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**Agricultural Tenancy And Contracts: An Economic Analysis
of the Strange Farmer System in the
Gambia.**

by
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(ABSTRACT)

This dissertation explores, both theoretically and empirically, the role of strange farmers in the Gambia's mono-cash crop economy and analyzes the structure of strange farmer contracts within the context of rural production relations; i.e. the relations of economic agents to resources of production in terms of their use and ownership rights and the relations between economic agents as principals (i.e. landlords) and agents (i.e. workers; strange farmers). Strange farmers, the migrant laborers who come from the West African hinterland to farm in the coastal areas of the Senegambia region due to certain transaction cost advantages, constitute a dynamic population adjustment to West Africa's spatial, unequal spread of resources. It is argued in this study that the reason "strange farming" has continued to persist is because it is flexible and adaptable to the prevailing agroclimatic conditions and endowments of the West Africa region, and to the economic changes induced by the interplay of internal (the government; technology) and external (e.g., world primary commodity markets) institutional and market forces.

Detailed analysis of the strange farmer contract (a contract of "input sharing"), as contrasted with wage, fixed-rent, and sharecropping, is presented; and emphasis is placed on the "strangeness" of the strange farmers (the fact that they are non-residents of their farming areas) as the distinguishing feature of the contract. Our analysis considers how environmental and idiosyncratic factors such as information, risk, and incentive constraints impinge on agents in this environment and how alternative models of the strange farmer system explain how such problems are circumvented. The study concludes by examining the efficiency and (briefly) the equity implications of strange farming, and argues that strange farming performs the vital economic role of providing otherwise labor deficient landlords with a steady and timely supply of labor throughout the farming season and indeed circumvents the contract enforcement and shirking problems posed by a second-best environment.

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And what you do not know is the only thing you know.
T.S. Eliot

Peasants are "efficient but poor."
T.W. Schultz

To think, a mere plague of finite chaos.
Wole Soyinka

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CHAPTER 1
INTRODUCTION

Introduction:

Studies of agricultural tenancy in less developed agrarian economies have gained renewed interest among development economists. This revival is partly due to a renewed interest in short-run problems of a micro-theoretic nature and partly due to a dissatisfaction with the earlier popular long-run growth models in their focus on aggregate behavior (and their relative neglect of, to borrow Thomas Schelling's term, the micro-motives of macrobehavior). The revived interest in agricultural tenancy builds on a long tradition dating back to Adam Smith and Marshall and continues into the contemporary works of Cheung (1969) and Stiglitz (1974). This dissertation continues in this tradition. Its focus is on a particular migrant labor system and tenancy in the Gambia called "Strange farming," which has persisted since the nineteenth century.

"Strange farming" or "Sama Manila" (in Mandinka) or "Nawetane" (in Wolof) is a tenancy arrangement pervasive in the West African region of Senegambia, which involves the strange farmer's (migrant laborer's) supply of labor to a host's (landlord's) plot in exchange for a temporary exclusive use of a plot of land. Strange farmers are migrant laborers who come from a number of West African countries; mainly Senegal, Mali, Guinea, and Guinea Bissau, into the Gambia to farm. The strange farmer

system is often confused with sharecropping; but it is an arrangement of "input sharing" through which the migrant laborer (strange farmer) operationally gets a plot of land and renders services to his landlord as "labor rent." In both Senegal and the Gambia (the constituent parts of the region of Senegambia), strange farming is synonymous with cash crop farming, primarily the farming of groundnuts (peanuts), and its over a century old development fuelled the growth of Senegambia's groundnut trade and, understandably, contributed significantly to the region's economic development. In what follows, we shall provide a general outline of the concerns of this dissertation.

1.1 PROBLEM, OBJECTIVES, AND JUSTIFICATIONS:

Some have called for reform of the strange farmer system in the Gambia. Tenancy reforms predicated on lack of information or poor information can have disastrous outcomes. Not all particular forms of tenancy represent practices associated with backward agriculture; some forms of tenancy are rational responses and adaptations to particular economic problems and, in this sense, serve a useful purpose. If this is true, then a systematic study of what gives rise to the strange farmer system, the historical and institutional factors which condition and create it, and an explanation of the structure of strange farmer contracts and strange farming could provide useful insights which may have prescriptive implications.

The objectives of this study are: i) to provide an economic history of the evolution of the strange farmer system, concentrating on a factual description of the migrants' origins, destinations, and distributions; their numbers; and motives for migration; ii) to provide a descriptive survey and analysis of the agricultural resource environment of the Gambia, focussing primarily on strange farmers, with a detailed description of the system of land tenure and use in the Gambia, and the forms and organization of labor; iii) to analyze why alternative contractual arrangements may be suboptimal and to explain why the strange farmer system is the dominant tenancy form in the Gambian environment; and iv) to present a model of the strange farmer system and to examine its descriptive and prescriptive implications.

Strange farmers, we should note, represent an adjustment to the unequal distribution of resources between the interior and coastal regions of West Africa. Cash crops (mainly groundnuts), which the strange farmers grow, have to be shipped as exports through coastal ports. In this sense, the high transaction costs of farming in the interior, such as of transportation, induce farmers in the interior to opt for the cheaper farming strategy of migrating to coastal areas (where land is also more fertile) rather than incur the prohibitive costs of farming in the interior, which entails the costly process of transporting produce to coastal ports (Jarrett 1949; Swindell 1985).

A study of the strange farmer system is important because there is much concern among government officials in sending and receiving areas about the economic and social consequences of the flow of such migrant

laborers. Some analysts argue that this migrant labor system provides opportunities for strange farmers to acquire greater income. This view accords well with the results of the internal migration literature (à la Todaro), which explain expected net income differentials between origin and destination areas as the prime motivation for migration. Others argue that strange farming drains the sending areas (ie. mainly Mali, Senegal, Guinea) of their humanpower and correspondingly exerts pressures on the limited resources, especially food, in the receiving areas (ie. in this case, rural Gambia) (Swindell 1985). Whatever the reasons for the pros and cons about the desirability of such a migrant labor system, it is clear that strange farmers continue to play a significant role in the Gambia's groundnut farming. The need for further understanding of the complex of economic institutions, agents, and processes which led to the emergence and development of the strange farmer system and its role in the Gambia's cash crop farming is the primary justification for this study.

1.2 METHODOLOGY:

The approach used in this dissertation is transaction cost economics and the use of descriptive statistics. The transaction cost approach deals with the "economizing properties of alternative institutional modes for organizing transactions (Williamson 1979, p.234)." It emphasizes the role and performance of institutions in structuring complex, long term relationships. The approach is a complement, rather than substitute, to

the neoclassical framework of utility and/or profit maximizing economic agents, but its framework is much broader, since it relaxes the neoclassical assumption of frictionless efficiency and treats production arrangements as hierarchical governance structures (Pollak 1985, pp. 582-583). As a framework of analysis, the transaction cost approach delves into such problematic contracting details as the time and resources expended in writing, monitoring, and enforcing agreements and treats them as costly events with efficiency implications.

Two reasons justify this analytical approach. One is that the limitations of data warrants that we rely on individual survey data provided by the Central Statistic Division of the Gambia and also on an assortment of papers on the strange farmers written mainly by British economic geographers and demographers and scattered in various journals. The second reason is that a descriptive analysis utilizing transaction cost economics provides greater flexibility and a more realistic explanation and understanding of strange farming than conventional models of utility maximizing and/or profit maximizing micro-entities.

1.3 ORGANIZATION OF THE STUDY:

Chapter II presents a definition and an economic history of the evolution of the strange farmer system. Chapter III provides a descriptive analysis of the agricultural resource environment of the Gambia, emphasizing in particular its relevance to strange farmers. Chapter IV analyzes

why alternative agricultural contracts are suboptimal in this environment and why the strange farmer system is the dominant one. Chapter V presents a model of the strange farmer system and examines its implications. And chapter VI provides conclusions of the study.

CHAPTER 2

STRANGE FARMERS AND THE DEVELOPMENT OF THE GAMBIA'S PEANUT

TRADE

This chapter provides a definition and a historical background for the understanding of the Strange Farmer phenomenon in the Gambia. The unusual name "Strange Farmers" is derived from the observation that these seasonal migrants are "strangers" or "non-residents" of the receiving areas they farm in. J.H. Palmer (1946, p.1) notes:

The name is curious since it conjures up visions of eccentric agriculturalists or exotic forms of agriculture, but it has received official recognition in more than one local ordinance. In Mandinka, the strange farmer is "Sama manila," literally "rains (or summer) abroad," a much more descriptive title.

The first section of this chapter provides a brief description of Gambian agriculture and demography. (More detailed description of the agricultural environment will be dealt with in the subsequent chapter). The second section provides a definition of the Strange Farmer system and distinguishes it from sharecropping, the contractual arrangement it is frequently confused with. The third section provides an economic history of the evolution of the strange farmer system, focussing on a factual description and analysis of the migrants' origins, destinations, and distributions; their numbers; economic roles; and motives for migration.

2.1 AGRICULTURE AND DEMOGRAPHY:

The Strange Farmer System consists of internal seasonal migrants (albeit a sizable number of them come from mainly the neighboring West African countries of Senegal, Mali, Guinea, and Guinea Bissau) who contribute significantly to the Gambia's agricultural output. A 1974-75 Agricultural Sample Survey, for example, reveals that 259,000 acres (103,000 hectares) were under cultivation and, of this total acreage, 43,000 acres (17,000 hectares) were cultivated by strange farmers (Swindell 1978, p. 4). Some of these seasonal migrants, who come from the neighboring countries, can be technically labelled as international migrants, but their behavior and the sets of opportunities they face reflect more significantly internal migrant behavior. Indeed, the political, legal, and economic boundaries these migrants cross are artificial and arbitrary, having been entrenched only with the advent of nineteenth century European colonialism.

The Gambia's land area is estimated at 11 thousand square kilometers, with a population estimated to be about .7 million around mid-1982. Even with an average population growth rate of 2.6 percent, the distribution of the Gambia's population has been sparse-- with the bulk of the labor force (85% in 1960 and 79% in 1980) in agriculture. The share of agriculture in the Gambia's gross domestic product is estimated at 58%, with peanuts (in British, groundnut) accounting for 37% of this share, providing for both public revenues and foreign exchange. Food crops such as millet, sorghum, and rice account for most of the residual of the

Gambia's aggregate crop-output, while fish and palm kernels constitute both products for subsistence and also means for cash generation (TSDSA, 1984, WBP, pp. 57-77).

The Gambia's agriculture is rain-fed with much of the agricultural output coming from small-scale traditional family farms. The total dependence of Gambian farmers on seasonal rainfall subjects local farming activity to the vagaries of nature and, for that matter, adds to the precariousness of local economic activity. The two main seasons, which constitute the year, are rainy and dry; the former begins around April and ends in December and the latter begins in January and ends in March. During the rainy or farming season, agricultural labor demand, as expected, is at its peak, and discrepancies in population-land ratios necessitates that land-surplus local farmers try to maximize the efficiency of their relatively more scarce input; ie. labor.

2.2 DEFINITION OF STRANGE FARMERS AND ITS DISTINCTION FROM CROPSHARING:

The Strange Farmers of the Gambia constitute a significant factor in relaxing the labor constraints faced by land-surplus local farm families in the receiving areas. They not only acquire cash incomes as seasonal migrants, but also provide the "extra labor" in the many local farms of the receiving areas of the Gambia where labor scarcity is such a limiting factor to agricultural production. The strange farmer system can be

described as an agriculturally based migrant labor system characterized by a bilateral negotiation between client-migrant and host-landlord, involving the provision of labor in exchange for the temporary use of land.

Ken Swindell (1978, p.4-5) provides a useful definition:

The Strange Farmers, or navetanes as they are called in Senegal, have been coming into Senegambia since the beginning of the nineteenth century, in numbers which at times have exceeded 100,000 per annum. The Strange Farmer system rests on a host-client basis, whereby the local farmer takes in a migrant on the understanding that he will work for him between two and four days per week. The stranger in return is given a plot of land on which he works the rest of the time, cultivating groundnuts which he will sell at the end of the season. During his stay the host farmer provides the stranger with food and tools, together with a hut within the family compound.

The host-client arrangement mentioned above may remind us of the partnership in a joint enterprise in sharecropping. But there is a basic difference between the two contractual arrangements traceable to a difference in contractual stipulations. In sharecropping, output and its sharing arrangements are the focus of the contract. But in the strange farmer system, inputs are shared. Swindell (1978, p.5) points out that the contractual focus of labor sharing, instead of crop sharing, further distinguishes strange farmers from other agricultural workers. In sharecropping, we should note, two or more separate parties jointly combine their individually owned resources to produce a mutually agreed upon output, the actual output to be shared according to certain percentages as returns for productive resources sacrificed (Cheung 1969, p.3). In strange farming, however, the contract represents a migrant's adjustment to the problem of labor shortage and land surplus. In this sense, the advantage to the host-farmer is that he receives supplementary

labor inputs without any need for cash payment of wages; while the migrant, depending on the size and quality of his peanut farm, will produce his own crop, and receive his plot-specific reward at the end of the harvest period.

In the following section, we will analytically examine the economic and historical evolution of this migrant labor system. We divide our analysis into three periods, starting with the introduction of peanuts in the Gambia.

2.3 1820-1894: STRANGE FARMERS AND THE BEGINNINGS OF THE GAMBIA'S PEANUT TRADE

The inflow of strange farmers (migrant laborers) into the Gambia has been directly linked to the development of the Gambia's peanut trade. Peanuts (in British, "groundnuts") and its commercialization generally in the Upper Guinea Coast of West Africa and specifically in the Gambia are a consequence of expanded demand for oils and fat in the then industrializing countries of Europe, especially in France's soap industry, a "reflex action" of the Industrial Revolution (Gray 1966, p.380; Brooks 1975, p.29). The Europeans' interests in this far-flung West African region were motivated by both commercial and imperial motives. The Europeans, not only traded in a variety of commodities such as slaves, gold, ivory, worked iron, etc. with the indigenous inhabitants of the region, but eventually established colonies (Brooks 1975, pp. 29-30),

which received official sanction in Europe's notorious Berlin 1884 Conference, which resulted in the colonial partition of Africa.

In the Upper Guinea Coast, peanuts (*arachis hypogaea*)-- a legume indigenous to South America or, more specifically, Brazil-- was introduced to the region through Portuguese agency in the sixteenth century (Brooks 1975, p.31). Precisely where it was introduced and for what reasons are not obvious; but it is not unreasonable to suppose that its introduction fitted with the broader colonial drive for overseas raw materials. Whereas "*arachis hypogaea*" (peanuts; groundnuts) is not indigenous to the Upper Guinea Coast, "*voandzeia subterranea*" (Bambara groundnut; ground pea) -- a nut of similar species-- is indigenous to the area, especially in Mali and the Bijago Islands (Brooks 1975, p.31) and familiarity with this nut may have enhanced the commercial diffusion of "*arachis hypogaea*" in the area (Swindell 1980, p.90).

Initial records of the peanut export trade in the Gambia date as far back as 1829 and 1830, when peanuts were reportedly shipped to the West Indies (Brooks 1975, p.32). One hundred baskets of peanuts at half a dollar each were reportedly shipped in 1830, followed four years later by 213 baskets and, in 1835, 47 tons of peanuts (Palmer 1946, p.1; Brooks 1975, p.32). In 1835, out of the 47 tons exported, only one went to Britain, which indicates the late demand and entry of England and also America into the West African peanut trade. However, in the subsequent years, increased demand from Britain and America expanded the growth and commercialization of peanuts along the Gambia river (Gray 1966,

p.381). To show the pattern of rapid growth of the Gambia's export trade in peanuts, we present:

Table 1. Gambia Peanut Exports 1834-51; Source: Brooks (1975, p.34)

Year	Total Exports '£'	Unshelled Nuts "tons"	Total Value '£'
1834	74033	213 baskets	23
1835	91368	47 tons	200
1836	147732	130	1558
1837	138226	671	8053
1838	129498	669	8021
1839	162789	810	9795
1840	124669	1128	13531
1841	115824	2304	26235
1842	149133	--	25824
1843	134513	--	31053
1844	136745	--	36001
1845	154816	3534	42397
1846	163082	5661	67155
1847	178112	8100	95659
1848	158190	8636	103778
1849	107802	4327	51923
1850	--	--	-- --
1851	186404	11095	133133

The rapid increase in the Gambia's peanut exports is illustrated by the discrepancies in the 213 baskets reported in 1834 to the 47 tons in 1835; 130 tons in 1836; and 671 tons in 1837. By the 1840s, peanut exports had risen to thousands of tons annually valued at thousands of pounds sterling (Brooks 1975, p.35). Throughout this phase, Gambian farmers and middlemen exhibited remarkable entrepreneurial skills, which enhanced the viability and success of the Gambia's export trade, a phenomenon unrivalled in the Upper Guinea Coast (Brooks 1975, p.35).

The expansion of the Gambia's peanut trade in the 1800s is due not only to local entrepreneurship, but also in part to the British and French pioneering efforts at finding industrial uses for peanuts and in part to the American's relish for the roasted nuts (Brooks 1975, p.35). In 1859, for example, over 13,000 out of 15,000 tons of the Gambia's exported peanuts went to France or its colonies; 600 tons to the United States; and the residual went to Britain (Gray 1966, p.381). In the United States, in particular, the spectacular growth in the peanut and hide trade with the Gambia came about with the abrogation of the British Navigation acts in West Africa and the equalization of import duties on British and foreign imports in the Gambia in 1835 (Brooks 1975, pp. 35-36). Indeed, from 1837 to 1841 American imports dominated the Gambian market (even though peanuts were being grown in insufficient quantities locally in the American South first, by slaves and then, subsequently, by freed blacks and some white farmers). The prosperous peanut trade with the Gambia, however, grew to a halt with the imposition of a U.S. tariff in 1842, which

discriminated against foreign exporters of peanuts in favor of domestic American producers (Brooks 1975, pp.36-37).

The expansion of the peanut trade in the Gambia also resulted in the advent and development of the strange farmer phenomenon (Palmer 1946, p.1; Gray 1966, p.383). Governor MacDonnell reported in 1852 that strange farmers, who primarily came from the interior down to the lower river Gambia for two or three years, grew most of the peanuts (Palmer 1946, p.1; Gray 1966, p.383; Robertson 1987, p.210). These farmers mainly came from neighboring West African countries, including the Futa Jallon area, and hired land from the various chiefs, planted peanuts and, after the harvest sales, used their incomes to purchase european (manufactured) goods before they returned home. The movement of strange farmers from the interior to the coastal areas is attributable to the high transaction costs (e.g. transportation) of farming inland. As Jarrett (1949, p.654) notes, "It is, in short, cheaper for the farmer to move himself than pay for the transport of his produce from the more remote hinterland." Transportation costs were high because, during this period, much of it depended on human portorage. Hence, it is estimated that the transport of 100 tons of produce per month over a 100 mile distance would require 2000 men, a non-sustainable requirement given the region's meager population (Jarrett 1949, p.654). In stark contrast, an average railroad train could do the transport work of at least 15,000 men for approximately one fifth of the cost (Jarrett 1949, p.654); albeit, we should note, much of Senegambia, till this day, has no railroads.

