instance, an attempt is made to identify the characteristics of key elements that define the configuration and lead to a specific type of exchange transactions.

5.1   Production for Own Consumption by Large and Small Farmers

In Pakistan the share of domestic (own) consumption to output by farmers was directly proportional to size farm and vice versa for the share of marketed surplus. The proportion of output consumed by the farm household was 42 percent for small farmers, 34 percent for medium farmers and 20 percent for large

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[26]The numbering of the distinct configurations corresponds to that shown in Figure 5.

producers. Why do larger farmers display a greater degree of market orientation than their smaller counterparts? The question should perhaps be asked conversely: why do small producers revert more to intra-household transactions?

The configuration within which production for own consumption occurs is the farm household configuration.[27] The lack, or incomplete nature, of markets in insurance and in credit is the primary raison d'ôtre of this type of configuration. Two types of insurance are provided within this configuration: i) an intergenerational form of "old age" or "social security" insurance with older generations receiving support from younger generations in exchange for care received when young; and ii) by linking together food production and consumption of staple foodstuffs, the family can insure itself, at least partially against state contingent uncertainty. Family members have first priority in the use of produced food.

How do farm households decide on the extent to which they engage in intra-farm household transactions as opposed to participating in transactions, in existing market configurations for the same item? de Janvry, Fafchamps and Sadoulet (1991) have provided a formal model that provides an answer to this question. They postulate that for commodities such as food and labor that can be sold and bought by peasant households, their sale price is a fraction of the purchase price. In turn, the width of this band depends on a whole set of transactions costs (such as transportation costs and marketing margins). Among the key elements influencing the size of this price band are the state of the infrastructure, the extent of competition along the marketing chain, the degree of risk of given transactions and the amount of information available to actors. The poorer the conditions of the above elements the wider the band.

Larger farmers producing more output than smaller farmers will naturally tend to retain a smaller proportion for own consumption than their counterparts. But, in addition, they are favored relative to small peasants in terms of the quality of infrastructure available (particularly storage facilities), access to formal credit sources and information; and, capacity to bear risk. Thus, larger

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[27]For a detailed discussion and analysis of this type of configuration, see Cornelisse and Thorbecke (1991) section 3.4.2 and Thorbecke (1992).

producers face a narrower price band than their less privileged counterparts and are, therefore, more likely to participate in market configurations. Cornelisse and Naqvi (1987) conducted statistical tests on the behavior of marketed surplus of wheat in Pakistan. They found out that the major explanatory variables were net availability of wheat and distance in miles to nearest procurement centers (a dimension of the physical environment). Large producers benefitted on both counts.

5.2   Sale of Wheat by Small Farmers to Village Shopkeepers

The trade channels (i.e. configurations) in which farmers operate depend on their endowment, capacity to hold stocks, liquidity position, and size of marketable surplus, among others. The smallest farmers with little land, essentially no storage capacity, no access to the formal credit market, and limited marketable surplus transact mainly with shopkeepers and beoparis. Thus one-fifth of the marketed surplus of farmers owning less than 2.5 acres was sold to shopkeepers (Cornelisse and Naqvi, 1987, p. 36). None of the other size farms sold more than 5% of their marketable surplus to shopkeepers. The typical transaction in this configuration is an interlinked one combining the exchange of product at prices reflecting the provision of credit in money or in kind (e.g. groceries) before the wheat is harvested. Other characteristics of the transaction are i) the small size of batches traded (often less than 5 maunds); ii) the relatively low price offered by shopkeepers, i.e. between Rs 48 and Rs 54 per maund in 1982 which, of course, includes an implicit margin for interest on the credit provided; and, iii) the low total volume traded (100 maunds) (for other characteristics of transactions and actors along the chain see Table 2).