The relative inexpensiveness of human mobility (as exemplified in strange farmers) as contrasted with the costly portability of produce provide the incentives for strange farmers to follow their trail of "wanderlust" (Gray 1966, p.383; Jarrett 1949, p.654). Strange farmers motivation to migrate may be explained in terms of "push" and "pull" factors-- population pressure and underemployment in origin areas against labor supply and demand in receiving areas-- and expected income differentials (Collins 1976, p.41). In a more descriptive sense, strange farmers' motivation to migrate range from the economic possibilities of earning increased income at destination areas (to be used for personal needs such as dowry, debt retirement, or assisting relatives or for purchasing european-made goods) to the psychological possibilities of fulfilling "a youthful desire to break away from family ties and routine work (which entails poor remuneration) and a longing to see other places and mix with strangers (Palmer 1946, p.2; Jarrett 1949, pp.652-653; Gray 1966, p.383)." Whereas economic factors can be argued to preponderate in explaining strange farmer behavior, we cannot totally ignore socio-psychological factors since they provide a residual explanation for aspects of strange farmer behavior not explained by the constraining influence of income and resource scarcity.

We should finally note that the emergence and development of strange farmers and strange farming provided a basis for revenue generation for local and colonial authorities. Chiefs, "kings," and alcaides acted as tax collecting and tax benefiting intermediaries between the strange farmers and the colonial authorities. The British colonial au-

thorities, in particular, were concerned about the level of the tax in the Gambia, fearing that too high a tax might induce strange farmers to substitute their destinations (farming areas) into French territory (i.e. Senegal) (Swindell 1980, p.98). In 1895, Governor Llewellyn proposed a hut or yard tax, which was formalized in an Ordinance which included the strange farmers paying a tax of 2 shillings each to the colonial government (commissioners) through the collection-agency of the alcaides (Swindell 1980, pp. 98-99).

We now turn to the period following 1895, and examine the evolutionary development of strange farmers as an economic adaptation to West Africa's spatial resource disparities.

2.4 1894-1945: COLONIAL RULE, PEANUTS, AND MIGRANTS

The European "scramble" for West Africa received official sanction with the collaborative partition of the continent in 1884 and the creation of rival spheres of influence, particularly between the English, French, and Portuguese, which, to this day, is West Africa's colonial mosaic. The introduction of colonial rule in West Africa "pacified" the region (Robertson 1987, p.210), but only in a perfunctory sense, since some ethnic ("tribal") groups were deliberately separated by artificially imposed borders; and competitive ethnic groups, that would otherwise not live together, were brought under the authority of a single colonial state. In addition, the "pacification" of West Africa opened the region to a

"balkanized" political economy, in which "native" rivalry is subsumed under and substituted for with the rival, expedient interests of the European colonial powers. Trade in West Africa grew during this period, and peanut production in the Gambia, in particular, trebled, which was concomitant with an increased influx of migrant farmers whose numbers impressed the colonial government (Robertson 1987, pp. 210-211).

The simultaneous growth of the Gambia's peanut trade with the influx of strange farmers is fairly well documented. From 1912 to 1946, the average number of strange farmers was 14,000; which peaked in 1915 when their number totalled 32,220 (Palmer 1946, p.1). Also, between 1912 and 1948, the number of strange farmers continued to fluctuate with no apparent pattern between it and the volume of exports. The table below illustrates this point:

Table 2. Strange Farmers and Export of Peanuts; Source: Jarrett (1949, p.651).

Year	Strange Farmers	Peanuts (Tons)
1912	6525	64196
1913	9940	67404
1914	14908	66885
1915	32220	96151
1916	9315	4636
1917	20727	74300
1918	20509	56490
1919	22440	70290
1920	24150	84037
1921	22048	58273
1922	20566	62978
1923	17383	62564
1924	14188	56980
1925	14652	46583
1926	13555	57344
1927	17237	65107
1928	20640	74442
1929	18874	56355
1930	16592	74761
1931	9736	66811
1932	16513	37315
1933	14537	67370
1934	8332	71919
1935	13341	44712
1936	9754	49104
1937	13479	66566
1938	9195	46651
1939	4643	48925
1940	4890	39188
1941	3741	40318
1942	2585	15651
1943	5995	17756
1944	10793	27538
1945	19979	41094
1946	13263	37772
1947	14662	54245
1948	--	70500

It would seem reasonable to anticipate some significant correlation between the number of strange farmers in a given year and the volume of peanut exports in the subsequent year, since peanuts grown and harvested in one year are not exported until the early months of the subsequent year; ie. in what is locally called the "trading season." But Jarrett (1949) notes that no such correlation is discernable from the above table. For example, the figures above illustrate that, in 1935, there were 13,341 strange farmers and an export of 49,104 tons of peanuts in 1936; but in 1936, there were 9,754 strange farmers and an export of 66,566 tons in 1937, and in 1937 there were 13,479 strange farmers and an export of 46,651 tons in 1938 (Jarrett 1949, pp. 651-652). Our results, however, reveal the opposite. Performing a simple correlation analysis between the volume of peanut exports in one year and the number of strange farmers the previous year and repeating the same test with the number of strange farmers in the same year revealed significant Pearson correlation coefficients of 0.44612 and 0.63925 respectively; thus not refuting our suspicions. We, however, cannot infer causality from this result. A more sophisticated (i.e. regression) analysis of the causal relationship between the volume of peanut exports and the number of strange farmers (and also the year) supports a significant correlation between the variables.

The following tables show the results of our linear regression analysis of the causal relationship between the volume of Gambian peanut exports (dependent variable) and the number of strange farmers and the year (explanatory variables). Our data consists of 36 observations.

Table 3. Linear Regression Analysis of the Volume of Gambian Peanut Exports on the Number of Strange Farmers in the Previous Year

Dependent Variable: PNUTS (t)--Peanut Exports In Year t
Mean: 56187.36 tons
Standard Deviation: 14178.87

Explanatory Variables	Regression Coefficient	Standard Error	Significant at Percent Level
Intercept	1594002.46	499079.44	0.01
Sfarm (t-1)	0.58901	0.4128	0.20
Year (t)	-801.3426	257.220	0.01
R ² =0.3811 R̄ ² =0.3436 F=8.448 Observations: 36			

Table 4. Linear Regression Analysis of the Volume of Gambian Peanut Exports on the Number of Strange Farmers of the Same Year			
Dependent Variable:PNUTS (t)--Peanut Exports in Year t			
Mean:56012.25 tons			
Standard Deviation:11752.04			
Explanatory Variables	Regression Coefficient	Standard Error	Significant at Percent Level
Intercept	1481960.8	413657.71	0.01
Sfarm (t)	1.133	0.3422	0.01
Year (t)	-747.375	213.195	0.01
R ² =0.5691 R̄ ² =0.5430 F=8.448 Observations: 36			

From the preceding tables, we refer to PNUTS (t) as the volume of peanuts exported by the Gambia in any reference year "t." The column with the explanatory variables identify the factors which may explain the variations in our dependent variable PNUTS. Our R square values for both regressions measure "goodness-of-fit;" i.e., how much variation in the dependent variable, PNUTS (t), can be accounted for by the model. Both regressions reveal significant R square values of 0.3811 and 0.5691 respectively, which means that the 38 percent and 57 percent respectively of the variation in the volume of peanut exports is accounted for by the two models respectively. Clearly, the explanatory variable we are concerned with here; i.e. SFARM-- the number of strange farmers, has a significantly positive effect on the volume of peanut exports. We could not accept our respective null hypotheses that the parameter estimates; i.e. the SFARM coefficients are equal to zero, which meant that we had to accept our alternative hypotheses that our SFARM coefficients are significantly different from zero and are, in fact, positive, as shown above as 0.589 and 1.133 respectively. This, of course, does not refute our suspicions but certainly contradicts Jarrett's (1949) results. We should note, though, that despite Jarrett's observance of no apparent correlation between the quantity of strange farmers and the volume of exports (and our results which reveal the opposite), the contribution of strange farmers in the Gambia's production of peanuts and in assisting with hosts' farms is, as researched by Swindell (1980), unquestionably significant. In fact, in 1925, at the Commissioners' Conference, the Gambia's Director of Agriculture revealed that one third of the Gambia's

peanut exports was produced by local farmers, one third by strange farmers, and the residual third by farmers in nearby French territory (Palmer 1946, p.2; Jarrett 1949, p.650).

The significance of the strange farmers' contribution, especially to the British colonial coffers in the Gambia, is manifest in the various reports by the British Travelling Commissioners, which assessed the productive role of strange farmers and encouraged their entry into the Gambia. Commissioner Ozanne, in fact, in 1894, examined the details of the strange farmer contract, assessed its net benefits at the micro-and macro-level, and recommended the need to attract strange farmers into the Gambia with whatever reasonable means (Robertson 1987, p.211). In 1893, the four-shilling fixed rent imposed on strange farmers and shared between landlords and the colonial government and the subsequent six-shilling tax did little to stem the influx of strange farmers into the Gambia. Fears, of course, rose at this time that the tax levied on strange farmers might have a disincentive effect on their migration into the Gambia. However, the events of the First World War allayed some of these fears as many strange farmers, particularly from French territory such as Senegal, fled away from French conscription into the Gambia (Robertson 1987, p.211).

Interest in the numbers and motivations of strange farmers was however not independent of the prices of the peanut crop they produced. Available data show little correlation between the number of strange farmers and the fluctuating prices obtained during the years 1920 to 1945. As can be seen in the table below, the large number of strange farmers

reported for the years 1917-1922 reveal some relation to the high prices prevailing during and immediately following the First World War, and the effect of the Second World War is manifest in the low numbers that entered the Gambia between 1940 to 1943 (Jarrett 1949, p.652). We present a table to illustrate the magnitude and pattern of the purchase price of peanuts per ton and the numbers of strange farmers:

Table 5. Peanut Prices and Numbers of Strange Farmers; Source: Jarrett (1949, p. 653).

Year	Average Price(ton)	Price to Farmers	Strange Farmers
	£ s. d.	£ s. d.	
1920	27 12 0		24150
1921	10 12 0		22048
1922	12 3 0		20566
1923	13 12 0	9 0 0	17383
1924	14 5 0	10 0 0	14188
1925	14 3 0	9 10 0	14652
1926	14 5 0	9 0 0	13555
1927	14 1 0		17237
1928	14 13 0		20640
1929	13 11 0	7 10 0	18874
1930	11 12 0	4 17 6	16592
1931	7 11 0	3 10 0	9736
1932	10 9 0	5 0 0	16513
1933	7 8 0	4 0 0	14537
1934	5 7 0	3 10 0	8332
1935	8 3 0	7 0 0	13341
1936	8 12 0	6 6 8	9754
1937	9 14 0	3 13 4	13479
1938	5 14 0	3 3 4	9195
1939	5 1 0	4 10 0	4643
1940	6 7 0	4 0 0	4890
1941	5 19 0	4 0 0	3741
1942	5 19 0	5 10 0	2585
1943	7 13 0	8 0 0	5995
1944	10 6 0	12 0 0	10793
1945	14 9 0	12 0 0	19979

The above table shows that the year 1920, when the average price of peanuts per ton was relatively quite high; ie. 27 pounds sterling 12 shillings, the number of strange farmers also was relatively high; ie. 24,150.

It is worth noting here that export prices and volume and the number of strange farmers all fit within the matrix of a peanut export trade. One of the popular frameworks utilized in analyzing West Africa's cash crop export trade is the "vent for surplus" theory. This theory, first developed by Adam Smith, and later articulated by H. Myint (1977), rests on three points consistent with the West African reality. These are that the tremendous growth in West African exports was achieved without a corresponding increase in population, without a significant trade-off in the amount of land and time expended in traditional goods and services, and without significant shifts in the techniques of production (Hopkins 1973, p.231). In the Gambia context, this theory needs modification since the point of an increase in peanut exports without a corresponding increase in population must be tested against the background of periodic, migrant labor movements, which involve "an effective transfer of population (albeit a seasonal one) from the interior to the coast (Swindell 1980, p.102)." Secondly, the claim of no resource trade-off between the traditional and the exported goods is not valid in the Gambian context, where increased specialization in peanut production did create a bias against (a factor substitution away from) food crops and a decline in some pre-colonial trades (Hopkins 1973, p.234). The

directional bias in favor of peanuts, set against the background of rice importation, is explained by the Gambian farmers' realization that growing peanuts is profitable, fairly resistant to the "ravages of locusts," and is not as "labor-intensive as cultivating swampland rice" (Swindell 1980, p.103). Thirdly, the point of no major shifts in production techniques can be said to hold in the Gambia, where technical innovations have played a negligible role in the expansion of peanut production. In fact, the most significant innovation involved the adjustment of traditional labor practices to a domestic economy in which peanuts, and no longer slavery, played the dominant role (Swindell 1980, p.103).

Considering these qualifications, therefore, the "vent for surplus" theory must be reconciled with the facts of the Gambian setting if it is to provide a compelling explanation of the forces leading to the growth of the Gambia's peanut trade. The Gambian situation, being a subset of the generally underpopulated region of West Africa, reveals that the demand for labor and its use must be reconciled with the supplementary supply provided by population movements; more specifically, the strange farmers. The "vent for surplus" theory, of course, implicitly emphasizes the importance of "effective demand for potential output" as a mechanism for mobilizing underemployed labor (Hopkins 1973, p.232). The creation of novel market opportunities induced a relatively more effective utilization of surplus time and effort and, indeed, attracted underutilized labor to exploit such opportunities through migration. In the Gambian context, the increased demand for peanut exports changed the traditional relationship between goods and leisure (Hopkins 1973, p.232). Because

the price of leisure (opportunity cost of leisure) rose (Hopkins 1973, p.232), more Gambian farmers substituted their time away from leisure into peanut export production, and the expanded opportunities attracted strange farmers to exploit the export-led profitable markets associated with the Gambia's comparatively under- or un-utilized land (Swindell 1980, pp.102-104).

In the next section, we will analyze the pattern of strange farmer behavior in the period following 1945, the period leading to the Gambia's attainment of nominal political independence.

2.5 1945-PRESENT: STRANGE FARMERS, INDEPENDENCE, AND DEVELOPMENTS

Prior to the Gambia's formal political independence in 1965, concerns about the maladies of Gambian agriculture; ie. "excessive dependence on groundnuts (peanuts), soil deterioration, capital deficiencies, and much else," prompted the creation of a Department of Agriculture in 1924 (Robertson 1987, p.212). The Department of Agriculture, observing seed availability as a major bottleneck in Gambian agriculture, created a seed supply scheme in 1926 and a network of cooperative village seedstores along the Gambia river in 1933 (Robertson 1987, p.212). After the Second World War, the ox plow was introduced along with simple sowing and weeding tools; and mixed farming centers were established, in Kwinella for example, to distribute such tools, to disseminate knowledge

associated with modern animal husbandry, and to improve general productivity through contract plowing (Weil 1970, p.246; Robertson 1987, p.212).

The heavy dependence on peanuts, mentioned above, especially as a crop for foreign exchange generation also meant that the Gambia had to depend on an increasing number of strange farmers to supplement domestic labor shortages. The Gambia's dependence on a single cash crop gave it the name "peanut monoculture," and subjected its economy to great vulnerability by making it dependent on prices obtaining in the world market for peanuts. Indeed, around 1948 to 1949, the Gambia Oil Seeds Marketing Board (GOMB)--a quasi-governmental institution-- was created (Bauer 1967, p.276; Robertson 1987, p.212) to help stabilize the producer price of peanuts and to serve as an implicit taxing agency. As an example of its role, GOMB, after 1963, in the wave of falling world market prices for peanuts, maintained a stable price of 27 pounds sterling per ton of peanuts for the Gambian farmer (Weil 1970, p.246). The peanuts GOMB purchases include both locally produced and smuggled nuts. The unofficial sales of peanuts by Senegalese farmers (i.e. smuggled nuts) to Gambian licensed buying agents is due to the higher purchase prices of peanuts in the Gambia. The magnitude of these sales, however, is difficult to tract and assess; but reports reveal that they range from 20,000-30,000 tons of unshelled peanuts annually (SAE-IMF, Vol. 6, p.15). In recent years, improvements in peanut prices and marketing conditions in general in Senegal have created the disincentive on cross-border sales to Gambian agents (SAE-IMF, Vol. 6, p.15).

Official concern about the volume of peanuts (and therefore about stable, attractive prices and strange farmers) is often expressed in the Gambia. Moreover, Gambian government officials often heed the statement of the then prime minister and now president, Sir. D.K. Jawara, around the time of Gambian independence in 1965. The statement, an admonition about not having illusions about the outcome of independence and about the immediate future of a mono-crop economy, went, "Independence is not a magic formula which will transform your groundnuts (peanuts) into diamonds. Independence does not mean an overnight change from poverty to wealth, or that leisure will replace hardwork. It means facing the fact that we shall be on our own and by our own efforts we must earn our keep (Rice 1967, p.164; TGSI-1980, p.9)." This statement reiterates not only the significance of peanuts as a crop for national revenue generation, but also alludes to the crucial role of labor (strange farmers included) as a complementary input to effective land utilization in a capital-poor and land-surplus country.

The significance of labor, and more specifically strange farmers, to the Gambia's peanut trade has already been discussed. What has not been mentioned is that since the Second World War, the demand for strange farmers has consistently been in excess of supply (Robertson 1987, p.216). In 1945, at a Chief's Conference, Chief Musa Cham of Nianija emphasized the continued encouragement of strange farmers into the Gambia, as he put it, "...we have insufficient labor. If strange farmers came in tax free, they would help us...(Jarrett 1949, p.656)." In the same year, the McCarthy Island Division commissioner reported

that information about strange farmer arrivals often led to a rush to secure them. And after a particular village's demand is met, strange farmers move to the next one. In fact, the commissioner further reported that "the demand for strange farmers in the Gambia is never satisfied (Robertson 1987, p.217).

In 1969-70, the number of strange farmers in the Gambia was estimated at 18,000 and their annual peanut output at about 10,000-15,000 tons (SAE-IMF, Vol. 6, p.15). Their numbers, in recent decades, and their contributions to the Gambia's peanut trade have continued to fluctuate. As recently as 1975, in a 1974-75 sample survey, the total number of strange farmers in the Gambia was estimated at 33,000 (Swindell 1985, p.181). This number is highly significant given the fact that there are 32,000 dabadas (or farming households) in rural Gambia (Swindell 1980, p. G.39). Out of these 33,000 strange farmers, one fourth (8,000) were Gambians, and the residual three fourths were mainly Senegalese, Malian, and Guinean, but there were also negligible representations of citizens of Guinea Bissau, Lower Mauritania, and Upper Volta (Swindell 1980, p. G. 40).