Mini-farmers are handicapped in their choice of an exchange channel by the small size of their marketed surplus which translates into high marketing costs per unit and only two trade channels effectively open to them: shopkeepers and beoparis.[28]

Many similar examples of this type of configuration can be found in the

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[28]In different surveys of small farmers, the latter indicated that important factors influencing them in the selection of a market (read configuration) were i) personal relationship with dealers (Ali and Ahmed, 1979); and ii) difficult access to more competitive markets (Government of Pakistan, 1990, p. 59).

developing world. Some involve small farmers and small itinerant traders--rather than shopkeepers. Crow (1989) describes in detail two types of transactions between small producers and small traders (farias) in the rice market in Bangladesh. The farias make credit advances to the producers before the harvest time, in exchange for a guaranteed purchase price at harvest, significantly lower than the official government price. Likewise, under the traditional "dadon" system the provision of the cash advance determines the price to be paid for the output. As Crow (1989, p. 211) indicated,

> "The dadon system seems to be associated with production areas where the market is relatively undeveloped and where the small trader collecting paddy has little capital. In the case of Noakhali, dadon acts to segment the market, linking production areas to particular markets and excluding traders from other markets."

5.3   Sale of Wheat by Small and Large Farmers to Beoparis

This is a relatively very important trade channel. On average, farmers sold 31 percent of their marketed surplus to beoparis. This average figure, however, hides significant differences among farm size categories. The smallest farms (under 2.5 acres) sold 61% of their marketed surplus to beoparis, while the corresponding ratios for farms between 5 and 25 acres was between 52 and 57 percent, respectively, and only 15% for farms over 25 acres. Beoparis (itinerant traders) in Pakistan, in contrast with Bangladesh, tend not to provide much preharvest credit. Their main functions consist of collection, transport and enlargement of lot size. The average size lot they purchase from farmers is about 100 maunds, at a purchase price of Rs 54-56 per maund. Total volume traded is in excess of 1000 maunds. The much larger batch size handled by beoparis, combined with the fact that they normally do not extend credit, enables them to pay a substantially higher price than shopkeepers. Their storage capacity is very limited which forces them to sell almost immediately after having bought from farmers. Transactions in this configuration are characterized by a very high turnover rate.

5.4   Sale of Wheat by Large Farmers to Commission Agents

The largest category farmers (25 acres and above) use this trade channel extensively; over 28 percent of their marketable surplus was sold to commission agents. For all other smaller categories of producers this was only a marginal

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outlet. Commission agents are "mediators" between buyers and sellers of wheat. Their main functions are the provision of some transportation services and credit, and enlargement of lot size. Commission agents operate mainly at mandi level (market town). They charge a fixed commission for their services that varied between Rs 0.50 and Rs 2.00 per maund. The typical transaction consisted of a lot size of 400 maunds, at a purchase price between Rs 57 and 75 per maund. Total volume handled by commission agents was much larger than that of beoparis, averaging approximately 10,000 maunds.

Two key elements essentially preclude smaller farmers from participation in this configuration i) the large size lot and ii) the lack of transport facilities to bridge the distance to the nearest commission agents.

5.5   Sale of Wheat by Large Farmers to Procurement Centers

Procurement activity "acts as a sheet-anchor in the wheat market," (Naqvi and Cornelisse, 1986). The government commits itself to purchase wheat at a fixed preannounced price through procurement depots. Procurement centers are the principal outlets for the largest farmers who dispose of as much as 54% of their marketable surplus to them. Although smaller categories of farmers also sell to procurement centers, many of them tend to be excluded from this configuration on three grounds i) the minimum purchase lot requirement is 950 kg; ii) procurement depots are spread out geographically in such a pattern that for many small farmers distance to the nearest depot is a binding constraint--given their lack of transportation means; iii) payment of sale proceeds was often delayed at the centers (Government of Pakistan, 1990, p. 52). In essence characteristics of the actors (particularly endowment) combined with characteristics of the physical and policy environment (e.g. location of depots, procurement regulations and procedures) define this type of configuration.

In any case the fixed price paid by procurement centers provides the basis for the retrograde pricing system upstream along the marketing chain described in the next section.

5.6   Sale of Wheat Flour by Ration Shops and Private Retailers to Consumers

Every household is, in principle, eligible to receive a ration card entitling it to buy at a subsidized price an amount of wheat not generally

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sufficient for a subsistence diet. The ration system also tends to discriminate against those consumers who are located at a distance from the nearest ration shop. For those reasons two distinct configurations co-exist at the end of the marketing chain, i.e. i) ration shops selling at a subsidized price to ration-card holders, and ii) private retailers selling to consumers at the market price. This is an example of parallel markets operating at the same node of the marketing chain. (Note that the private configuration is completely legal in this instance, in contrast with other settings--particularly in Africa--where the parallel foodgrain market is unofficial and often illegal). Often the flour sold through ration shops is of inferior quality as compared with the flour available on the open market.