To show the pattern of distribution of these strange farmers in the Gambia and their nationalities (or places of origin), we present the table below. The table is based on a special strange farmer survey of 960 dabadas, which involved detailed information on 1,025 migrant farmers (Swindell 1980, p. G. 39).

Table 6. Nationality of Strange Farmers by Division; Source: Swindell (1985, p.182)

Division	Gambia	Senegal	Guinea	Mali	Guinea Bissau	Other	Total
Western	48 (45)	35 (33)	9 (9)	4 (4)	10 (9)	-- --	106 (100)
LRD-SB	29 (29)	15 (14)	29 (29)	26 (26)	2 (2)	-- --	101 (100)
LRD-NBW	100 (31)	79 (25)	57 (18)	85 (26)	2 --	-- --	323 (100)
LRD-NBE	13 (15)	11 (13)	15 (17)	45 (51)	1 (1)	3 (3)	88 (100)
MID-NB	19 (18)	28 (26)	46 (43)	10 (9)	2 (2)	2 (2)	107 (100)
MID-SB	23 (15)	12 (8)	103 (66)	11 (7)	6 (4)	1 (-1)	156 (100)
URD	18 (13)	37 (26)	53 (37)	33 (23)	1 (-1)	2 (1)	144 (100)
Total	250 (24)	217 (21)	312 (31)	214 (21)	24 (2)	8 (1)	1025 (100)

Notes: Lower River Division (LRD) has been divided into Lower River Division-South Bank (LRD-SB), Lower River Division-North Bank West (LRD-NBW), Lower and River Division-North Bank East (LRD-NBE). MacCarthy Island Division (MID) has been divided into MacCarthy Island Division-North Bank (MID-NB) and MacCarthy Island Division-South Bank (MID-SB). Upper River Division is (URD).

As can be seen in the above table, the Lower River division shows the largest concentration of strange farmers. In just the western part of the Lower River North Bank division (encompassing three districts-- Lower and Upper Niimi and Jokadu) alone, one third of the total number of strange farmers were reported there. In the 1974-75 year, also, one third of the estimated 259,000 acres (117,727 hectares) of peanuts farmed were in the Lower River division (Swindell 1985, p.181). The Lower River division not only exhibits large numbers of non-Gambian but also Gambian strange farmers. The inducement of strange farmers to this area has to do largely with the low population pressure in the area and the availability of vast upland areas of productive soils along the Gambia river (Swindell 1985, p.181; Swindell 1980, p. G.44).

In contrast, the Upper River, Western, and McCarthy Island divisions all have significant numbers of strange farmers, but each of them with relatively low numbers of Gambian strange farmers. Whether a particular region in the Gambia is a net receiver or sender of strange farmers depends on a complex of variables. Swindell (1985, pp.181-182) points out that, given any Gambian locality, strange farmers "may be generated firstly by non-locals moving into the area and secondly by locals moving within the area, but the fact that local men may be leaving to farm elsewhere must also be taken into account." In this sense, proper monitoring of the net gain or loss of strange farmers for any particular locality must depend on these considerations. The Lower River division, for example, was found to host both long-distance internal migrants and locally circulating migrants whereas the Upper River division had locally

circulating migrants and also generated long-distance internal migrants (Swindell 1985, p.183).

The origins and destinations of strange farmers aside, we should note that the Gambia experienced a political crisis, an aborted coup in July 1981, which resulted in the creation of a confederation with Senegal (Robertson 1987, p.217). It is not clear yet what effect this problematic and (to date) unpopular and ineffective union will have on the flow of strange farmers between Senegal and the Gambia. However, what is clear is that Gambia is still a "small, poor and dependent enclave," whose fate is tied to peanuts (80 percent of exports) and therefore, to a significant extent, to the influx of strange farmers, a condition which led many observers to call it an "improbable nation," a "geographical absurdity" (Robertson 1987, p.217; Rice 1967).

2.6 CONCLUSION:

This chapter has been concerned with analyzing the origins and developments of the Gambia's peanut trade and the critical (but important) role played in it by strange farmers. With the introduction of peanuts ("arachis hypogaea") into the Gambia through Portuguese agency in the sixteenth century, peanuts continued to dominate the Gambia's export trade with countries like Britain, France, the West Indies, and America. The significance of strange farmers to this peanut export trade is illustrated in the various concerns, expressed particularly by British

colonial officers, about the need to attract them into the Gambia to assist with colonial revenue generation. For the local Gambian farmers, the strange farmers provided them with extra sources of labor and, for the strange farmer, the arrangement provided the opportunity to acquire greater income and to satisfy other sociological desires. In the context of the strange farmers' economic evolution, data relating their numbers to prices obtaining in the previous harvest season, or to the volume of peanut exports, or to the availability of seednuts, showed only a loose correlation. We should note though, that despite the paucity of time series data for some years on strange farmers and peanut exports, the available evidence showed that their importance is manifest in the continuous excess demand for them at the level of the individual contract and the frequent expressions of concern at the public level. The next chapter examines in greater detail the resource environment which generates the strange farmer contract.

CHAPTER 3

THE AGRICULTURAL RESOURCE ENVIRONMENT OF THE GAMBIA: LAND AND LABOR

The previous chapter alluded to the labor scarce and land surplus situation prevailing in the Gambia. In this chapter, the structure of human and natural resources is analyzed in more detail. We focus on the two resources central to the strange farmer contract; ie. land and labor. It is presumed here that any attempt to understand the forces that give rise to particular forms of agricultural tenancy would be incomplete if it does not also address these resources, their uses under a variety of crops and cropping patterns, and the set of institutional configurations that emerge to facilitate transactions in them. This chapter provides a general background on land and labor in the Gambian environment, since these two resources serve as parameters at both the level of the individual strange farmer contract and at the macro-behaviorial level.

Our initial effort will concentrate on examining land tenure and use in the Gambia, an issue which has particular relevance to the growing debate among development economists about the efficiency and equity consequences of land reform.

3.1 LAND:

The Gambia, an elongated strip of land, extends over 200 miles into the West African interior and is strictly within the Savannah belt of seasonal rains. The land is distributed along the banks of the Gambia river, which flows from east to west. Land quality varies, and three types of soil can be identified: mangrove swamps; "banto faros" (areas above river level that are dry during the dry season and swampy during the rainy season); and sandstone plateau (Jarrett 1948, p.633).

Abundant land exists in the Gambia, but quality variation in soil form and content induces farmers to seek the richer, ochre-brown sandy loams, contributing to the apparent shortage of such favored soils (Haswell 1975, p.35). Soils of the western region (North and South Bank divisions) are clayey and, during the rainy season, these "banto faros" are flooded with brine, which renders the area useless for agriculture (Jarrett 1948, p.633). Soils of the eastern region (McCarthy Island and Upper River divisions) are lighter, loamier, and more fertile, and the river in this division contains fresh water (Jarrett 1948, p.633). Soils of the sandstone plateau; ie. upland soils, are sandy, lateritic, and of low fertility (Jarrett 1948, p.633; Evelyn 1964, p.153).

3.1.1 Land Tenure:

Presently, all rural land rights in the Gambia are vested in district authorities. The individual or individuals who first clear a plot can claim ownership; ie. usufructory rights are established (G.G.P.R./R.D.P. 1981-86, p.2). However, for these traditional land use rights to be respected, senior Gambian agriculturalists hold that they should be registered with the district authorities. In this sense current land rights in the Gambia are "customary tenure vouchsafed in national law" (Robertson 1977, p.231). Traditionally, rights in land were not clearly defined (Haswell 1975, p.35); customary land tenure dictated that "the land belongs to a vast family of whom many are dead, a few are living, and many are yet unborn (G.G.P.R./R.D.P. 1981-86, p.3)." In earlier days, the Gambia was a peripheral region of the Mandinka chiefdoms, and its various villages were founded by hunters and gatherers of forest products such as bamboo, who cleared and settled in sites (Haswell 1975, p.35) that offered opportunities.

The shift from communal land tenure to privatization of rights in land is occurring in the Gambia, to a significant degree, due to increasing population pressure on limited good land and the frequency of land disputes. Currently, there is fewer unclaimed land "and permanent rights over farms are acquired through inheritance (Haswell 1975, p.35)." In the 1950s, a serious land dispute took place which resulted in suggestions by Gambian agriculturalists for the creation of a Land Commission (G.G.P.R./R.D.P. 1981-86, p.2). These suggestions were ignored.

But the available evidence (G.G.P.R./R.D.P. 1981-86, p.2; Haswell 1975, p.35) reveals that land disputes are increasing in number and frequency.

Despite these, government officials argue that generally villagers and compound heads know the area of plots in which they have usufructory rights and the scope of those rights. Reform of land tenure laws are argued to be unnecessary because the current legal arrangements allow for the flexibility needed to accommodate certain pressures, such as specific cropping techniques (G.G.P.R./R.D.P.1981-86, p.2). However, within particular development areas requiring high investment, such as in irrigated rice, registration and the issue of leases on land is encouraged (Ibid.,p.2).

3.1.2 Entitlement Relations In Land:

Clear delimitation of rights in land is critical to the proper functioning of a private ownership economy; otherwise the efficient utilization of land is hampered (either by careless use or costly disputes over ownership). Land, held as communal property, precludes proper use, because the absence of exclusive rights creates disincentives to its maintenance or improvement. If an individual can move to the next plot after the soil is exhausted (e.g. fertility loss, mineral depletion, e.t.c.), then minimal incentives exist for that individual to properly maintain the land. But if an individual has private claims to a plot, then consider-

ations to sell or use it in the future provide correct incentives for proper maintenance (Lazear 1986, p.7).

In a market economy, entitlements to resources are of four types: i) trade-based, ii) production-based, iii) own-labor based, and iv) inheritance and transfer-based entitlements (Sen 1982, p.2). Trade-based entitlements require that ownership is respected when acquired through voluntary exchange, and production-based entitlements require that one has ownership over what one produces through the transformation of one's own resources. Own labor-based entitlements require that one own the fruits of one's effort, and inheritance and transfer-based entitlements require that one own what one is given by another who acquired it through respectable means (Sen 1982, p.2).

Land tenure fundamentally deals with entitlements in land and the complex of relationships between individuals and their links to the land (Bohannan 1967, p.53). Entitlements deal with bundles of resources and/or goods over which an individual can exercise command through acquirement rules (Sen 1984, p.30). Entitlements in land do not preclude "rights" in land, since "rights are attributes of persons against other persons" (Bohannan 1967, p.53). In this sense, entitlements in land deal with "land rights," the linking of a person to a plot of land, which must be balanced against the constraining attributes of other persons. In the Gambia, entitlements in land are acquired through own labor-based and transfer means. That is, entitlement in land is considered respected if acquired by gift or inheritance (Dunsmore 1976, p.283; Robertson 1987, p.231) or by first clearance through the use of one's own labor.

"Usufruct is allocated hierarchically through chiefs, village headmen, lineages, and compound heads.... The residual rights of the headman (Alkalo) are acknowledged mainly in his capacity to designate annually new areas for cultivation, but the rights of compound heads and individuals are, de facto, very secure.... (Jeng 1978, p.41; Robertson 1987, p.231)." Evidence exists that "sales, mortgages, pledges... (in land) are formally prohibited" except that government can lease-out plots on a medium term basis to interested parties (Dunsmore 1976, p.283; Robertson 1987, p.231).

3.1.3 Cultivation Methods, Cropping Patterns, and Land Use:

Shifting cultivation used to be a prevalent technique; but the rising density of the population, particularly in the western region of the Gambia, has resulted in the adoption of crop rotation techniques (Robertson 1977, p.230). This observation accords well with the Boserupian thesis of population induced technical change, in which mounting population pressure on limited land induces individual farmers to change from the extensive to the intensive margin of cultivation, increasingly adopting cultivation methods congruent with intensive farming (ie. from forest fallow to bushfallow to short fallow to annual cropping to multicropping) (Boserup 1965, p.15-16). A rough measure of population pressure is population/land ratios. Evidence from the 1974/75 sample survey (R.D.P.) reveals small inter-divisional variations in the

ratio of land per person. The Upper river division shows the highest population pressure (0.377 hectares/person), followed by Western division (0.387 hectares/person), followed by McCarthy Island division (0.470 hectares/person), followed by Lower River division (0.500 hectares/person), and followed lastly by the North Bank division with the lowest population pressure (0.664 hectares/person). There is evidence that some bushfallow is still practised in the Gambia in areas with less population pressure, but the extent of such practices is quite difficult to delineate in location and scope (Robertson 1977, p.230).

In 1950, rice grown continuously on annually flooded river flats was added to the shifting cultivation of the plateau soils. Within a time span of 15 to 50 years, plateau lands have all been cleared (Clark and Haswell 1967, pp.49-50). The much favored sandy loams located near the river valley had changed from shifting to continuous cultivation (annual cropping). Inland, due to rising population pressure, "slash and burn" methods were increasingly adopted; cultivation, in some situations, continuing for 3 to 5 years, even though the upper bound on safe cultivation using such "slash and burn" techniques was 3 years (Clark and Haswell 1967, p.50). Moreover, the net consequence of such practices (ie. soil exhaustion, fertility loss) has been crop failures (especially with millet).

In many areas of the Gambia, shifting cultivation was often associated with male farming and, in 1962, the shortage of men in certain areas of the Gambia, induced in part by the breakdown of the extended family and in part by adverse sex-ratios, created the incentive for them to join

the women in the more intensive cultivation of rice swamplands in the river valley (Clark and Haswell 1967, p.50).

3.1.3.1 Land Use:

The particularities of land use differ, but some general patterns are observable that incorporate ecological factors into the complex mix which characterizes Gambian farming systems. A typical cropping pattern in the Lower River Division of the Gambia, adopted from (Mohr 1969, p.67; Ruthenberg 1980, p.188) follows:

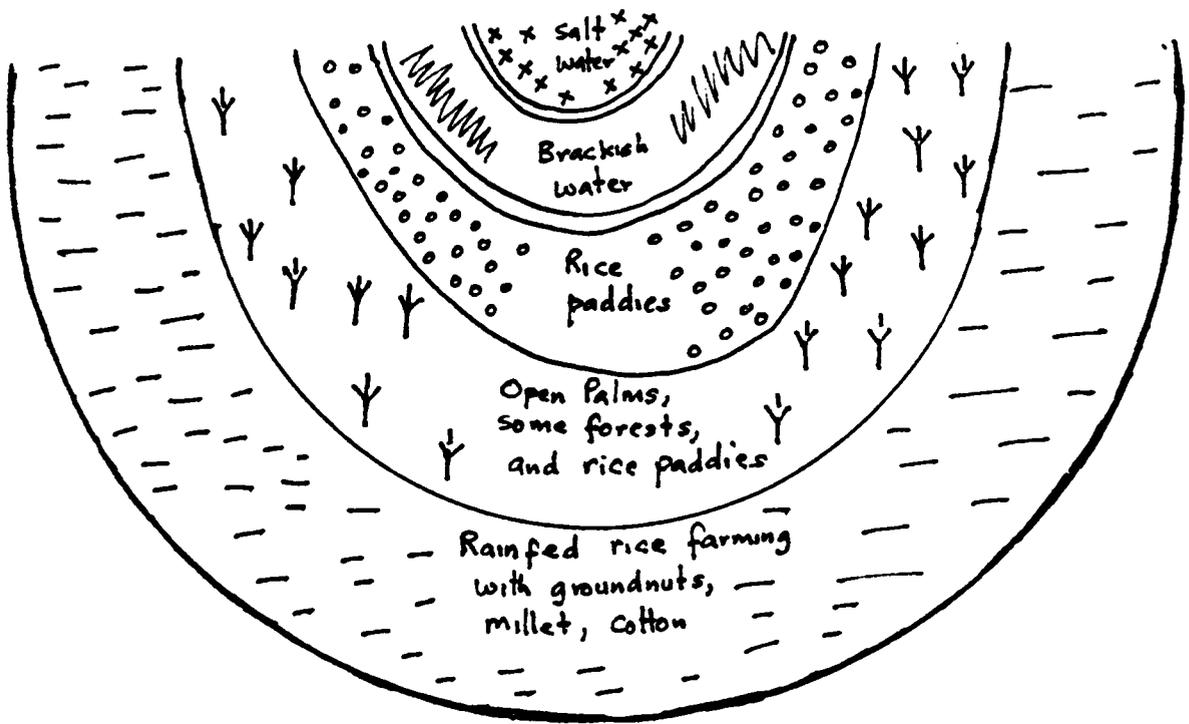


Figure 1. Cropping Pattern in the Gambia's Lower River Division

As can be seen from the diagram, there is a mixture of upland arable crops and lowland rice, which is generally representative of wet rice production in the Gambia and which allows for a more efficient distribution of labor requirements.

Another similar example of land use shows the delicate balancing of ecology with agricultural production in the Gambia.