6. EVALUATION OF PERFORMANCE OF WHEAT MARKET

The two key criteria that can be used to evaluate performance are efficiency and equity, respectively.[29] Efficiency is a difficult criterion to define in operational terms. A first distinction to make is between i) efficiency of the entire commodity system (i.e. the whole marketing chain); and ii) efficiency of individual configurations and exchange channels along the chain. The broader concept (i above) was defined by Abbott (1993) as "the movement of goods from producers to consumers at the lowest cost consistent with the provision of the services that consumers desire and are able to pay for." Although it is difficult to disagree with this definition, its operational usefulness is clearly limited. As Cornelisse and Naqvi (1987, p. 113) mentioned

> When setting out to examine the efficiency of operation of a certain market there is a problem that just one parameter in which efficiency performance can be expressed does not exist. The best

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[29]A third criterion which was identified in Cornelisse and Thorbecke, 1991, Ch. 2, is adaptability. By this is meant the extent to which restrictive elements--particularly, policies, rules, and institutions--can be changed or relaxed to improve the efficiency and equity of the overall commodity system and/or the various configurations constituting it. For example, the World Bank (in this case Knudsen et al., 1990, p. 59) argues that
> "parastatals marketers operate inefficiently because they operate inflexibly. They cannot adapt readily to changing market circumstances. In Zimbabwe, Kenya and Malawi in 1986, for example, official prices were kept constant in spite of massive oversupply and severe budgetary losses...".

Since "adaptability" is related to the dynamics of market evolution, it is better discussed in the chapter on market evolution.

alternative, therefore, is to consider a set of indicators of efficiency which when taken together, provide an impression of the functioning of the market concerned."

They proceeded to identify five such indicators and use them to evaluate the Pakistan wheat market, i.e. i) price spread (difference between consumers' and producers' prices expressed as a percentage of the consumer price); ii) variations in producers' price; iii) credit ties; iv) rate of turnover of wheat stocks held by private traders; and, v) adjustments made by private traders to the requirements of producers and consumers.[30] They concluded, based on these indicators, that the private wheat market appears to have operated at reasonably low cost to producers and consumers. The same conclusion that foodgrains markets operated relatively efficiently was also reached by other researchers in other settings. Thus, Lele (1971) suggested that private grain traders in India were efficient and the Bangladesh foodgrain markets was described as subject to "intense competition" (Islam, et al., 1985, p. 140) and was found to have among the lowest trading margins in major world rice producing and consuming nations (Farruk, 1972, p. 33).

Perhaps the best single--although incomplete--measure of the overall efficiency of the commodity system is the marketing margin defined as the retail value of the finished product less the equivalent farm gate value. The average farmers' share in prices paid by consumers has ranged between 62% and 67% in Punjab, 65% to 68% in Sindh, and 68% to 74% in NWFP (Government of Pakistan, 1990, p. 122). These are relatively high ratios by international standards-- suggesting that the overall commodity system functioned reasonably efficiently.

An analytically much more rigorous way of evaluating efficiency is to focus on the marketing margin (gross and net of costs) at each stage of the marketing process. By analyzing the marketing margins among and within each configuration and exchange channel, a clearer impression can be obtained of the performance of the actors and, more generally, of those specific characteristics of elements responsible for relatively high margins. The GOP study identifies five market channels in the Punjab and decomposes the total marketing margin within each

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[30]Some of these indicators are not entirely clear. An effort is made subsequently to identify specific and measurable indicators.

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channel into three components i) the share of the consumer price received by farmers; ii) the distribution of the gross marketing margin among the various intermediaries within each channel; and iii) the share of net margins to gross margins at each stage. This information is summarized in Table 4. Thus, for example, the first channel in Table 4 links farmers to beoparis, to processors, to wholesalers, to retailers. Along this channel, farmers receive 65.2% of the consumer price, beoparis 4.6%, processors 9.2%, wholesalers 9.6% and retailers 11.3% (adding up to 100%). Finally, to complete this example it can be seen that the net margin kept by e.g. retailers is 9.3% of the consumer price.