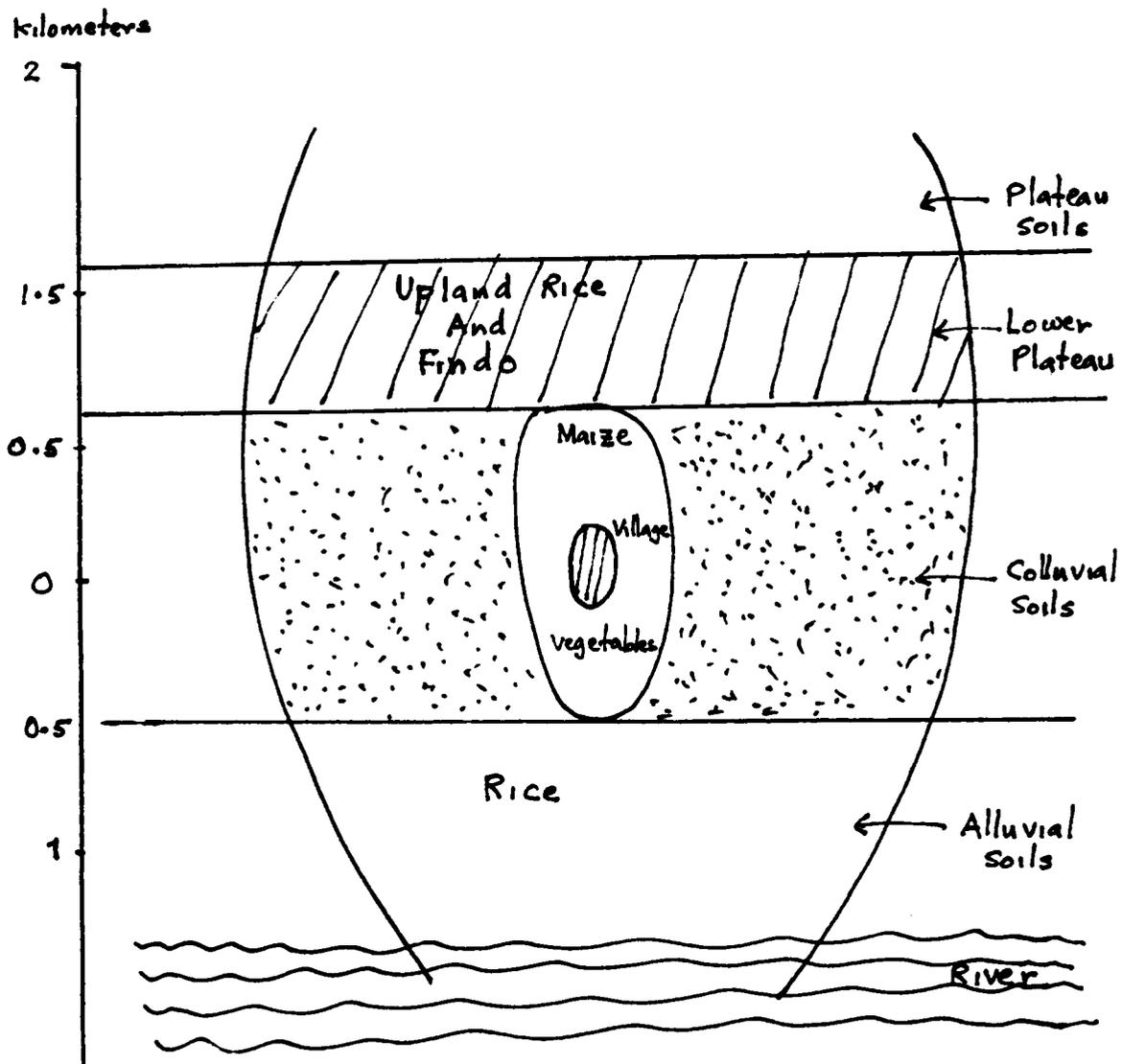


Figure 2. Ecology of Agricultural Production in a Gambian Village
 Sources: Haswell (1953, p. 28); Robertson (1987, p. 232)

As can be seen from the above, wet-rice is grown on the alluvial soils near the Gambia river. Groundnut, millet, and sorghum are grown on the colluvial soils. Upland rice and findo are grown on the lower plateau soils. Maize and vegetables are often grown on the colluvial soils near the immediate vicinity of the village; the vegetables, in particular, are grown in special gardens locally called "nakos." The vegetables are mainly grown to serve immediate needs (food and cash); their cultivation near the village allows for quick and costless access during periods of need (for food and/ or liquidity). The whole arrangement (illustrated above) shows not only an ecological balancing of various soil types and crops, but also of labor requirements; since, for example, some crops such as wet-rice require more "tender loving care" (ie. weeding, tending, etc.) than others such as millet.

To show the magnitudes (in percentages) in the pattern of land use in a typical Gambian village, we will utilize D.P. Gamble's (1949, pp.119-120) findings on Kerewan, a Mandinka village in the North Bank division of the Gambia. In Kerewan, at the time of Gamble's study, the total amount of cultivated land was 72.9 percent and the residual, the uncultivated land, was 27.1 percent. Of the cultivated land, 41.3 percent was utilized for groundnuts (peanuts), 21.8 percent for findo (digitaria), 9.3 percent for "coos" (millet and guinea corn), and 0.5 percent for gardens. With the residual, the uncultivated land, 19.1 percent was bush; 4.1 percent bordered the swamps; 0.6 percent was occupied by a government station; 3.2 percent was cleared upland, and the remaining 0.1 percent served as a cemetery. The above percentages, of course,

deliberately ignore the area occupied by the village (ie. the settled area), the roads, and the paths.

The above figures, we should note, are not without economic content. The 19.1 percent which constitutes the "bush" part of the uncultivated land is not utilized because it consists of rocky hills unsuitable for agriculture or which would be prohibitively costly to farm given the state of available techniques. The 72.9 percent of cultivated land (of which 41.3 percent is utilized in groundnuts) shows that cash crop farming (groundnuts) occupies a central place in Gambian village farms. Food crops such as "coos" and findo occupy a relatively meager place in village farming, although their importance in terms of village human survival is often underestimated. Findo, particularly, has an added economic importance in that it serves as a cover crop to other crops such as groundnuts.

In what immediately follows, we will examine another resource-- labor, whose centrality to particular forms of tenancy is as incontrovertible as its importance to agricultural development.

3.2 LABOR:

Recognition of the importance of labor, its organization, and its utilization under a variety of alternative institutional arrangements is central to understanding the forces behind agricultural development. Labor affects agricultural development which also simultaneously affects

the form and organization of work. In the Gambia, one of the basic units of labor organization is the farm family, an economic unit that performs a variety of productive tasks and that correspondingly rewards its members according to a "sharing rule."

In 1979, the Gambia had approximately 30,000 farm families (the average size of a farm family being 22 members) (G.C.S.R.--1979). These farm families produce both food and cash crops; but paradoxically their members, sometimes, go without food. The paradox is not an unfamiliar dilemma in the stories of underdevelopment, in which uninformed public interventions distort family-level resource allocation decisions between food and cash crops. The Gambia crop situation reveals, for example, that, of the 30,000 farm families, 10 percent are likely to have produced enough food and cash crops to meet their annual needs; the residual-- 35 percent require continuous injections of assistance till the next harvest and the remaining 55 percent require help at various periods (ie. averaging 6 months) annually (G.C.S.R.--1979). Geographical decomposition of these farm families (which constitute the bulk of the rural population) shows that MacCarthy Island division has the largest number of rural inhabitants (ie. 158,514); followed by North Bank division 145,271; then by Western division 141,577; then by Upper River division 134,042; and finally by Lower River division which has the least number of rural inhabitants-- 66,029 (G.C.S.R.--1979).

3.3 TYPES OF LABOR IN GAMBIAN AGRICULTURE:

Two categories of labor; ie. family and non-family, broadly capture the types of labor in Gambian agriculture. In primitive societies, utilization of family labor never transcends the economic autarky of the family; but, over time, economic progress alters the structure of resource use in the family and the autarky of the family is modified or replaced by the exchange of goods and resources (Boserup 1971, p.15).

Non-family labor is defined here as the employment of labor beyond the economic autarky of the family group. This definition sweeps over the distinguishing features between family and non-family labor, which is explained more significantly by the differences in the set of objectives, motivational rules, and information and decision possibilities that either type of labor faces.

Family labor often operates within a "sharing unit" that induces its members to forgo some leisure with guarantees of receiving claims on family resources for the effort put forth. In this sense, a family member is penalized if he shirks and rewarded if he puts forth superior effort (Lewis 1955, p.65). But these reward/punishment mechanisms are not easily executed, because of the problems of observing and metering effort in a unit (the family), notorious for its benevolence towards its members. Generally, whether a family member puts forth effort in a family farm (enterprise) depends on the size of the family and its sharing rule; thus small families with compensation rules conditioned on individual behavior

exhibit incentives superior to large families with egalitarian sharing rules (Pollak 1985, p. 585).

In large families with egalitarian sharing rules, a family member may exhibit effort-slackness without correspondingly diminishing his share of the product. This is partially a result of family size which, as it gets larger, induces each member to stint his effort and free-ride, and partially a consequence of inadequate incentives (ie. of not linking rewards to effort). In agricultural environments such as the Gambia, a farm family may resort to economic (and/or extra-economic) reward/punishment mechanisms such as "ostracism" to deter malfeasance and to induce family members to behave within acceptable bounds (Lewis 1955, pp. 64-114; Pollak 1985, pp. 586-87). A family member who misbehaves, as signalled in poor performance, gets a "bad reputation" and may be ostracized by other family members or even by the local community as a "black sheep." Such sanctions against bad behavior are especially effective in agricultural environments with small populations where relationships are "personalized," anonymity particularly difficult and therefore misbehavior costly.

However, there is another side to family labor which has to do with the opportunities of insurance the family provides to guard against uncertain, adverse circumstances through the pooling of family resources. The family requires that its members be loyal and industrious and it will correspondingly discharge its obligations of providing indemnity to its members during unfavorable times. In the same sense, each member pays an insurance premium to the family fund during favorable times to guard

against future, possible misfortunes (See Lewis 1955, pp. 64-114; Pollak 1985, p. 588).

Non-family labor differs from family labor in that the former breaks away from the autarky of the family and seeks better alternative uses of labor-time. In this sense, the limited opportunities within the family combined with better alternative uses of labor-time induces the non-family laborer to seek superior rewards through trading his service.

3.4 FORMS OF NON-FAMILY LABOR IN THE GAMBIA:

Various forms of non-family labor exist in the Gambia which can be taxonomized (Robertson 1987, pp. 220-225) as:

- i) communal labor (in Mandinka, "kafo;" in Wolof, "kompin");
- ii) daily or weekly individual wage labor (in Mandinka, "mbaragnini");
- iii) monthly or quarterly individual wage labor (in Mandinka, "karidokula;" in Wolof, "legeetu werr");
- iv) strange farmer labor (in Mandinka, "sama manilla;" in Wolof, "nawetane");
- v) fixed-renting labor (in Mandinka, "saffer dingo").

Each of these forms of labor is transacted within contractually or reciprocally mediated arrangements which entail costly events, since they involve costs of defining, policing, negotiating, reciprocating, and enforcing labor service rights. Let us examine each form of non-family labor, proceeding successively.

3.4.1 The Kafo:

Kafos are age-sex group workforces that mainly operate by supplying communal labor to relax labor bottlenecks during the farming season (Haswell 1975, p.63). They include both male and female members, who engage in various communal work, such as well-digging, and whose ages range from a lower bound of 10 years to the mature, physically strong adult. In a typical Gambian village, for example, Sabusere, located in the Upper River division, Swindell (1978, p.8) found that the village kafo there was unstratified and consisted of males of 18-35 years. Generally, kafos that consist of young, robust members are referred to as "active" and those that consist of older men and women or village crafts-people or of community members who, for reasons of physical and/or mental handicap, are unable to engage in manual work are referred to as "retired" kafos.

In any particular rural Gambian village, every family is expected to contribute a minimum of one male member to a kafo, unless conditions do not permit (Swindell 1978, p.8). The kafo operates under an elected head ("kafotio"), who coordinates the activities of the kafo through costly directing and negotiating with parties interested in kafo labor. Since kafo groups are differentiated by age sets, each of these age sets has its own "kafotio" (head). The head of the senior set not only supervises his kafo but also takes care of the leisure (recreational) aspects of village life (Little 1949, p.77). For each kafo, the surplus cash generated from group work is utilized for mutual aid, in terms of small loans, to its members. Some of these funds, however, are not used for productive purposes but are quickly dissipated through various conspicuous consumptive activities, such as entertaining visitors, sponsoring wrestling matches, etc. (Little 1949, p.77).

Apart from performing community work (road mending, well digging, etc.) and functioning as a social club, the kafos primarily provide a local labor pool for parties who can afford to hire them (Swindell 1978, p.8). In earlier days, freeborn descendants had advantage over those of slave origin in utilizing kafo labor because of their privileged status and the costliness in real terms (millet, goat meat, and other foodstuffs) of hiring kafo labor. The relative superior economic status of the freeborn (and their superior ability in commanding reciprocal services from neighboring households) gave them the superior edge in hiring work groups over those of slave origin (Haswell 1975, p.63).

In recent years, with the firm entrenchment of cash-mediated transactions, the relevance of caste and status to economic behavior is rapidly diminishing. Swindell (1978, p.8) finds in a 1974-75 survey that the rate of paid kafo services in Sabusere, a typical Gambian village, is: sunset to sunset 35 Dalasis; 8 a.m. to noon 20 Dalasis; noon to 5 p.m. 15 Dalasis (1 Dalasi being equivalent to U.S.\$ 0.57 then). This arrangement shows, of course, an increasingly structured local pattern of community relationships, in which the introduction of a means of exchange has altered payment modes (Swindell 1978, p.8). In cases where a farmer cannot afford a paid kafo, he would resort to reciprocal work groups--(non-paid) kafos--who require food, kolanuts, and cigarettes and the return of labor service on their farms (Ames 1959, p.229). In a strict sense, these kafos are paid in kind.

In hiring kafo labor, the rule of thumb applied is "come one, come all," which makes it difficult to apply marginal analysis based on returns per man-hour. Conceptually, benefits are measured in terms of average product of kafo labor. The advantage of kafo labor, particularly the paid-variety, is "that the total input is massive and quick, which may be of great advantage to the host farmer with a fixed domestic workforce and faced with the urgency of completing farming operations within a set time" (Swindell 1978, p.8).

Work Incentives Within The Kafo:

Motivating kafo members to put forth their best effort requires an incentive structure, which can be defined as a set of compensation rules

designed to induce each kafo member to exert his best effort in a multi-person joint enterprise directed at a common goal (Groves 1973, pp. 618-619). In the Mandinka kafos of the Gambia, hard working members are compensated with "respect," and fines are levied on kafo members who shirk their obligations (Little 1949, p.77). Detection of indolent members within a kafo is often costly; nonetheless, individual kafo members police each other and report any observable slack behavior to the "kafotio" (head) for remedial action.

In the Wolof kafos (or more appropriately "kompins"), incentives assume the form of a sporting contest. Kompin members compete for the position of the best worker under the supervision of a head ("the botal"). The best worker receives a large hock from a cow and sometimes money, clothing, and other gifts. In addition, the best worker (the champion) is rewarded with "prestige" and a widened range of social opportunities, such as easy and costless access to a wife of his choice (Ames 1959, pp. 230-232). In some sense, an incentive structure in kompins work is similar to a tournament-type incentive arrangement, in which one worker is pitted against another through the force of dramatic competition, and the worker with the highest level of output receives the winning prize. Workers, therefore, are induced to increase the probability of winning by demonstrating superior efficiency through hard work (Lazear 1986, pp. 9-10).

3.4.2 The Mbaragnini:

Mbaragninis are hired, occasional individual wage laborers in the Gambia who, often strangers to the communities they seek work in, engage in day- or piecework, such as, for example, lifting, stacking, threshing and loading groundnuts during the harvest period (Swindell 1978, p.10; Robertson 1987, p.221). The name "mbaragnini" derives from the Mandinka "looking-for-work," apparently referring to such workers' job search behavior as "spot" laborers. Generally, mbaragnini workers are on the average young and single (Robertson 1987, p.221), which explains their flexible behavior since their alternative costs are much less than workers with correspondingly opposite characteristics.

As a flexible pool of labor, mbaragninis primarily engage in weeding and harvest work; their availability at critical periods of farming may, however, be unreliable. As Swindell (1978, p.10) rightly notes, "workers hired daily probably represent the most flexible system for the farmer, but the supply may be very unreliable and the most difficult kind of labour input to estimate in advance." But if available, mbaragnini labor can assist in the completion of particular farming tasks under circumstances where agricultural timing is stringently operative and therefore a supplementary source of labor potentially useful in significantly affecting farming outcomes (Robertson 1987, p.221).

Rewards to mbaragnini labor in a 1974-75 survey (Swindell, 1978, p.10) were 2 Dalasis (1 Dalasi being equivalent to U.S.\$ 0.57 then) for working from 8 a.m. until noon, an amount relatively lower than the

minimum wage rate of 4 Dalasis per day for the urban worker fixed by the Gambian government. But why is it that mbaragninis do not move to the urban areas where the minimum wage is operative and therefore the wage rate is higher? The many who do not shuttle into urban areas are deterred not only by the high cost of living in the city areas, but also by the prohibitive transaction costs (job acquisition information, transportation, e.t.c.) of doing so. Indeed, the few who shuttle into urban areas end up as underemployed (load carriers, street cleaners, etc.) or unemployed workers in the urban informal sector.

3.4.3 The Karidokula:

Karidokulas are wage laborers paid on a monthly or quarterly basis, who often live and eat with their employers (Robertson 1987, p.221). Compared with mbaragninis, karidokulas are a more reliable source of farming labor since their availability is over a longer period, which allows for some attachment with their employers. For the employer (local farmer), karidokulas provide a stable pool of labor which does not entail the costly daily transactions associated with hiring mbaragnini labor. For the karidokula (monthly worker or employee), this labor arrangement provides superior security over the mbaragnini system because of the short-term stability in the worker's earning profile. The stable and regular nature of the karidokula's income enables him as a worker to smoothen his intertemporal consumption behavior by postponing some of

current income (residual consumption) for the future. As Robertson (1987, p.221) documents, "relative security and the prospects of making savings are the principal interests (ie. in karidokula arrangements)." With karidokula "...they (employer-farmers) don't give it (income) bit by bit, they pay you at one time... and ... the regular income (is) preferable to waiting all season for an unreliable harvest (Robertson 1987, p. 221)."

3.4.4 The Sama Manilla:

Sama Manilla or strange farmers are migrant workers who contract with local farmers on a client-host basis, supplying labor on a host's plot between two to four days in exchange for a plot of land, the reward of which goes to them (client- migrant strange farmer). The host-farmer (landlord) usually provides the strange farmer (client-migrant) with food, tools, a hut and, in some cases, seed loans, etc. Strange farmers often appear in the farming villages around the beginning of the rainy season (i.e. April) and stay till the end of the farming season, when the harvested crops are commercially traded (ie. during the Trading season starting in December) (Swindell 1978, pp. 4-5). Detailed explanation of the structure and "stylized facts" of strange farmer arrangements are dealt with in subsequent chapters.

3.4.5 The Saffer Dingoo:

Saffer dingoo is identical to fixed-renting labor and is a variation of the sama manila contract, allowing the resourceful stranger (worker) the most direct control over land and his own labor (Robertson 1987, p.225). As a worker with cash, the saffer dingoo (fixed-renter) rents land and absorbs all the production risks; ie. he is a residual claimant. Generally, most strange farmers do not return to their previous hosts' farms (as is revealed in a national agricultural survey cited in later chapters), but the few who do develop trusted and sustained relations with their host-landlords, eventually becoming fixed renters. As David (1960, p.47) puts it, "sama manila has had the remarkable capacity to transform the penniless immigrant into an independent producer."

To give a clear picture of the use of non-family labor in the Gambia, we consider a typical village, Sabusere, of 25 compounds in 1975. Sabusere, a village in the Upper River division of the Gambia, had in a 1974-75 survey strange farmers, kafos, and hired daily laborers employed in the various farming compounds. If we consider the 25 farming compounds, 11 had one or more strange farmers (an overall total of 20 strange farmers); 5 had used paid kafos; 8 had used non-paid kafos; and 8 compounds had hired daily laborers (mbaragninis) (Swindell 1978, pp. 9-10). The following table shows the precise breakdown of individual compounds (or farming units) in Sabusere and the non-family labor forms utilized in each.

Table 7. A Classification of Non-family Labor Inputs: Sabusere Village, the Gambia, 1975; Source: Swindell (1978, p.9).