Some tentative inferences can be drawn from the GOP study and its extensive analysis of a significant number of distinct trade channels for wheat and rice. The average farmer's share tends to be greater in marketing channels i) where the number of intermediaries is less and ii) where farmers sell directly to the procurement centers. Both of these cases reflect a higher degree of vertical integration within configurations. Hence the efficiency of an overall commodity system can be improved by reducing the number of intermediary links along the chain, (i.e. through greater vertical integration); and by reducing the net margins obtained by each set of actors along the chain. A quick perusal of Table 4 reveals extremely high ratios of net margins to gross margins (varying between 82 % for processors and 96% for beoparis in channel 1). The GOP study warns that these high ratios do not necessarily mean high profitability (it is not clear whether depreciation and other costs of capital have been included under the cost item). In any case, there would appear to be scope for reducing net and gross margins in the overall price structure--as relatively high gross margins suggest economic inefficiency in terms of unreasonably high prices being charged for the marketing services being provided by the various intermediaries. In turn, high ratios of net to gross margins imply lack of competition in the configurations in which they occur.

Evidence relating to the degree of competition in the Pakistan wheat market is somewhat conflicting. The GOP survey of the foodgrain markets, in general, concludes that the number of participants is very large, barriers to entry are few, and a reasonable network for supplying market intelligence information

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Table 4

Percentage Shares of Farmgate Prices and of Marketing Margins in the Consumer Prices for Different Market Channels

%age of Consumer Prices - Wheat

	MARKET CHANNEL				
	Punjab				
	I	II	III	IV	V
Farm Gate	65.23	64.39	62.46	62.46	67.22
Farmer Cost	--	3.20	3.14	3.14	2.62
Beopari					
- Gross Margin	4.63	--	--	--	--
- Cost	0.19	--	--	--	--
- Net Margin	4.45	--	--	--	--
Katch Arhati					
- Gross Margin	--	2.27	--	--	--
- Cost	--	1.14	--	--	--
- Net Margin	--	1.13	--	--	--
Pacca Arhati					
- Gross Margin	--	--	4.26	5.97	--
- Cost	--	--	0.42	0.42	--
- Net Margin	--	--	3.84	5.55	--
Food Department					
- Gross Margin	--	--	--	--	--
- Cost	--	--	--	--	--
- Net Margin	--	--	--	--	--
Processors					
- Gross Margin	9.24	9.24	9.24	7.53	9.24
- Cost	1.73	1.73	1.73	1.73	1.73
- Net Margin	7.51	7.51	7.51	5.80	7.51
Wholesaler					
- Gross Margin	9.62	9.62	9.62	9.62	9.62
- Cost	2.02	2.02	2.02	2.02	2.02
- Net Margin	7.60	7.60	7.60	7.60	7.60
Retailer					
- Gross Margin	11.28	11.28	11.28	11.28	11.28
- Cost	1.96	1.96	1.96	1.96	1.96
- Net Margin	9.32	9.32	9.32	9.32	9.32
Total	100.00	100.00	100.00	100.00	100.00

Source: Government of Pakistan (1990), p. 123.

appears in place (Government of Pakistan, 1990, p. 18). Likewise Cornelisse and Naqvi (1987) find the wheat system relatively competitive. Yet the observed high ratios of net margins to gross margins indicate economic inefficiency as unreasonably high prices are charged for the services provided by the various intermediaries. "There is absence of integration in so far as each trader operates independently forming a link in a long chain of intermediaries" (Government of Pakistan, 1990, p. 17). The implication seems to be that competition resulting in low excess profits earned at any stage of the marketing process does not necessarily translate into overall efficiency.

In order to assess the extent of competition, the logical unit of observation ought to be at the configuration level. Although comprehensive information is missing, it is known that there seems to be little competition at the village level. Mushtaq (1971) pointed out that

> "the producer got the lowest net price in sales to the village dealers which was mainly due to the dilution of competition at the village level. This intermediary could, however, be made efficient by rendering the competition at village level more effective."

Interestingly the same study concludes that except for the village dealers, the profits of all other intermediaries were justifiable. Crow (1989) and Harriss (1982) suggest, likewise, that competition is limited at early stages of the rice marketing chain in Bangladesh and West Bengal, respectively--particularly as it affects small producers and traders (farias) who provide credit. Many of these traders appear to have strong bargaining power and to be able to segment the market among them.

The issue of appraising competitiveness and the existence of excess profits at any stage (i.e. within every configuration) along the commodity chain is, of course, crucial to an evaluation of efficiency. One recent approach that addresses this issue is the "analyse de filiÒre" (chain-link method) developed by French agricultural economists (Fabre, 1990; FAO, 1992). It is essentially "an accounting exercise which isolates specific levels and functions within the chain and attempts to assess the relative costs of each function" (FAO, 1992, p. 240). The chain-link approach takes into account only the physical costs involved in the chain (including the crucial capital costs) but does not

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calculate transactions costs. A potentially fruitful extension of the "chain-link" method would be to apply it at the configuration level. In this way, at least, a comprehensive accounting of production costs and revenues would be available for the various actors operating within a given configuration. The next step would then consist of estimating transactions costs within these exchange channels. This could go a long way in explaining why certain transactions (rather than others) occur within specific configurations. It would permit one to test the hypothesis that the observed transactions within any given configuration are those that minimize the sum of production and transactions costs for the actors involved.

In particular, a comprehensive accounting scheme designed at the level of the configuration could help identify those key characteristics of elements that affect directly and significantly the costs and revenues' ledgers of the participating actors in a given configuration. It could also help the government in the determination of benefit/costs ratios of different forms of government intervention (capital projects, policies and institutional change) on the various configurations constituting the commodity system. For example, the social profitability of the elimination of some links (intermediaries) in the marketing chain through the removal of binding constraints to vertical integration (such as the building of a farm to market network benefitting small farmers) could be computed. A strong case can be made that an appropriate marriage of the chain-link approach with the configuration framework could also help estimate and distinguish different types of efficiency (i.e. allocative, technical and transactions costs). We return to this issue in the concluding section.

Equity is an even more difficult concept to define and measure than efficiency--given its normative nature. The consensus seems to be that the system worked reasonably equitably--except at the two ends of the marketing chain. At the producer end small farmers are relegated to essentially two configurations, one with shopkeepers and the other with beoparis. In both instances characteristics of small farmers (e.g. minimum endowment of land, lack of collateral, limited information) combined with characteristics of the physical environment (inadequate transport infrastructure) and of the policy environment

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environment (sparse location of procurement centers and large minimum size lots) greatly circumscribed the choice of trade channels and the bargaining power of these small producers.

At the consumer end of the chain the configuration integrating ration card holders and ration shop keepers is only equitable to the extent that all ration card holders have easy and equivalent access to the ration outlets. This does not appear to be the case, as the locational pattern of ration shops is such that many consumers are discriminated against distance wise. Again, we shall touch on this question in the next section.

IV. CONCLUSIONS AND POLICY RECOMMENDATIONS

The configuration approach which has been described in this paper and applied to the case of the wheat marketing chain in Pakistan provides an operational framework to understand better the complexities of the exchange process. The interaction among actors trading a particular item and operating in a given environment gives rise to specific transactions. Transactions are directly mapped to the characteristics of the elements shaping the configurations in which they occur. We can now return to an examination of the relatively inefficient and inequitable configurations that were just identified at the polar ends of the marketing chain to illustrate briefly the potential policy usefulness of the approach. In the small producers/shopkeepers and small producers/beoparis configurations, the government can relax the restrictive nature of the policy environment by improving smallholders' access to procurement centers. This could be done through a combination of infrastructure projects (farm to procurement center roads), relocation of centers closer to areas where small farmers produce wheat; and reducing the minimum quantity of wheat which centers are allowed to purchase (minimum lot size is 950 kg.).

In the ration-holders/ration-shopkeepers configuration, the issue is to provide consumers more even and closer access to ration shops. The poverty characteristics of different geographical regions and neighborhoods could be used to decide where to locate ration shops. It should not be too difficult to design a more efficient and equitable locational pattern of ration shops. A key issue in the design of different types of government interventions is the benefit/cost

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implications--a question that is discussed subsequently.

At the more general level, the analysis in section II identified the two most constraining sets of elements to the efficient functioning of foodgrain markets in Africa as compared to Asia as the backward nature of the infrastructure system and the prevailing public policies and institutions. Two-thirds of the absolute difference in marketing margins in the African context relative to Asia were accounted for by these two sets of elements. Some marketing studies in Eastern Africa indicate that transactions costs to overcome trade restrictions (originating from rules, regulations and practices of public agents inimical to growers and traders) can be as high as 20% of marketing margins. Improving infrastructural facilities could contribute significantly to increasing incentives for both producers and consumers. Better transport facilities, by reducing the transport margin, could lead simultaneously to a reduction in the prices paid by consumers and an increase in the farmgate prices. The same is, of course, true of a more enlightened and less restrictive policy environment that would lower transactions costs.