Compound	Strange Farmer(s)	Paid	Kafos Non-Paid	Hired Daily Labor	Ox Ploughs	Ethnic Group of Head
1	2	+	+	+	owns	T ₁
2 x	-	-	-	-	-	T
3 x	2	+	+	-	owns	F ₁
4 x	-	-	+	+	owns	F
5 x	-	-	-	-	hires	H
6	4	+	-	-	owns	T ₂
7	2	-	+	+	owns	T ₂
8	2	-	-	-	hires	T
9	2	-	+	+	hires	F ₂
10 x	-	-	-	+	owns	D ₁
11 x	1	+	1	1	hires	T ₃
12 x	-	-	-	-	hires	T
13	-	-	-	-	hires	F
14	-	-	-	-	hires	F
15	-	+	-	-	owns	F ₃
16 x	2	-	-	+	hires	F
17	1	-	+	-	hires	T
18	-	-	+	-	hires	T
19	1	-	-	-	shares	B
20	-	-	-	-	hires	F
21 x	1	-	-	-	hires	F
22	-	-	-	-	owns	F
23 x	-	-	-	-	-	T
24 x	-	-	-	-	-	F
25 x	-	-	-	-	owns	D ₂

Notes: x= Head of compound born in Sabusere.
 += Used at least once in 1974/75 season.
 T= Tilibo; T₁=Alkali; T₂=Traders/farmers.
 T₃=Taxi-park foreman, Basse.
 F= Fula; F₁=Headman of Fula Section.
 F₂=Blacksmith; F₃=Baker.
 D= Diakhanke; D₁=Imam; D₂=temporary compound of farmer from a neighboring village.
 H= Hausa, trader/farmer; B= Bambara.

We should note that strange farmers, in Sabusere, are found in more "prosperous and enterprising compounds" and their presence positively augments the village's population and therefore the labor shortages encountered during the farming season (Swindell 1978, pp. 10-11).

In what immediately follows, we shall examine the interactions between gender and the division of labor in Gambian agriculture.

3.5 DIVISION OF LABOR, GENDER, AND GAMBIAN AGRICULTURE

Adam Smith's statement that the "division of labor is limited by the extent of the market" conveys that resource scarcity and exchange relations explain and determine the observed specialization of self-interested individuals in particular tasks. But Smith's point, while specifically true, is not general enough to encompass pre-market societies, where division of labor exists and price mediated (market) exchanges are generally not observable. We can, however, improve on Smith by asserting that the division of labor is limited by the extent of the prevailing system of exchange (of which the market-mechanism is a special case). To the extent that the preceding discussion is acceptable, then explanations about the division of labor between sexes in Gambian agriculture as "natural" (in the sense that it is biologically imposed-- as held by some anthropologists) are scientifically untenable (See Boserup 1970, pp.15-16).

Gambian males specialize in particular tasks, not because of any natural fortune (or misfortune), but because the micro-motivations and the structure of opportunities they face at the farm-household level differ from that of females. If these micro-motivations and range of opportunities are altered, then we would most likely observe changes in the so called "natural" division of labor between males and females.

In Gambian agriculture, the division of labor is observable as much over tasks as over crops. Men and women combine their endowments of time and resources and allocate them between alternative uses, such as food cultivation, food preparation, reciprocal activities (gift and counter-gift giving, mutual aid, ceremonies, etc.), and residual activities. Even though some of Gambian agriculture is becoming increasingly commercialized, much of it is still subsistence agriculture. Boserup (1970, p.16) identifies two types of subsistence agriculture; ie. one in which women produce all the food with minimal help from men and the other in which men produce all the food with barely no help from women. These two types of systems have been conveniently labelled "male" and "female" farming systems respectively (a la Boserup).

In the Gambia, men's work generally involves felling trees or clearing bush, grass, and stumps; and women's work involves the removal and burning of felled trees; sowing; weeding; and food preparation for final consumption (Boserup 1970, p.17; Gamble 1967, pp. 34-35). Deviations from this generalization, of course, exist between sexes and between "tribal" groups, especially among the majority Gambian tribes-- the

"Wolof" and "Mandinka." But there are striking patterns (disregarding some cultural attributes) between men and women's work.

Among the Wolof, for example, the men grow most of the food; ie. millet; while the women are strictly responsible for rice-growing in areas where rice is cultivated. Cooperative behavior between the sexes is widely exhibited in farming; at least more so, than among the Mandinka (Gamble 1967, p.34). Wolof women usually assist their husbands and families with sowing and weeding on their millet farms. In the rice fields, the men usually clear the heavy grass, carry the rice tendrils for transplanting, and police the fields at night to ward off pests, such as monkeys and hippos (Gamble 1967, p.34). Wolof men often plant cotton and groundnuts, with the women responsible for the picking of the cotton and the winnowing of the groundnuts. The young women and girls mostly assume the job of scaring birds away from the maize and millet fields (Gamble 1967, p.34).

With the Mandinka, particularly of the lower Gambia, women do not plant groundnuts, and a male is not entitled to a farm of his own until he is a young adult (18 or 19 years old) (Gamble 1967, p.34). This compares unfavorably to the Wolof females (women and girls), who can have small groundnut plots (the earnings of which can be used for person-specific, own-consumption activities or held in various wealth-forms, such as ornaments, etc.) and to Wolof boys who can have groundnut farms as early as when they are 12 years old (Gamble 1967, p.34).

The presence of a female farming system is particularly pronounced among the Mandinka. In the village of Geneiri, for example, in the Lower River division of the Gambia (in 1949), Haswell (1975, pp.40-42) notes that the men cleared and planted the millet as a communal activity; but effort slackness among the men, however, resulted in poor millet outcomes, which had to be supplemented with food grain from the women's rice fields. The economic importance of women here is underscored by their enormous contribution to the village food supply. As Haswell further notes, "In that women and girls were responsible for rice production, and rice, by weight, made up 80 per cent of the food-grain supply, the female labour force of individual compounds obviously determined in large measure the choice of crops and food supply. Men in compounds with a relatively large female labour force tended to devote less time than other compounds to millet production (Haswell 1975, p.42)." Here, indeed, we observe the substitution of men's time away from food crops into cash crop (groundnuts) production and residual activities (ie. hunting, etc.) because of women's overwhelming role as producers of food.

In another Mandinka village, Kerewan, in the North Bank division of the Gambia, women plant findo (*digitaria*) on plots which had groundnuts the previous year and therefore require little effort in clearing. The men harvest the ripe findo by cutting the stalks with sickles and piling them in stacks (Gamble 1949, pp. 122-123). Rice cultivation here is exclusively women's work, albeit in some Mandinka villages like Jarra in the South Bank and in Upper Baddibu, some men

engage in rice production. The different varieties of rice grown in Kerewan, when ripe, are also policed during the day by women and children, who use crude scaring-technologies such as singing, drumming, shouting, or throwing stones (Gamble 1949, p.123).

To make some rough generalizations about the gender division of labor over tasks in the Gambia, we can examine the following list. The list is not exhaustive, but it captures some of the major tasks associated with the sex distribution of work in Gambian village life.

3.5.1 Division of Labor

Men's Work	Women's Work
Clearing farms.	Help guard ripening suna.
Millet farming.	Rice farming.
Groundnut farming.	Also have small groundnut plots.
Housebuilding.	Help men in winnowing nuts.
Thatching.	Drawing water.
Fencing.	Clothes washing.
Hunting (making traps).	Pounding grain.
Fishing.	Cooking.
Mat-making.	Gathering firewood.
Basket-making.	Cleaning compound.
Weaving.	Looking after children.
Rope-making.	Picking, cleaning, spinning cotton.

Smithing.

Dyeing.

Leatherwork.

Hairdressing.

Butchering.

Playing "water drum."

Drumming.

Musical instruments.

Care of goats.

Care of cattle.

Gathering leaves, fruits, etc.

Gathering honey.

Harvesting garden products & minor

crop.

Large scale trading.

Trading (urban women).

Paddling canoes.

Sale of vegetables in market.

Religious teaching.

Gathering common plants

Doctoring and herbalism.

Gathering medicinal leaves.

Setting fractures.

Midwifery.

Source: Gamble (1967, p. 35).

The above list conveys, in some general sense, how the micro-motivations of farm-household level opportunities constrain and determine male and female specialization to particular tasks. Some categories such as midwifery (childbearing) and childrearing make gender-specific demands on women's allocation of time between intra- and extra-household activities. Others such as groundnut farming are easily substituted for between genders. But even with childrearing, the prevalence of polygamous and extended family institutions in the Gambia provide opportunities for pooling "family time resources" and for moderating the

otherwise intensive allocation of women's time to the physical care of children. Put alternatively, the allocation of women's time to food and cash crop production is enhanced in the Gambia by the extended family, which allows the entrusting of the physical care of children to otherwise leisure-pursuing old men and women; and is also enhanced by polygamous arrangements, which allow for household-burden sharing, especially child care, among the respective wives.

That the Gambian women's time allocation and specialization in particular tasks is crucial is rendered obvious by their enormously productive role in agriculture. As earlier mentioned, women grow most of the rice in the Gambia; but the marketing of the rice is done in the name of their husbands, who receive the total proceeds from the sale of the crop (Ceesay-Marenah 1982, p.293). In, for example, a compound with ten women joint producers of rice, the entire crop is sold in the name of the male compound head, who usually returns the proceeds to the women to be used for purchasing family goods; ie. clothing, cooking utensils, household supplies, etc. The residual income of the women is often given to the male head for "safe-keeping," and there is evidence that, "men may and do use their wives' money for their own ends, for their social satisfaction (Ceesay-Marenah 1982, pp. 293-294)."

Interestingly, men's observed behavior here is opportunistically motivated by the potential net gains in satisfaction from indulging in such behavior without the constraining objections of their wives. Ceesay-Marenah (1982, p.294) notes, "A man, for example, may use his wives' "safe keeping" funds to marry an additional wife. In previous times,

women were content with that; a woman could feel proud that through her labor an additional wife arrived to share chores and to be answerable to her." Previously then, the lack of women's objection to men's polygamous behavior may be ascribed to the women's anticipated advantages (such as household burden sharing, improved status associated with wife seniority, etc) from the marriage-entry of another wife. In recent times, however, "women are beginning to join cooperative thrift and credit societies... (which)... differ from marketing cooperatives in that they are mainly savings and loans. Women still give part of their earnings to their husbands, but more and more, they are beginning to save a portion for their own use (Ceesay-Marenah 1982, p.294). In some sense, therefore, changes in the economic environment (the emergence of cooperative thrift and credit societies, for example) as reflected in changes in economic signals (prices and income) in the rural areas of the Gambia are increasingly altering men and women's role in and outside the farm-household, their specialization in particular tasks, and the balancing of their time and resources between alternative uses.

With respect to the balancing of labor time between competing alternatives in agriculture, data on precise labor inputs between the sexes is useful. The data about men and women's input of labor in Gambian agriculture is scant, but Boserup (1970, p.20-22) finds that men work less than 10 hours per week in agriculture, whereas the women work more than 19 hours per week. Boserup's findings (1970, p.22) are from a survey and resurvey of the same village, the time-lapse before the resurvey being ten years, and in the interim of which the village population

and the cultivation of the labor-intensive paddy-crop have both expanded. Boserup (1970, p.22) further notes, "the women who had been found in the first survey to be already working much longer hours in the fields than the men, were found at the resurvey to be working still longer hours, while the average work input of men had even diminished. In this case the farming system was thus becoming even more female than it had previously been." To get a clear picture of the numerical magnitudes of work input by men and women in Gambian agriculture, we examine Boserup's (1970, p.21) figures from the two samples:

Table 8. Work Input by Women and Men in Gambian Agriculture;
Source: Boserup (1970, p.219).

Sample	Percentage of women in family labor force in agriculture:	Average hours worked per week on own farms:		Percentage of work in farm performed by:		
		by active female family members	by active male family members	female hours as percent of male hours	active female family members	active male family members
A	51	19	11	168	64	36
B	52	20	9	213	70	30

The above figures, according to Boserup, reveal that Gambian women work longer hours, on the average, than do the men in agriculture; this pattern, maintained between the time interval of the survey and resurvey, substantiates the claim of a "female farming system." Her figures on average hours worked, however, while seemingly convincing, are not entirely compelling to support her eventual point-- that the Gambian farming system is female. Apart from the possible doubts about the representativeness of her samples (given the observed "tribal" heterogeneity of Gambia's population) and the observed motivational variations between males and females across "tribal" groups, Boserup's eventual point poses some additional problems. First, her treatment of females' "greater average working hours" as a proxy for "producing most or all of the food" (and hence a female farming system) is indefensible, especially since "working hours," by themselves, are not too revealing; i.e.-- effective labor input (and therefore what translates into greater food output) is a combination of both a measure of worker time with some measure of the effort maintained by the worker over that time. A more helpful statistic would be a combination of average working hours and some productivity comparison between the sexes. Second, it is most unlikely that the demographic environment between the survey and resurvey period remained stable (as Boserup would have us believe) to warrant her point that the "average work input of men had even diminished." These criticisms, however, do not generally undermine the observed economic importance of women, as both food and cash crop producers, in Gambian agriculture.

3.6 INCOME, NUTRITION, ENERGY EXPENDITURES, AND LABOR PRODUCTIVITY IN GAMBIAN AGRICULTURE:

Links between income (wage) levels and productivity form the heart of the efficiency wage hypothesis; at least in the context of less developed agrarian economies (Leibenstein 1957; Yellen 1984, p.201). The quality and quantity of food intake have been found to directly influence worker physical performance (Leibenstein 1957; Strauss 1986; Wolgemuth et. al. 1982). Dietary intake is a necessary correlative of human energy expenditures in the execution of various "basal" and "activity" functions. Humans, as open "steady state" systems, require continuous energy inputs to maintain and build body tissues needed in production and consumption (Lawton 1973, p.59). If dietary intake is not enough to maintain individual activities, then "body substance" will have to substitute for the needed energy, and deterioration in body weight will ensue (Turnham 1971, p.81). Energy inputs are necessary to support the "basal" dimension of human bodily processes, such as breathing, assimilating food, etc.; and the "activity" dimension of executing various transactions, such as standing, walking, lifting, contracting, etc. (Turnham et. al. 1971, p.81).

In economic life, income (wage) levels are a useful proxy for assessing the quantity and quality of a workers' food intake, which even-

tually translates into a worker's effort performance. Income, in principle, represents the command a worker has over a distribution of market goods and services. In this sense, it is not an unreasonable presumption that a well-paid worker (and therefore a well-nourished person-- in the sense of being most likely to spread his earnings over a balanced dietary intake) is more likely to be more productive relative to an underpaid worker. Alternatively stated, the amount of effort that a worker puts forth "depends on his energy level, his health, his vitality, etc., which in turn depend on his consumption level (which depends on income level) and, most directly, on the nutritive value of his food intake (Leibenstein 1967, p.62)."

A worker's calorie requirements in executing "basal" and "activity" functions depends on his physical activities, sex, body size, age, climate (Turnham 1971, p.81) and residual functions and attributes. These calorie requirements, when met through adequate dietary intake, are utilized, more specifically, as energy stored for tissue growth and procreation, as energy expended in respiration or dissipated as heat in physical activities, as energy not assimilated (ie. as waste matter), and as energy eventually lost as urine (Lawton 1973, p.59).

The hypothesis of a wage-productivity nexus (mentioned earlier as the efficiency wage thesis) has found some support in African agriculture (Strauss 1986; Wolgemuth et. al. 1982). The wage-productivity nexus is intermediated by the factor of nutrition or, alternatively put, the nexus is between i) income (wages) and nutrition and ii) nutrition and productivity (Leibenstein 1967, p.63). Strauss' evidence from a study

of rural Sierra Leone farm family laborers, using household-level data, reveals that a higher family caloric intake has a large, statistically significant output elasticity of .34 (Strauss 1986, pp. 313-314). Similarly, Wolgemuth et. al.'s study-- though not strictly agricultural-- of male Kenyan road construction workers reports a significant direct relationship between energy supplementation and worker productivity. The road workers, in this study, were divided into 2 groups (group I received 200 kcal/day and group II received 1000 kcal/day); the effects of this energy supplementation on worker productivity were examined and it was found that increases in arm circumference and Hb levels (blood-hemoglobin levels) were related to significant productivity gains-- about 4 percent (Wolgemuth et. al. 1982, pp. 79-86).

In the Gambia, the population is generally undernourished. Average calorie intake nationally is 80 percent of normal requirements and slightly lower (75 percent) for the rural population. This observation is contraposed with the paradox that the Gambia is "a heavy net exporter of foodstuffs (WBCS, The Gambia, 1981, p.78)." The food exports-- mainly groundnuts (peanuts), fish, and palm kernels-- are also part of the domestic diet, which makes the country, in an aggregate sense, more than self sufficient in food. Inadequacy in dietary intake is attributable to the Gambia's population "attaching lower priority to eating 'normally' than to spending money for nonfood items, such as textiles and transistor radios, and only marginally to a lack of locally produced foodstuffs (WBCS, The Gambia, 1981, p.78)."

Nationally, the average country-wide calorie consumption approximates 330 billion per year (1,800 calories a day per capita). The average per capita daily intake of 1,800 calories constitutes 81 percent of the per capita daily calorie requirement (calculated by the World Bank) of 2,230. Between 1972/73 and 1974/75, the estimated aggregate calorie needs of the Gambia was 412 billion annually. Actual domestic produce between these years was 450 billion calories annually and domestic consumption was estimated at only 330 billion. By implication, then, Gambian farmers produce more calories (9 percent more) than the entire needs of the country and 44 percent more calories than the rural population alone needs (WBCS, *The Gambia*, 1981, pp.78-80).

The paradox of a country self sufficient in food production, yet undernourished because of the low priority placed on food consumption, is made more disturbing by the observed sex and age-biased pattern of calorie consumption. There exist, for example, a popular claim (WBCS, *The Gambia*, pp.81-82) that adult Gambian men consume greater calories than women and children. The implication of this claim is obvious-- that the portion of the rural population (adult males) which decides what crops are grown, what marketing is done, and which receives the proceeds from the crop sales-- may have no incentive to alter their priorities. In essence, their control of the farm-household decision making mechanism and their advantageous position in the overall farm-household economic matrix turns them into a viable coalition that would block any movement away from the status quo.

In a study of pregnant and lactating women in Keneba in the Lower River division of the Gambia, for example, average daily calorie consumption of 1,660 are reported (60 percent of the norm) by such women; albeit the entire rural population consumes 75 percent of the (World Bank calculated) norm. In addition, various studies conducted by the Medical Research Council (M.R.C.) of the Gambia report that the nutritional status of children (who are productive agents of agriculture) is generally poor in the Gambia. Women and children are generally reported as having calorie intakes much below the average of the entire population, suggesting adult men consume substantially much more than the entire population's average (WBCS, The Gambia, p.82).

The inadequacy of calorie intakes, especially among the women and children, most likely affects their working efficiency or productivity. This is because calorie expenditures during the farming season depend on the adjustments farmers make between food intake and energy requirements in the execution of "basal" and "activity" functions (Haswell 1975, p.102). Haswell, for example, reports for Genieri village in Gambia's Lower River division that, during the farming season, "the performance of heavy tasks was interspersed by long periods of rest or the performance of light tasks (Haswell 1975, p.102)." Where circumstances permit, inadequate calorie intake is supplemented by "wild fruits" gathered or fetched by children from the "bush" and utilized by men and women as "snacks" or "nibblings" apart from main meals (Haswell 1975, p.102).