It has been suggested that a reform program--particularly appropriate to the African context--might consist of i) gradual transition to private trading with minimal regulation and control; ii) policies to improve the legal framework, information flows, and other aspects of trade transactions; iii) a heavy commitment to properly formulated infrastructural development; and iv) the continuation of select public interventions in marketing in areas of extremely backward infrastructure where thin and unstable markets prevail (FAO, 1992, p. 227).

The configuration framework is helpful in suggesting answers to a number of interrelated questions such as what are the appropriate components, sequencing and pace of a reformed package; and what are the benefit/costs implications of altering restrictive elements affecting the operation and performance of the chain of configurations that constitute an entire commodity system.

In conclusion, the major implications of the configuration approach developed in this paper for policy analysis appear to be the following. First, insofar as this approach points to the role of a multiplicity of factors and

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their interrelationships in shaping a given transaction, it opens up a whole range of potential policy instruments that can be used to bring about change. These instruments range from altering credit availability to actors, improving communications and transport networks, storage facilities and procurement policies to price reform. This, in turn, has two implications:

a) it strengthens and clarifies the argument that price reform is only one amongst the many policy instruments available and thus an intervention that focuses on price reform alone can have only limited success. This emphasizes a need for designing a policy package of complementary and reinforcing measures rather than tinkering with one or two policies at a time. In particular, much of the critique of structural adjustment programs focuses on this argument. One striking example is brought out by a study of Mozambique by Steven Kyle (1991).

> "The extreme nature of the price reforms with increases of between 500% and 1000% for most agricultural products and devaluation of the exchange rate of more than 2000% in dollar terms over the three-year period 1986-89, together with the lack of complementary inputs, make Mozambique an interesting case study of the possibilities and limits to price reform in structural adjustment programs.";

b) sound policy analysis to be effective needs to be grounded in underlying political reality. However, this need not always lead to pessimism regarding the role of economists in policy formulation. The importance of an integrated framework like the present, is to open up for the policy maker a whole range of policy instruments with varying degrees of political acceptability and feasibility. For example, in the case of India, given the strong farmers' lobby, tinkering with procurement policies is politically very sensitive, and at the limit, politically infeasible; while improving infrastructural networks is more acceptable.

Secondly, if the reform process is conceived of as a "package" then an important question is that regarding the proper sequencing of the reform. Often asked questions are whether increased scope for privatization should occur before price liberalization; is it advisable to wait for infrastructural investments which have long gestation periods to occur before price liberalization and so on? The configuration approach is particularly useful in dealing with these questions since it highlights the interrelationships among the various elements and the

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binding constraints. For example, in the case of most African countries characterized by inadequate marketing networks, price liberalization first is hardly expected to yield much supply response; on the other hand, it is likely to lead to instability in agricultural incomes. If the binding constraint to increasing output is a poor infrastructure network (inadequate roads and storage facilities), a policy of raising producer prices (i.e. getting the prices right) would be to no avail; to be effective, the former intervention has to precede the latter. The de-emphasis of project lending in favor of program lending by donor agencies is a further obstacle to the implementation of a desirable sequence of measures when infrastructure projects are critical to increasing output and reducing marketing costs. The pace of the reform process is also of crucial importance in its impact on the performance of markets. The impact of a structural adjustment programs on efficiency and equity during the transition period have to be estimated. In particular, the configuration approach, within limits, may have something to say about measures which could reduce the impact of the stabilization and adjustment process on vulnerable groups in the transitional stage.

Thirdly, given the pressure on government budgets, the need for carrying out an indepth benefit-cost analysis for various types of government intervention cannot but be overemphasized. An appropriate cost based approach for government intervention needs to be designed to estimate the impact of alternative projects, policies and institutional changes on different types of efficiency (allocative, technical and transactions costs) and the performance of a commodity system, as a whole (for a good effort along these lines, see Smith and Thompson, 1991, pp. 73-87). The contribution of the configuration approach is that it provides an analytical framework to take into account transaction costs which are at the crux of market fragmentation. Such benefit-cost analysis can best be done at the configuration level--particularly when the latter approach is complemented by a comprehensive accounting scheme such as the previously mentioned chain-link method--appropriately modified to incorporate and measure transactions costs.

Fourth, the configuration approach analyzes how transactions are shaped by the various characteristics of the underlying exchange channels. The

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decomposition of a whole marketing chain into the various exchange channels appearing along it, allows one to analyze the impact of policy changes (affecting corresponding elements) on each configuration separately and jointly. Thus, measures contributing to a more efficient functioning of individual and distinct configurations can be designed. Alternatively, measures contributing to the elimination of some intermediary links and greater vertical integration--through a reduction in the number of configurations can also be analyzed and identified. The context-specific nature of the elements shaping markets in developing countries, which has been amply illustrated in this paper, points to the futility of blanket policy recommendations. At the same time, a comparison across countries and regions of the characteristics of key elements shaping exchange configurations and transactions could be useful in pointing out what are the similarities and differences in the underlying structural characteristics of various economies and how these translate into differences in the performance of markets.

Bibliography

Abbott, J. (Ed.)(1993) Agricultural marketing and development: readings on agricultural marketing in developing countries, Oxon: CAB International.

Ahmed, R. and N. Rustagi (1984) "Agricultural Marketing and Price Incentives: A Comparative Study of African and Asian Countries", International Food Policy Research Institute, May.

Alderman, H. (199) "Intercommodity Price Transmittal: Analysis of Food Markets in Ghana", (mimeo).

Ali, M.M. and C & A. Ahmed (1979) "Marketing of Farm Products and Farm Inputs in Barani Punjab and NWFP," Punjab Economic Research Institute, Lahore, Publication No. 176.

Bates, R. (1981) Markets and States in Tropical Africa, Berkeley, University of California Press.

Bardhan, P. (1989) The Economic Theory of Agrarian Institutions, Clarendon Press, Oxford.

Cornelisse, P.A. (1984) "Wheat Market Flows in the Punjab", The Pakistan Development Review, Vol. XXIII, No. 1.

Cornelisse, P.A. and H. de Kruijk (1985) "Consumption and Trade of Wheat and Flour in Pakistan, The Role of Public and Private Sectors", The Pakistan Development Review, Vol. XXIV, No. 2.

Cornelisse, P.A. and S.N.H. Naqvi (1987) The Wheat-marketing Activity in Pakistan, PIDE and Erasmus University, Islamabad.

Cornelisse, P.A. and E. Thorbecke (1991) Markets and Transactions in Developing Countries, Chapters 1-3 (book being prepared for Institute for Policy Reform, Washington, DC).

Crow, B. (1989) "Plain Tales from the Rice Trade: Indications of Vertical Integration in Food Grain Markets in Bangladesh", The Journal of Peasant Studies

David, P.A. (1988) "Path-dependence: Putting the Past into the Future of Economics", Stanford University, Institute for Mathematical Studies in the Social Sciences, Technical Report No. 533.

deJanvry, A., M. Fafchamps and E. Sadoulet (1991) "Peasant Household Behavior with Missing Markets: Some Paradoxes Explained", The Economic Journal 101(409), November.

Dijkstra, T. and T.D. Magori (1991) Horticultural Production and Marketing in Kenya, Part 1, Food and Nutrition Studies Program, Report No. 41-1991, Ministry of Planning and National Development, Nairobi and African Studies Center, Leiden.

Edwards, S. and G. Tabellini (1991) "The political economy of fiscal policy and inflation in developing countries: an empirical analysis", World Bank working paper WPS 703.

Fabre, P. (1990) Note de Méthodologie Générale sur l'Analyse de Filière, FAO, ESPT.

Faiz, F.M. (1985) Prices and the Green Revolution: Some Reflections on the Performance of Private Agriculture Markets in Pakistan", The Pakistan Development Review, Vol. XXIV, No. 2.

FAO, (1992) Agricultural Price and Marketing Policy: Government and the Market, Policy Analysis Division, ESPT, Rome.

Faminov, M.D. and B.L. Benson (1990) "Integration of Spatial Markets", American Journal of Agricultural Economics, Vol. 72, No. 1, Feb., pp. 49-62.