Nutrition intake generally in the Gambia can be characterized as exhibiting sharp seasonal fluctuations (WBCS, *The Gambia*, p.83). Food supplies are plentiful during the period immediately following the harvest (ie. around December to January) and so therefore dietary intake (cooked rice, side dishes of vegetables-- tomatoes, lettuce, etc, groundnuts, and fresh or dried fish) is more than sufficient during this period. During this period, body fat and tissue are restored and even some body weight is accumulated. Low food supplies are, however, experienced during the months preceding and up to August, when there is generally a "pre-harvest hunger;" aptly called the "hungry season" or "hungry period" (Haswell 1975, p.99). The "hungry period" constitutes a time of substantial drop in dietary intake (due to low food availability) and it extends from July to October (ie. at the peak of the rainy season) (WBCS, *The Gambia*, p.83).

The hungry period's effects are particularly adverse because it occurs at a time of the year when agricultural work load is heaviest and farmers' energy expenditures are at their peaks. The coincidence of peak labor season and depleted food inventories causes substantial body weight loss among farmers and adversely affects their productivity (WBCS, *The Gambia*, p.83). At this period, also, the incidence of epidemic diseases such as malaria and diarrhea rises sharply during the rains (WBCS, *The Gambia*, p.83). To present a clear idea of the pattern of changes in dietary intake over the year, we present Haswell's (1975) results from Genieri village in the Gambia's Lower River division.

Table 9. Eight Recorded Compounds in Genieri; Source:Haswell (1975, p.103).

Period	Calories	Per head per day		1949 Proteins (grams)
		1948 Proteins (grams)	Calories	
Dec-Feb	2167	55	2149	60
Feb-Jun	1653	49	1575	44
Jun-Aug	1747	54	1696	45
Aug-Dec	1502	43	1623	49

The above table shows the seasonal trend in dietary intakes in the eight sampled compounds in 1948 and 1949. The seasonal trends in calorie intake above shows the decline in consumption levels as the months of dependence on the past year's stock of grains lengthens (Haswell 1975, p. 103).

3.7 CONCLUSION:

This chapter analyzed the organization and structure of land and labor acquisition and use in rural Gambia. Land is acquired in rural Gambia by gift, inheritance, or first clearance, but not through sales or mortgages, which are formally prohibited. Usufructory rights are established on the first clearance of a plot, and such land rights are allocated hierarchically by village chiefs or other customary heads. Rising population pressure has continued to influence changes in the techniques of production in the Gambia, and this, together with the increasing frequency of land disputes, has induced a march towards a clearer delimitation of plots and greater privatization of traditional communally held rights in land. Population pressure together with annual agroclimatic variations has resulted in complex patterns of adaptations of land use to prevailing ecological conditions.

This chapter also analyzed that labor is central (albeit also critical) to the Gambia's agricultural future; and the various forms of labor, family and non-family, dovetail in an essential way towards the fulfillment of

individual, farm-specific productive goals. Types of Gambian non-family labor are identified as "kafos" (communal work groups), "mbaragninis" (daily or weekly individual wage laborers), "karidokulas" (monthly individual wage laborers), "saffer dingos" (fixed renting laborers), and "sama manila" (strange farmers). Utilization of different types of laborers entails the exploitation of complementarities between them at the farm-specific level to meet the demands and/or contingencies of agricultural production. Some discussion of the gender-specific division of labor in Gambian agriculture is presented and the implications that has for Gambia's agricultural productivity and for the allocation of male and female's time in food and cash crop production is explored. Special mention is made of the effect of gender on dietary intake, resource allocation, and on the unequal distribution of power and privileges between males and females within the Gambian farm-household.

CHAPTER 4
ALTERNATIVE AGRICULTURAL CONTRACTS: WHY THEIR
NON-PREVALENCE IN THE GAMBIA

This chapter argues that resource disparities condition and explain why agricultural tenures and tenorial contracts vary across space and time. The puzzle which requires some convincing explanation and which the following analysis examines is: Why are alternative contractual arrangements non-prevalent in the Gambia? Are there specific features of the Gambian environment (weather, crops, demography, technology, etc.) which make wage, fixed-rent, or share contracts unattractive to the participating agents? We claim in this chapter that there are, and that these specific features are related to problems of imperfect information and other transaction costs. Our analysis utilizes time series data on Gambian rainfall variability. Rainfall variability is a significant cause of risk in rain-fed agriculture, and our analysis argues that this element, combined with multiple agency (ie. many workers), creates moral hazard problems under alternative contractual arrangements. Moral hazard, as an incentive problem, derives from the asymmetric distribution of information among contracting parties. Reputation and monitoring are argued as possible remedies for the incentive problems, but the latter measure is costly and the former is of low pay-off in the Gambian environment.

Alternative contractual arrangements are considered and eliminated on the basis of their unattractiveness to the contracting agents. Eventually, the share contract is shown to be dominant (given the Gambian environment) and some explanation is provided as to why even the sharecropping contract is suboptimal in this environment.

4.1 THE WAGE CONTRACT:

Under this type of contract, the landlord, as residual claimant, hires the services of a worker and pays him a fixed wage. The landlord contracts with a worker, but he cannot costlessly ensure that the worker behaves according to the contracted terms. In part, this is a result of the worker having considerable discretion concerning his performance (Yellen 1984, p.205), which might induce him to engage in shirking. Inability on the part of the landlord to costlessly guarantee that a worker does what he contracted to do is in part due to the landlord being less than perfectly informed about a worker's behavior and also partially due to a divergence between the landlord's and worker's objectives. If the landlord has perfect information about a worker's actions, then penalties could be incorporated into the contract that penalize any departure from contractual specifications (Holmstrom 1979, p.74). Similarly, if there is no divergence between landlord's and worker's objectives, then the problem of trust in worker's adherence to contract terms does not arise. Moral hazard, as an incentive problem, arises in wage contracts because

a worker's effort "cannot be observed and hence contracted upon" (Holmstrom 1979, p.74). The fact that a worker has full discretion over his unobservable effort and that he will be paid, regardless of performance, alters his incentives and therefore the probabilities of the outcome (Arrow 1971, p.142; Holmstrom 1979, p.74).

In agriculture, moral hazard problems vary in complexity depending on whether the landlord has one or many workers. If the relationship between worker and landlord is one-to-one and if there are no other exogenous factors in the production process (i.e. if stochastic phenomena such as the weather is stable and perfectly predictable), then the problem of moral hazard does not arise. The behavior of the worker here is deterministically related to the final outcome. The landlord can simply observe the outcome (crop yields) and determine whether there is any shirking or not. Under this circumstance, worker-effort is uniquely linked to output. The moral hazard problem in the one worker case arises, however, because the final outcome is stochastic. In this context, output is no longer a sufficient signal of the worker's behavior, since it has both an effort and a stochastic component. Any attempt by the landlord to deduce the worker's behavior from the outcome (output) will be stifled by the prohibitive costs of identifying and separating the independent effects of both factors from such an outcome.

Various remedial measures have been suggested to the moral hazard problem. "Reputation effect" is one of them. Reputation, as a form of human capital, is sequentially accumulated through time by a worker; it may result in a landlord's trust (or lack there-of) in a worker. The

importance of reputation depends on the value that a particular worker attaches to it. Reputation effects matter in the Gambian context if the contract between landlord and worker is repeated. If the wage contract is a repeated game and if the contract is for the one worker case, then the moral hazard problem is minimized because the worker will act in favorable ways to achieve some good reputation which will improve his chances of being repeatedly hired by the same landlord or by other landlords in the same area. If the wage contract is non-repeated, then substantial risks saddle such arrangements (especially if there is no monitoring), as a worker may see it in his self interest to shirk his effort supply.

We should note here that, for the one worker case, effort is observed (albeit imperfectly) only after the contract is over. From the worker's (strange farmer's) viewpoint, whether investment in reputation is profitable or not depends on the duration and repeat frequency of strange farmer contracts. The evidence from a 1974-75 sample survey of 900 strange farmers in the Gambia (ASSG, 1975, p.8) reveals that about one fourth of the strange farmers that came were non-repeaters whereas the residual three fourths had come the preceding year as strange farmers. Among the repeaters about 60 percent changed their village, whereas 40 percent went to the same village in the two successive years, 1973-74 and 1974-75. This implies that only a small fraction of strange farmers from this sample (i.e. 0.75×0.40) may worry about reputation. In general, the fact that the duration of the strange farmer contract is for one season during the year and that the majority of

repeaters change their village of cultivation may be due to the fact that investment in reputation has a low pay-off. .

In the many worker case, the moral hazard problem in wage contracts is even more severe. Here, even in a deterministic setting, output is no longer an accurate signal of individual effort, albeit a signal of group (of workers') effort. If the production process is characterized by irreducible uncertainty, then here the moral hazard problem is even exacerbated further. The problem of moral hazard arises here for two reasons. First, even though effort is in principle subject to monitoring, in the many worker case, it is costly to observe. Second, the variability and unpredictability of stochastic phenomena such as the weather adds a risky component to wage contracts.

The unobservability of effort problem is related to the fact that the worker (effort-supplier) has considerable discretion with respect to deciding the level and allocation of his effort (Braverman and Stiglitz 1982) in a wage contract. In the absence of perfect monitoring, the worker may engage in shirking, which can be minimized to the zero level only by incurring prohibitive costs. Even though investment of resources in supervision and monitoring may help; it will, however, not provide a perfect remedy because the prohibitive costs of doing so may vary with the number of workers and their spread across space. The claim can be made that supervision costs are a non-decreasing function of the size and spatial dispersion of a given number of contracted workers.

The evidence from the Gambia, based on the 1974-75 sample survey (Swindell 1978) shows that the average number of strange farmers per

landlord is 1.92. Of the "dabadas" (farming households) sampled, 51.9 percent had one or more strange farmers. The fact that a significant number of Gambian farming households have more than one strange farmer implies that moral hazard problems will saddle wage contracts in this environment. The use of monitoring and supervision may help in alleviating this problem, but such activities can be very costly, particularly in the case of many workers (strange farmers) per landlord.

Risks associated with stochastic phenomena, mentioned above, may exacerbate the moral hazard problem in wage contracts. If the number of workers is greater than unity and the weather is significantly variable (as it is clearly in the Gambia), then it is hard to separate the outcome (crop yields) from the causes. The act-to-outcome mapping operationalized in part by the worker is not completely known to the landlord, which is, in principle, a principal's (landlord's) problem (Ross 1973). The outcome of poor crop yields here is multi-caused; it is not clear whether the outcome is a result of a worker's shirking or of bad luck (weather). The claim can be made, following from this exposition, that a worker (strange farmer) who is part of a large number of workers laboring for a single landlord under an environment of uncertainty will have the incentive to stint his effort supply since his chances of being identified from the outcome (crop yields) is low.

Weather variability and unpredictability in the Gambia, as mentioned above, is indisputable. The effects of such stochastic phenomena on wage contracts has particular relevance to the risk/return choices that landlords and workers make. In the Gambia, rainfall was generally abundant

from the 1950s to the 1960s. Then the rains failed in 1968, which actually marked the beginning of the great desiccation that resulted in the 1972-73 drought, continuing into the late 70s and early 80s. Since 1968, the rainfall pattern in the whole region of the Sahel (of which Gambia is a part) showed a downward trend. This is particularly observable from the time series of rainfall data of four weather stations in the Gambia, showing 1550 mm in 1951 and 700mm in 1985 (Jallow 1986). Significant variations in rainfall pattern are observed from year to year and a general declining trend. The time series data shows that 1958 was the wettest year with 1860mm of rainfall observed in the western region of the country and, for the eastern region, 1961 was the wettest year with 1500 mm of rainfall. 1983 is documented as the single driest year with an average rainfall of 380mm for the whole country (Jallow 1986).

Significant weather variability, together with production and other environmental risks (locust-invasions, pests such as monkeys, etc.), as discussed above, makes wage contracts in Gambian agriculture quite risky to the participating agents. The landlord, in particular-- especially under a characterization where the contracting worker exhibits infinite risk aversion, will have to fully bear all the risks. But possible observable differences in risk attitudes and abilities to bear risks may create opportunities for risk-sharing in wage contracts. If the attitude of the worker towards the uncertainty identified above is that of a risk lover or one who is risk-neutral, then possibilities may exist to shift risks to the agent most willing and able to bear them; in this case, the worker. But risk neutral or risk loving workers are unusual in agriculture. A

more realistic assumption (which most likely holds for the Gambian environment) is for both the worker and landlord to be risk averse. Under such circumstances, the wage contract, which puts all the risks on the residual claimant, will be unattractive to landlords and will generally be sub-optimal.

We will now turn to an alternative contractual arrangement known as fixed-rent tenancy and explain why we do not observe its prevalence in the Gambian environment.

4.2 THE FIXED RENT CONTRACT:

Under this type of contract, the fixed-renter (tenant) is a residual claimant, who pays a fixed lump sum rent to a landlord. The landlord receives his fixed-rent, regardless of whether favorable or unfavorable states of nature obtain, and he is freed from directly cultivating his land and may concentrate his time on alternative economic activities. The fixed-rent contract provides maximum incentive for the tenant (strange farmer) because the tenant bears all the production risks. The landlord, however, may find such a contract attractive because the rent he receives is invariant with respect to any state of nature.

The fixed-rent contract must entail some pareto optimal sharing of risks and returns between agents or otherwise none of the contracting parties will choose to engage in it. In other words, the fixed rent contract is an agreement freely reached between two parties. And if both

parties choose to enter into it, then both must be made better off (Arrow 1971,p.137). Pareto optimal sharing of risks and returns is important because it creates possibilities for at least one party to improve his allocation without a corresponding worsening of the other party's allocation by shifting risks to the party most willing and able to bear them.

In the Gambian environment, as mentioned above, agriculture is subject to the vagaries of weather (particularly rainfall variability), pests, etc., which makes fixed-rent contracts generally risky. The existence of such risks and of risk-averse tenants necessitates some form of risk-sharing arrangement. Otherwise, fixed-rent contracts cannot prevail. If the landlord is risk neutral or risk loving and the tenant risk averse, then pareto optimal risk sharing requires that the tenant shifts the risks to the landlord in exchange for which the landlord receives a higher rent. An equilibrium fixed rent contract could be defined here as that unique combination of risk and rent that both landlord and tenant agree to and that neither party can improve upon.

But the assumption of a risk neutral or risk loving landlord is untenable in most agricultural environments. Generally, a safer presumption is one of risk averse landlords and tenants (and this is a reasonable presumption for the Gambian environment). Under this circumstance, however, risk averse tenants will generally find fixed-rent contracts unattractive. Even though some possibilities may exist for shifting risks based on the relative degrees of risk aversion between landlords and tenants, such opportunities may be negligible. Generally,

then, attitudes of risk aversion among Gambian tenants will make the fixed-rent contract to be sub-optimal.

This brings us to the two remaining contractual forms: the Sharecropping contract and the Strange Farmer contract. It is intended in this subsequent analysis to examine both contractual arrangements and to explain why one prevails in the Gambia and the other does not.

4.3 THE SHARECROPPING CONTRACT:

Under this type of contract, the sharecropper (tenant) provides his labor and a portion of the cost of other inputs in exchange for land and a stipulated share of the crop (Cheung 1969; Reid 1976; Eswaran and Kotwal 1985). Generally, the sharecropper (tenant) and landlord each provides one of the unmarketed privately owned resources, which are used for the production of a certain mutually agreed output, the actual output to be shared according to some endogenously and competitively determined percentages.

The literature on sharecropping is vast. But two contending views pervade the sharecropping literature. One view, associated with Alfred Marshall (1966), holds that sharecropping is inefficient. The other view, associated with Steven Cheung (1969), holds that sharecropping is efficient. We will examine each view here, and the results obtained from the two competing views will hopefully throw some light on our problem, which is: Why do we not observe the prevalence of sharecropping con-

tracts in the Gambian environment? The formal models employed here are slight variants of those treated in Bliss and Stern (1982).

4.3.1 The Marshallian Model:

In this model, the landlord stipulates the share; ie. "k" in the sharecropping contract. The landlord, however, leaves the tenant with considerable discretion; ie. the tenant chooses his variable input; ie. labor, and maximizes his net returns. An inefficient outcome results because the tenant equates his marginal product to a multiple of his opportunity cost; ie. the market wage.

Formally, the tenant's problem is:

$$\text{Max}_{\{l\}} (1-k) F(l,d) - wl \quad (1)$$

where: k = landlord's crop share

d = land

l = labor

w = opportunity cost of labor

k, w, d = parameters

The tenant's discretionary variable is "l" which he chooses and optimizes. From this maximizing behavior, we obtain the following first order conditions:

$$(1-k) F_l = w \quad (2)$$

$$F_l = w / (1-k)$$

The result shows that labor is not motivated enough to result in our standard efficiency condition. The marginal productivity of labor is not equal to the competitive wage. In short, the result in (2) with respect to labor application is inefficient.

Similarly, inefficiency results with respect to the utilization of land. That is, if the sharecropper (tenant) can hire-in any desirable level of land, then the tenant's optimization problem with respect to land is:

$$\text{Max}_{\{d\}} (1-k) F(l,d) - wl \quad (3)$$

where d = land; choice variable.

From this maximizing behavior, the tenant's first order condition with respect to land is:

$$(1-k) F_d = 0 \quad (4)$$

The outcome from this behavior is likewise inefficient because efficiency in land use requires that the marginal productivity of land be equal to the competitive rent. In the result in (4), the marginal productivity of land is equal to zero. This implies that the tenant has an incentive to hire-in land whenever the marginal productivity of land is strictly positive, since his net reward would be equivalent to a multiple of this marginal productivity; i.e., $(1-k)F_2$.

One immediate consideration from the result in (4) is the implication of the marginal productivity of land being equal to zero. This means that there will be an excess demand for land whenever the marginal productivity of land is positive, which immediately suggests the necessity for rationing. Realistically, it is inconceivable to observe land with zero marginal productivity because we can always make land yield positive output through changes in cropping patterns, application of fertilizers, etc. In some sense, it is this dissatisfaction with the Marshallian representation and conclusion about the inefficiency of sharecropping which led Cheung to present an alternative perspective. The point of contention between the two views is who determines the tenant's labor input level: landlord or tenant? Marshall assumes that it is the tenant. Cheung assumes that it is the landlord, and the landlord stipulates it in the contract. We shall now consider the Cheung view.

4.3.2 The Cheung Model:

We should note, foremost, that Cheung's dissatisfaction with the Marshallian (traditional) view is based on two points. One is that the traditional analysis neglects the role of the land market in the sharecropping contract. Another is that the traditional analysis ignores the position of landlords in the sharecropping arrangement. The position of the landlord is important with respect to determining the tenant's input level in the contract. We shall examine these concerns in greater detail after we formally introduce Cheung's model.

In Cheung's model, the landlord not only stipulates a share "k" in the contract but also the labor input. In addition, the landlord divides his total stock of land "D" into several plots "n" and decides on all these subject to the constraint that tenants receive at least the market wage "w," the equivalent of a tenant's foregone income.

The landlord's optimization problem is to maximize his total rent;ie:

$$\text{Max}_{\{k,n,l\}} nk F(l,D/n) \quad (5)$$

where $nkF() = \text{total rent}$

s. t.

$$(1-k) F(l,D/n) \geq wl \quad (6)$$

If we let the landlord's total share rent to be equal to "R" such that: $R = nk F()$, then the landlord's problem becomes:

$$\text{Max } R \quad \text{s.t.} \quad F(I, D/n) - kF(I, D/n) \geq wl \quad (7)$$

Expressing the constraint in terms of "R" further yields:

$$\text{Max } R \quad \text{s.t.} \quad F - R/n \geq wl \quad (8)$$

With the assumption that the constraint binds, the constraint gets modified as:

$$F - R/n = wl \quad (9)$$

$$R/n = F - wl$$

$$R = n (F - wl)$$

Substitution of (9) into (8) yields:

$$\text{Max } n (F - wl) = \text{Max } n (F(I, D/n) - wl) \quad (10)$$

Optimization with respect to the choice variable "I" yields:

$$nF_1 - nw = 0 \quad (11)$$

$$F_1 = w$$

and with respect to the choice variable "n" yields:

$$(F-wl) - nF_2 D/n^2 = 0 \quad (12)$$

$$(F-wl) - F_2 D/n = 0$$

Using (9) and substituting into (12), we obtain:

$$R/n = D/n F_2 \quad (13)$$

In (11) we obtain the efficient condition that the tenant wage is equal to the marginal product of labor, a result that is competitively reached. That is, inter-landlord competition for tenants guarantees that tenants receive at least the opportunity wage for their effort. Each tenant's ability to rent land guarantees that no tenant accepts a crop share less than his residual from rented land. Similarly, each tenant's ability to hire-out his labor guarantees that no tenant accepts a crop share less than his competitive wage (Cheung 1969; Reid 1973, 1977). In this sense, labor's equilibrium intensity and per-acre yield is invariant with respect to tenure choice (Reid 1977).

In (13) we also have the efficient result that the landlord's rent per tenant is the land per tenant multiplied by the marginal product of land. In standard terms, the marginal productivity of land equals the competitive rent. Inter-tenant competition for land guarantees that the landlords get at least the opportunity rent for their land in the form of output. Every landlord's ability to rent-out his land guarantees that

no landlord accepts a crop share less than the competitive rent; likewise, no landlord accepts a crop share less than his residual from owner-cultivation (Reid 1977).

In this sense, with pure competition (zero transaction costs and clearly defined exclusive rights), the Cheungian efficiency conclusion follows: the simultaneous existence of different tenures (wage, fixed-rent, sharecropping) does not imply different efficiencies, since factor rewards are equalized across tenures (Cheung 1969; Reid 1973). Essentially, identical efficiencies obtain, regardless of tenure form.

It should be noted that solutions to the potential inefficiency of sharecropping were first suggested by D.G. Johnson (1950). Johnson recommended that the potential inefficiency could be eliminated by three means; ie. i) by having the landlord enforce the desired intensity of cultivation, or ii) by sharing in the costs to the same extent as in the output, or iii) by issuing short term leases subject to periodic assessment of tenant performance and renewal. Cheung (1969) and Reid (1973) concentrated on the first solution and provided historical evidence about the actual existence of such contracts. Reid's (1973; 1976) evidence shows that American southern contracts (both ante-bellum and post-bellum) generally detailed the rights and obligations of tenants and landlords and often included types of crops to be grown, marketing configurations to be used, the length of the working day, penalties for sicknesses and absences, farm fences to be erected, etc.

But there are some problems with this first solution. There is, first of all, an implicit presumption that landlords have the power to determine

the tenant's input level. But Cheung provides no explanation about where the landlord's get this power (Bardhan and Srinivasan 1971) and why they benevolently reward their tenants with at least the opportunity wage (Reid 1977). Secondly, Cheung ignores the enormous informational requirements and measurement problems associated with specifying the intensity of work under various contingencies in the agricultural season. It is not only prohibitively difficult to write a contract based on effort intensity, but also costly to verify (observation and measurement problems) whether contract terms have been executed or not.

The second solution proposed by Johnson; ie. cost-sharing proportionate to output, may improve the allocation of non-labor resources, but does not remedy the labor use distortion since labor cost is not a part of the sharing agreement (Sen 1975, p.69). The third solution; ie. the issue of short-term leases with periodic review of performance (and contract renewal only upon satisfactory performance) is the one Johnson primarily discussed, and it is a solution widely utilized in actual sharecropping. This solution relies much on the "threat of eviction" to induce correct incentives towards the desired work intensity (Sen 1975, p.69), but such a solution would be ineffective without a "reserve army" of tenants.

With the distinction between the Marshallian and the Cheungian framework clearly made, we now proceed to examine some explanations given for the use of sharecropping contracts. Then subsequently, some explanation is provided as to why sharecropping contracts are not prevalent in the Gambia.

4.4 SOME POPULAR EXPLANATIONS FOR SHARECROPPING'S USE:

Three dominant explanations for sharecropping's use persist. One focuses on the opportunities it provides for risk sharing, and the other concentrates on the opportunities it provides for circumventing market failure and/or the absence of certain markets, especially those for credit and capital. The third deals with the role of sharecropping as a screening device.

The risk sharing explanation for the use of sharecropping holds that sharecropping enables landlords and tenants to disperse risk among themselves based on their relative willingness and abilities to bear it. Agriculture, as is generally observed, is subject to much price and yield uncertainty. Risk sharing could be a beneficial option since risk is a bad that risk-averse landlords and tenants generally pay to avoid. In the absence of a market for insuring risks, sharecropping is a convenient arrangement which enables landlords and tenants to distribute the variance of crop yields among themselves (Cheung 1969, p.68).

The risk sharing explanation has been disputed, however, for its lack of generality. Some studies (Stiglitz (1974); Newbery (1975); Newbery and Stiglitz (1976) go even further to argue that risk aversion and the gains of risk sharing are not sufficient reasons for the use of sharecropping. Why? Because identical risk sharing benefits could be

obtained by landlords and tenants from simply mixing land and labor contracts. This implies that it is possible, with the assumption of a linearly homogenous land, for a landlord to divide his total stock of land into two plots-- one contracted under fixed-rent and the other under a fixed wage, and identical risk sharing benefits will obtain as in sharecropping. In this sense, sharecropping can be shown to be redundant. We should note though that the constant returns to scale (linear homogeneity) assumption of the production function is very crucial here for the redundancy result. If the production function is not linearly homogenous (as in the case of increasing returns to scale) and there are multiple sources of risk (production and labor market risks), then sharecropping can be a superior device for risk dispersion than simply a mixture of wage and fixed-rent contracts.

The other prevalent explanation for sharecropping's use focuses on the opportunities it provides for dealing with market failure and/or absent markets. This explanation, popular among Classicists (Smith; Marx) and their modern revivalists (Jaynes 1984), holds that sharecropping is used because it provides positive incentives in production. For example, sharecropping provides access to credit (in the absence of a credit market) or access to cheaper credit (in the presence of high credit costs). The access to cheaper credit, for example, may induce the tenant to apply greater effort (thereby augmenting the size of the total crop yields; a benefit to the landlord). The tenant's incentive to work harder here comes from the fact that he is obliged to retire his debt out of his crop share after the harvest period.

The third explanation for sharecropping's use deals with its role as a screening device (Newbery and Stiglitz 1979, pp. 323). This explanation for sharecropping presumes that workers of heterogeneous productivities reveal their abilities by the type of contract each chooses. Generally, of course, landlords prefer workers with the highest productivity. In a fixed-rent contract, the landlord would be indifferent about worker-quality (as long as the relevant worker pays his rent and does not misuse the land). But under fixed-wage and sharecropping contracts, information about worker-quality is useful to the landlord. Interestingly, workers' views of their own abilities gets revealed in their contract choice: hence the most productive workers choose fixed-rent; the least productive choose wage contract; and those of intermediate productivities choose sharecropping (Newbery and Stiglitz, p. 323).

We now proceed to examine why sharecropping contracts are not prevalent in the Gambia.

4.5 THE NON-PREVALENCE OF SHARECROPPING CONTRACTS IN THE GAMBIA: WHY?

One explanation can be provided for the non-prevalence of sharecropping contracts in the Gambia, which is that it creates the incentive for strange farmers (tenants) to cheat by understating their final output. A possible correction for this behavior is to engage in inspection, but inspection is a costly activity. Indeed, in practice, in-

spection can be prohibitively costly if the number of tenants is numerous and if the plots of cultivated land are spatially dispersed. In sharecropping, incentives to cheat through the understatement of final output exist because of this costliness of inspection. In the absence of inspection, the strange farmer is induced by self interest to cleverly understate the final crop yields.

Another possible corrective is to penalize bad behavior (as exhibited in poor performance and cheating) by relying on reputation effects. If that is the case, then such concerns about reputation will induce the strange farmer to behave in ways favorable to his landlord. But investment in reputation is complicated by the "strangeness" of the strange farmers or the low return from such an investment. The "strangeness" of the strange farmers derives from the fact that they do not reside in their farming area; ie. their geographical origins and ethnic ("tribal") backgrounds are heterogenous. The 1974-75 agricultural sample survey of the Gambia (Swindell 1985), for example, shows that one fourth of the total sample of 33,000 migrants (strange farmers) are Gambians (ie. 8000) and the residual three fourths consist of equal proportions of strange farmer migrants from Senegal, Guinea and Mali. These migrants also come from heterogeneous ethnic groups; namely: Mandinka, Wolof, Fula, Bambara, and Serer. "Reputation" in agriculture, as a form of human capital dealing with the general estimate in which an individual is held by others, generally has local-specific value. If the migrants do not return to the same area or landlords to farm, then the value of investing in it is practically diminished. The sample evidence, cited earlier, sug-

gests that few strange farmers repeat their contracts. In this sense, the "strangeness" of the strange farmers undermines the value of investment in reputation.

After explaining why we observe the non-prevalence of sharecropping contracts, we now explain the non-prevalence of alternative contracts in rural Gambia.

4.6 EXPLANATION FOR THE NON-PREVALENCE OF ALTERNATIVE CONTRACTS:

Given that Gambian farming requires reliable sources of labor during critical phases of the agricultural season, strange farmers provide precisely this supplementary source (Jeng 1978, p.108; Swindell 1981, p.17; Robertson 1987, p.222). Wage contracts are not prevalent because all risks are absorbed by the landlord, and generally, given the Gambian environment, wage labor is unattractive and unreliable because i) it is scarce or non-accessible during critical times (such as weeding, tending, etc.) of the farming season; ii) it often involves prohibitive transaction costs, especially if it is recruited daily; iii) it often involves outlays of scarce cash; and iv) it does not provide the farm-specific skills accumulated through intra-seasonal attachment between a strange farmer and his landlord. Similarly, fixed-rent contracts are inferior to strange farmer contracts in the Gambian environment simply because, even though they provide maximum incentives to the tenant, they force him to absorb

all the risks of farming. Additionally, strange farmer contracts dominate sharecropping contracts in this environment because the latter provides greater incentives to cheat through understatement of final output. In strange farmer contracts, however, the problem of cheating on the final output is minimized by the clear delimitation of plots. In this sense, the landlord does not have to rely on the honesty of a strange farmer to know what is his (landlord) true final due.

4.7 CONCLUSION:

This chapter has been concerned with analyzing alternative contractual arrangements; ie. wage, fixed-rent, and sharecropping contracts; and explaining their attractiveness or unattractiveness to the contracting parties, given the Gambian environment. Wage and fixed rent contracts are eliminated first because they provide minimal opportunities for risk-dispersion; overwhelmingly shifting all risks to the respective residual claimant. Wage and sharecropping contracts, in the absence of costly monitoring, are particularly saddled with moral hazard problems, a possible remedy of which is "reputation;" but this panacea is of no consequence because of its low pay-off in the Gambian environment. Sharecropping, which has identical attractive properties as strange farming, does not prevail in this environment because of incentive problems; such as incentives to cheat through understatement of final

output associated with it and the worker being rewarded less than his full marginal product.

CHAPTER 5

THE STRANGE FARMER CONTRACT: MODELS AND THEIR IMPLICATIONS

This chapter builds on the results of the previous chapter, discusses the structure of the strange farmer contract, and presents two models of the strange farmer system and examines their descriptive implications. Some of the earlier chapters (particularly two and three) showed that the strange farmer system emerged due to a complex of historical and demographic factors, but here we insist on an economic rationale because the arrangement involves the use of scarce resources.

The first section of this chapter briefly modifies and extends the results in the previous chapter about why alternative contracts are suboptimal in the Gambian environment. The next section discusses the pre-contract (screening, sorting, and negotiating) phase and also the structure of the strange farmer contract. The third section provides an economic rationale for strange farming and discusses problems of contract enforcement in this environment. The fourth section develops models of the strange farmer system and discusses their implications in terms of contractual terms, location of plots, incentives, and efficiency.

We will repeat some of the assumptions and claims made in the preceding chapter because the specific hypotheses and assumptions we are making about the strange farmer environment are important here for subsequent analytical clarity. We first hypothesize that rainfall vari-

ability in this environment introduces significant riskiness into agricultural contracts. This hypothesis makes sense because Gambian agriculture is rainfed, and poor rainfall or the non-availability of rain at critical phases of the farming cycle results in a poor harvest. Secondly, we hypothesize that the "strangeness" of the strange farmers (the fact that they do not reside in their farming area and also that they come from diverse ethnic ("tribal") groups) makes enforcing contracts prohibitively costly. Reputation effects could ameliorate enforcement problems, but we found in the previous chapter that, because of its low pay-off in this environment, reputation is of no consequence. Thirdly, we assume that strange farmers are given to opportunism, and this means that using mechanisms of "trust" or "honesty" to enforce implicit contract terms generally results in less than satisfactory contractual performance. In what immediately follows, we briefly examine the suboptimality of alternative contracts in this environment.

5.1 SUBOPTIMALITY OF ALTERNATIVE CONTRACTS:

Apart from the unwillingness of risk averse Gambian landlords to accept a contract (ie. wage contract) which forces them to absorb all the risk burden, wage contracts have the added unattractive feature that a worker could leave in the middle of the farming season. The farming season generally consists of slack and peak periods, and opportunistic behavior may induce the worker to work and receive wages during the

slack period, when work intensity is low, and flee away during the peak labor period. For the landlord in the strange farmer environment, this "fleeing away" hazards could disrupt farming operations and the landlord has no effective rules and courts in place to use as a recourse for adjudication.

Fixed rent contracts could be used in this environment but they are suboptimal because the risk averse worker (fixed renter), who is the residual claimant, is not likely to accept a contract that forces him to absorb all the risks. Sharecropping contracts of the Cheung variety (1968), particularly in this strange farmer environment, are riddled with enormous information, measurement, and enforcement problems, which renders them impracticable. The landlord specifying the share and desired labor intensity in the contract is generally infeasible, since it requires full information about all possible contingencies and involves problems of metering and enforcing a contract based on worker effort. If strange farmers (migrant workers) value reputation highly enough as to invest in it, then landlords can utilize past worker-performance as a signal to improve on future contracts. But, in the strange farmer context, a negligible number of contracts are repeated, which suggests the inconsequential nature of reputation effects. Marshallian sharecropping contracts, however, could be used, but they exhibit severe incentive problems because the tenant (migrant worker) equates his marginal product to a multiple of the opportunity wage; hence, absent costly monitoring in such contracts, a less than optimal level of labor will be supplied. In the next section, we will discuss the activities (screening,

sorting, etc.) which characterize the phase before the strange farmer contract.

5.2 THE PRE-CONTRACT PHASE:

The pre-contract phase of the strange farmer contract is characterized by a search period. When strange farmers arrive at their receiving areas in March (and the influx continues till June), they drift from locality to locality in search of a landlord who will be their best match for the rainy season (Palmer 1946, p.2; Jarrett 1949, p.654). The search costs these migrant farmers incur vary directly with the distance of their search and the number of tried landlords. In this sense, it is in the strange farmers' self interest to minimize search costs by aborting the search process if the expected net benefits of search are negative.

The exchange place (or negotiation) platform for strange farmers in most Gambian villages is the "bantaba." The "bantaba," a raised platform of sticks and bamboo mats and usually under a large tree, is the center of village life, a place for both resting and for individual and community meetings (Palmer 1946, p.2). It resembles the "village green and the inn in England, and is often used by travellers as a sleeping place (Palmer 1946, p.2)." Inquiry about and discussion of contractual terms with landlords usually take place at the "bantaba."

The search process for a strange farmer contract is mutual, but it is the migrant (strange farmer) who does the locational adjustment. In

general, the strange farmer searches for the landlord who offers the best terms, which means that the strange farmer will accept the contract which offers the highest expected net returns. The process of host selection on the part of the strange farmer and of client selection on the part of the landlord is, however, riddled with uncertainty. An agreement to negotiate terms entails each party operationally acquiring a lottery; ie. an investment in a resource whose productivity depends on chance. Each party is faced also with an asymmetric information problem.

This asymmetric information problem makes optimal screening prohibitively costly. In the strange farmer context, the strange farmer knows more about his labor than the landlord, and vice versa in the case of the plot of land given to the strange farmer. The landlord cannot ascertain the quality of labor he receives, except by accumulating information from experience with the migrant through time. As such, if the landlord is to invest in such an uncertain resource, he most likely will rely on imperfect signals such as the observable attributes of the strange farmer.

In fact, the evidence indicates that such proxies of ability such as age and/or physical appearance are in fact used. As Swindell (1980, p.G.44) notes, "Most strange farmers are aged between 18 and 35 years... hosts require able-bodied men capable of a good day's work, otherwise they are not accepted as Strange Farmers. Such selectivity effectively rules out young boys and older men." The use of such selectivity criteria is by no means costless, and may create incentives for some strange farmers to provide false information where possible. In-

deed, the observation that few strange farmers know their ages with accuracy is most likely not inconsistent with the desire, on the part of most strange farmers, to appear attractive to their landlords (hosts). Similarly, the absence of proper screening devices may enable some strange farmers to pass the physical appearance test without, in reality, being "able-bodied" (in the sense of being physically fit to exert the necessary effort to actualize host-client contractual objectives).