Farruk, M.O. (1972) Structure and Performance of the Rice Marketing System in East Pakistan, New York, Cornell University Press.

Government of Pakistan, Ministry of Food, Agriculture and Cooperatives, (1990) Marketing Margins of Selected Crops in the Context of Farming Systems and Ecological Zones, Volumes 1 and 2, Lahore, January.

Green, R.H. (1987) Stabilization and Adjustment Policies and Programmes - Ghana, Country Study !, Helsinki, WIDER.

Harriss, B.   (1979) "There is Method in My Madness: Or is it Vice Versa? Measuring Agricultural Product Performance."   Food Research Institute Studies, Vol. 17, pp. 197-218.

Harriss, B. (1982) "Food Systems and Society: The System of Circulation of Rice in West Bengal", CRESSIDA Transactions, Vol. 2, Nos. 1 and 2, pp. 159-248.

Islam, et al. (1985) A Benchmark Study of Rice Marketing in Bangladesh.

Johnston, B.F. and P. Kilby (1975) Agriculture and Structural Transformation: Economic   Strategies   in   Late   Developing   Countries,   London: Oxford University Press.

Knudsen, O., J. Nash, J. Bovard, B. Gardner, and L.A. Winters (1990) Redefining government's role in agriculture in the Nineties, Washington, DC: Country Economics Dept., World Bank.

Kyle, Steven, (1991). "Economic Reform and Armed Conflict in Mozambique", World Development, Vol. 19(6).

Lecaillon, J., Morrisson, C., Schneider, H. and Thorbecke, E. (1987). Economic Policies and Agricultural Performance of Low Income Countries.   Paris, Development Centre Studies, OECD.

Lele, U.J.   (1971) Food Grains Marketing in India: Public Policy and Private Performance, Cornell University Press, Ithaca, NY.

Lucas, R.E. Jr. (1980)   "Rules, Discretion and the Role of the Economic Advisor." In: S.Fisher, Ed., Rational Expectations and Economic Policy, Chicago: University of Chicago Press.

Monke, E. and Todd Petzel (1984) "Market Integration: An Application to International Trade in Cotton".   American Journal of Agricultural Economics, Vol. 66, pp. 481-87.

Mushtaq, A. (1971) "An Economic Appraisal of Institutional Framework in the Marketing of Agricultural Commodities," Faisalabad.

Naqvi, S.N.H. and P.A. Cornelisse (1986) "Public Policy and Wheat Market in Pakistan", The Pakistan Development Review, Vol. XXV, No. 2.

North, D. (1981). Structure and Change in Economic History, New York, Norton.

Persson, T. and G. Tabellini (1991) Is inequality harmful for growth?: theory and evidence, Oxford: University of Oxford Press.

Pyatt, G. and E. Thorbecke (1976) Planning Techniques for a Better Future, ILO, Geneva.

Roemer, M. (1986) "Simple Analytics of Segmented Markets: What Case for Liberalization?, World Development 14(3):   .

Smith, L.D. and A.N. Thompson, (1991) "The Role of Public and Private Agents in the Food and Agricultural Sectors of Developing Countries," FAO Economic and Social Development Paper 105, Rome.

Streeten, P. (1991) "Markets and States: Against Minimalism", mimeo, paper prepared for a conference on The Role of the State, Markets and Civil Institutions in Rural Development, Cornell University, December.

Thompson, A.M. (1991) Institutional Changes in Agricultural Product and Input Markets and Their Impact on Agricultural Performance. FAO, Economic and Social Development paper No. 98, Rome.

Thorbecke, E. (1991) "Impact of State and Civil Institutions on the Operation of Rural Market and Non-Market Configurations", paper prepared for a conference on The Role of the State, Markets and Civil Institutions in Rural Development, Cornell University, December 1991 and submitted for publication World Development 1992.

Thorbecke, E. (1992) Adjustment, Growth and Income Distribution in Indonesia, OECD Development Centre, Paris.

Tinbergen, J. (1956) Economic Policy: Principles and Design. North Holland Publishing Company, Amsterdam.

USAID, (1991) Office of Technical Resources, Bureau for Africa, Publication Series No. 91-1, A Strategic Framework for Promoting Agricultural Marketing and Agri-Business Development in Sub-Saharan Africa, Washington, DC.