The use of selectivity criteria by the landlord (host) to obtain what Alfred Marshall (Principles, 1948, p.649) refers to in the context of the European "Metayer" system (ie. rental by shares) as "an able and responsible tenant" may not rest strictly on commercial principles. In the strange farmer context, the landlord may use such proximate sources of information as, for example, the "reputation of a particular tribe," in the selection of a migrant (client). In the Gambia, some tribes; eg. the Mandinka, Jola, and upcountry Wolof, are reputed for "hardwork." Other tribes, such as the metropolitan Wolof and the Akus are reputed for a strong white-collar jobs' preference, and still others, like the Mandiagoes, are known for "drunkenness" and "idleness." In the absence of good information to condition strange farmer selection procedures on, a host-landlord may resort to the "reputation of a tribe" with respect to working attitudes, attachment to the land, and responsibility, as a surrogate for good information. The host-landlord may operationally follow a rule-of-thumb like this: "On the average, a Jola strange farmer may exhibit more discipline, exert more effort, and require less direction than a Mandiago strange farmer." This is not to say that such selection

techniques are not fraught with mistakes, which may be very costly; but that in an environment where asymmetric information looms large, it may be reasonable or even advantageous to base contractual decisions on the available, imperfect information than on nothing at all.

The screening and sorting of strange farmers (based on imperfect signals) aside, a landlord will most likely interpret the signals he observes in the light of his past experience. The information set that a landlord acquires from certain observable characteristics of the strange farmer (ie. tribal marks, physical fitness, etc.) enables him to sort out what, in his informed judgement, would constitute a good worker. Once a strange farmer is screened (and vice versa for the landlord) and the two parties agree to negotiate, further costs are incurred. Since negotiation costs are an increasing function of negotiation time, then the earlier the consensus between landlord and strange farmer the less costly is the negotiation.

We should note that, even though negotiation is characterized by selfish interests, in the strange farmer context, fair practice is the best policy. This is because in negotiating a strange farmer contract, reputational considerations come to play. If an unscrupulous landlord, for example, engages in an unattractive negotiation to the detriment of a strange farmer, this may ruin his reputation in the farming community. As a colonial secretary put it, "As the strange farmer is a free agent negotiating with his landlord there can be few of the latter who fail to learn very soon that fair treatment is the best policy (Palmer 1946, p.3)."

In the next section, we discuss the terms and structure of the strange farmer contract.

5.3 THE STRANGE FARMER CONTRACT:

As mentioned earlier, under this type of contract, the strange farmer (in Mandinka, "samalaa;" plural "samalaalu") provides labor time in exchange for a temporary exclusive use of a plot of land (Palmer 1946; Jarrett 1949; Swindell 1978; Robertson 1987). The landlord's choice variable is his total stock of land which he allocates between himself and his strange farmer (ie. tenant) to maximize his expected net-income. The strange farmer, however, has a reservation utility below which he would not accept any contract.

5.3.1 The Contract Terms:

The "samalaa" contract is verbal, although this aspect of the contract, given the legal environment, is of minimal consequence. The general outline of the contract terms does not vary by space or between contracts. But conditions supporting the private agreement and the specific terms may vary with the circumstance (Palmer 1946; Jarrett 1949). Generally, the landlord provides food, lodging, and land. In

some cases, credit is provided which is repayable after the harvest period (Palmer 1946; Jarrett 1949; Robertson 1987, p.222).

Food is often provided by the landlord's family as a consumption loan repayable in kind or in exchange for which the strange farmer provides consumption-inputs such as firewood for cooking. In the case of lodging, if there is no spare accommodation, the landlord assists the strange farmer with the construction of a hut on the landlord's compound (grounds) for the strange farmer's use (Jarrett 1949). Sometimes these extra conditions undergirding food and lodging provision are stipulated in the original agreement. In addition, the landlord may provide credit in the form of capital loans such as hoes, mosquito nets, seeds, etc. repayable from peanut sales after the harvest (Palmer 1946; Jarrett 1949).

In exchange for the inputs supplied by the landlord, the strange farmer provides labor on both his own plot and his landlord's. The number of days worked by a strange farmer on his landlord's plot is variant with respect to locality (district) and with respect to the ethnic group(s) residing in that locality; i.e., whether the inhabitants are Mandinka, Wolof, Jola, and/or Fula. It is only in the locality of Niani in the McCarthy Island Division that the host days (days worked on landlord's plot) are four days a week. In general, two host days are common in the Western region of the Gambia and three host days in the Eastern region (McCarthy Island and Upper River divisions) (Palmer 1946; Jarrett 1949). What accounts for such spatial variation in the number of host days is not clear, but possible explanations may be associated with variations in working norms between geographical divisions

or spatial variations in population pressure on limited "good" land. Considering working norms, it may be that the variation in "host days" is inconsequential given that the amount of hours worked on a host's plot per week is what eventually matters. Put clearly, it may be the working norm in the Western region that strange farmers work longer hours per day (and hence work fewer days per week) whereas in the Eastern region they work shorter hours per day (and hence more days per week). If this explanation is valid (a matter for empirical verification), then the observed variation in "host days" is without consequence.

A possible alternative explanation for "host days" variation may be due to spatial variations in population pressure on "good" land. Emphasis is on the adjective "good" because what matters in productive agriculture is quality soils. Population pressure on land by itself is not too revealing here because both the Western region and Eastern region are relatively high population pressure areas in the Gambia. However, as noted in chapter three, the Western region has relatively much poorer soils than the Eastern. It is conceivable that the further constricted and available good soils in the Western region may narrow the size of cultivable lands of landlords and therefore result in smaller host plots. In this sense, landlords may require lesser "host days" than in the Eastern region where host plots may be relatively much larger.

5.3.1.1 Explanation For The Loan Aspects Of The Contract Terms:

Two types of loans can be observed in strange farmer contracts: production and consumption loans. Production loans are given to a strange farmer in the form of production-factors (e.g., capital-- such as hoes, seeds, mosquito nets). These loans benefit the landlord not only in the form of direct interest payments but indirect benefits in the form of increased crop yields. For example, the loan of a hoe translates into extra benefits in terms of strange farmer productivity. In the same vein, the loan of a "mosquito net" confers external benefits to a landlord by reducing the risk and incidence of malaria from mosquito bites and thereby favorably augments the "health capital" of a strange farmer.

The other type of loans, consumption loans, are given to a strange farmer in the form of consumption goods (food, kolanuts, etc.) before the realization of crop yields. Consumption loans, particularly food loans, are deemed central to the strange farmer contract. In fact, the available evidence (Robertson 1977, p.225) suggests that the most scarce resources, food and labor, constitute the focus of the contract. Strange farmers are primarily engaged in cash crop (mainly peanut) production, and this has raised official concerns with respect to whether they are net consumers or producers of food (Robertson 1977, p. 225-226). Responses to these concerns seem to suggest that strange farmers do not aggravate food shortages. But this position is based on the contention that the strange farmer contract combines both subsistence and commercial elements: that a strange farmer works on his landlord's food crops

as well as on his landlord's and his own cash crop (peanut) fields (Robertson 1987, p.226). Several observers contend that early seasonal participation in food crop growing is a special feature of the strange farmer contract. The argument in this regard is that "since the samalaa (strange farmer) shares the family food bowl, he has an interest in tending especially the early food grains (Palmer 1946, p.4; Jarrett 1949, p.665)" (Robertson 1977, p.226).

5.3.2 Structural Decomposition Of The Strange Farmer Contract:

The strange farmer contract combines some of the features of rental and wage contracts, which makes it similar to a "mixed contract." The arrangement on the landlord's plot is identical to owner-cultivation; i.e., where a landlord hires a worker, whom he pays a fixed wage and from whom he reaps the residual between the output and the fixed payment. Operationally, this is tantamount to the strange farmer working on his landlord's plot and for which he receives a zero-wage. On his allocated plot, the strange farmer behaves like a fixed renter who cultivates his plot and remits zero rent for it (ie. reaps the full benefits). The overall contract exhibits the features of a convex combination of wage and fixed-rental contracts, in which a strange farmer supplies effort on his landlord's plot in exchange for which he receives a separate plot for his own cultivation. The arrangement is essentially one of a fixed-renter whose fixed-rent to the landlord is rendered in the form of service on

his landlord's plot (labor rent) and whose wage for the rendered service is the food he gets and the returns from his allocated plot.

In the landlord's plot, incentive problems may arise because the incentives of the strange farmer (worker) may not coincide with those of his landlord. Some motivation rules must be developed by the landlord, or else the strange farmer will misallocate his effort. Investment in close monitoring and supervision of the strange farmer could ameliorate the moral hazards related to the agent's (strange farmer's) behavior, but such an investment is not costless. Alternatively, on the strange farmer's plot, there is no shirking problem as pure self interest induces the strange farmer to behave optimally. In the next section, we identify two economic rationales which constitute the basis for the two models subsequently presented; one of which explains the plot division as a labor-tying mechanism and the other as an incentive mechanism. Subsequent sections examine the implications of each model.

5.4 RATIONALE FOR STRANGE FARMING:

Many factors may provide a rationale for strange farming, some of which unquestionably are extra-economic. Here, we insist on two rationales that a) strange farming is an effort signalling device and that b) it is an economic adaptation to problems of acquiring credible commitments of labor in an environment of labor market imperfections. We shall briefly discuss the latter rationale below.

Strange farming, as an economic response to problems of acquiring committed labor, circumvents the severe enforcement and information problems (asymmetries, e.t.c.) which persist in rural Gambia between contracting parties. Such labor-tying arrangements have historical and economic roots, the most blatant cases being the obligatory service of the medieval tenant-serf to the manor-lord or of the debt peonage to the moneylender-cum-landlord (Bardhan 1985, p. 552). These cases, however, entail the tenant continually losing his freedom; hence these arrangements approximate bonded labor. In strange farming, the migrant worker voluntarily enters into an implicit labor-tying contract and is free to terminate it whenever he chooses to, albeit at substantial costs. The arrangement enables the landlord to engage in "labor hoarding" to meet the labor demands of the tight peak season (Bardhan 1985, p.553).

5.4.1 Credible Commitment Argument:

The belief that the "legal system enforces promises in a knowledgeable, sophisticated, and low cost way (Williamson 1983, p.519)" has resulted in a "relative neglect" of the study of credible commitments. That private parties create their own "laws" in their transaction-specific agreements and minimize costs by doing so explains the widespread existence of "private ordering" within the "shadow of the law" (Mnookin and Kornhauser 1979, pp. 950-952). That the study of "private ordering" is profitable in understanding a variety of contractual and institu-

tional configurations is succinctly captured by Professors Hart and Sacks: "Every society necessarily assigns many kinds of questions to private decision, and then backs up the private decision, if it has been duly made, when and if it is challenged before officials. Thus, private persons are empowered, by observance of a prescribed procedure, to oblige themselves to carry out certain contractual undertakings, and if dispute arises, to settle their differences for themselves (Hart and Sacks 1958; Mnookin and Kornhauser 1979, p.950)." Various matters of an immediately private but potentially public concern are settled in this way and they become institutionalized. As Hart and Sacks (1958) and Mnookin and Kornhauser (1979, p.950) further state, "An understanding of how they work is vital to an understanding of the institutional system as a whole."

Understanding "private ordering" and its pervasive (if not ubiquitous) use by parties to structure and safeguard exchanges stands contraposed with the "unreality of the assumptions of legal centralism (Williamson 1983, p.520)," which presumes the existence of neutral third parties (courts, juries, etc.) that apply general authoritative rules to settle disputes in an informed and inexpensive way. Not only is this view counterfactual, as Williamson notes, but it also overlooks the "serious disabilities" experienced by courts with respect to transactions involving "private ordering" (Williamson 1983, p.521).

The judicious and widespread use of "private ordering" suggests that private parties to a contract perceive legal governance structures as not omniscient and, therefore, as incapable of detecting and applying

general rules of adjudication to each remote case or circumstance, except by incurring prohibitive costs. In this sense, the incentives private parties have to "contract out of or away from" (Williamson 1983, p.520) the legal governance structures comes from their superior and intimate knowledge of their circumstance of "time and place" (Hayek 1948, p.84) and, let me add, resources.

"Private ordering" in place, the issue of securing and safeguarding commitments between private parties behind the "shadow of the law" requires sanctions other than just plain trust. The reliance of one contracting party on another's "word" or another's "common honesty and decency" (Macaulay 1963, p.58) is not conducive to optimal contractual performance because of the self-seeking motivations in private opportunism. Indeed the use of "hostages" or "their economic equivalents," as suggested and developed by Williamson (1983) shows the type of mechanisms used by private individuals to secure "credible commitments" in opportunistic environments.

It is in this sense that strange farming represents an arrangement of "private ordering," since the contracting parties do not have any legal governance structures to rely on for contractual compliance. The strange farmer and landlord create their internal rules of conduct to induce each party's adherence to contractual terms and to ensure that deviation from agreed upon terms is penalized. The creation of a "hostage" to safeguard contractual terms operationally reinforces the credibility of private commitments. Let us examine this point in detail.

5.5 HOSTAGE MODEL:

In the strange farmer contract, the length of the contract is fixed by the duration of the farming season; ie. the contract extends from March to December. The farming season consists of two periods; namely, i) slack (lean) and ii) peak. We can illustrate the length of the farming season on an agricultural calendar.

March _____ August _____ December.

The slack or lean period is characterized by land preparation (ie. clearing, ridging), planting, interculture, etc., and the peak period involves harvesting, stacking, threshing, winnowing, and storing.

If we assume the existence of a rural labor market and if we name the slack and peak periods "1" and "2" respectively, then we can have a wage distribution of " w_1 " and " w_2 " for the respective periods. We can safely assert that worker productivity is higher in the peak period to warrant $w_2 > w_1$

The landlord's concern is to induce the strange farmer (migrant worker) to provide a steady and continuous supply of labor throughout the farming season. But how does he do this given the "strangeness" of the strange farmers; ie. the fact that they are strangers to their farming communities and therefore could flee away into profitable oppor-

tunities in their places of origin without severe penalties? The landlord requires an advance commitment from his strange farmer supported by the creation of a "hostage;" a plot allocated to the strange farmer which, once in place as a land-specific investment, is non-salvageable in the middle of the farming season. This means that the strange farmer cannot flee away in mid-season without losing the sunk asset associated with his land-specific investment.

In principle, the allocation of a land as a "hostage" is a mechanism of "tying" the strange farmer's hands to a plot-specific investment (which is costly to salvage and redeploy), and thereby reap the benefits of a steady supply of labor to smoothen farming operations. Without this "tying" mechanism the strange farmer has strong incentives to renege on his implicit contract. Let us explain the workings of the implicit contract.

In the slack period, the worker receives an implicit subsistence wage; i.e., a wage greater than his marginal product for this period ($w_s > mp_l$). The difference between the prevailing market wage; ie. $w_1 = mp_l$ and the subsistence wage " w_s " the strange farmer receives is compensated for by the strange farmer receiving a wage less than his marginal product at the end of the peak period and also a state-contingent output from the plot allocated to him. The arrangement is identical to an insurance contract that cushions the strange farmer (worker) against the inter-seasonal fluctuations in his marginal product.

The strange farmer's incentive not to flee after after the slack period (and thereby disrupt farming operations) comes from the anticipated

output from his land-specific investment. Absent this self-enforcing mechanism of the implicit contract, the strange farmer may costlessly abrogate his contractual responsibilities by fleeing.

Some Implicit Assumptions about the Gambia's rural Labor Market:

Two major assumptions we make to require this model to work is that Gambian rural labor markets exhibit some imperfections and are incomplete. These assumptions not only suggest that the suppliers and demanders of labor in rural Gambia do not have perfect information about each other (since information is costly), but that also they do not possess perfect information about future labor possibilities. In other words, there is imperfect information about the resource to be traded; i.e., labor, and there does not exist a complete set of futures markets which allow the trading of labor for future delivery at whatever the contingency.

The desire on a landlord's part to tie a strange farmer to a plot of land for the duration of the farming season is linked to precisely this kind of labor market imperfection. The strange farmer contractual device implicitly allows the intertemporal exchange of labor within the informational constraints of the Gambian environment. In this sense, it is an adaptive response to labor market imperfections which Bardhan (1984, p.163) succinctly describes (in the context of general labor-tying) as "labor...preferentially hired in the lean season in exchange for a commitment of ready availability in the peak season (an intertemporal linking

of labor markets)." We explore further, in greater detail, the factor of labor-tying below.

5.5.1 Seasonality of Gambian Agriculture and the Relevance of Input-tying:

Rain-fed agriculture, as is the case in the Gambia, is volatile, which makes it susceptible to the risks of untimeliness in the supply of certain critical inputs, eg. labor, when most needed. In Gambian agriculture the timeliness of inputs is everything. A shortage of hands when a crop needs the most attention could jeopardize the productivity of all previously applied labor (Whatley 1987, p.48). The seasonality of labor inputs implies that landlords who do not maintain workers on long-duration contracts may face the risks of workers leaving before the end of the farming season. In this sense, there are recruitment costs (costs of hiring) and firing that landlords must incur if they do not maintain tied-workers.

Landlords, in this sense, have "proper" incentives to reduce seasonal fluctuations in labor cost. In the slack period, when many hands are available, recruitment costs may be low. But in the peak labor demand period, shortage of hands can make recruitment costs quite prohibitive. This is because seasonality influences labor supplies, and rural labor markets get thin during the peak period, when marginal labor costs

are increasing (Whatley 1987, p.49). Unanticipated seasonal rises in labor demand significantly increases average labor cost. In this sense, the tying of a worker, as in the holding of a strange farmer "hostage" to his plot of land, smoothens the seasonal fluctuations in labor costs.

The seasonal cost-savings with tying committed labor aside, the tying arrangement enables the landlord to capture the productivity benefits of increased nutrition. By feeding and maintaining a strange farmer throughout both the slack and peak period of the farming season, a landlord captures the productivity advantages that the efficiency wages theory attributes to the direct nexus between food and effort. The provision of food on the farm also has the direct benefit of minimizing the alternative transaction costs that the strange farmer would otherwise have spent "shopping" for food. In what follows, we shall examine the reward scheme under this implicit labor-tying arrangement.

5.5.2 Reward Scheme of the Strange Farmer Contract:

The strange farmer's income " W_{sf} " is a function of both the "tying period" 't' and output 'y'; that is:

$$W_{sf} = w(t, y) \quad \text{where } t \in (1, 2)$$

We can write the strange farmer's reward more explicitly as:

$$t.w_s + y(t) \text{ in which } y(t) = \begin{cases} 0 & \text{for } t=1 \\ y_{sf} & \text{for } t=2 \end{cases}$$

This shows that the strange farmer's reward has both an unconditional and conditional component. The subsistence wage ' w_s ' is received by the strange farmer unconditionally; however, the output from his plot is received only if he stays for the duration of the contract; ie. till the end of the second period.

The landlord's reward is similarly dependent on the "tying period" and output. The landlord's reward ' R_L ' however, comes only at the end of the harvest period (ie. period 2) and is contingent on the strange farmer's effort and, therefore, on whether or not the strange farmer stays for both periods. In the first period, the landlord receives "zero income" from the contract and in the second, he receives the output from his own plot. We can explicitly write the landlord's reward scheme as:

$$R_L = r(t, y) = \begin{cases} 0 & \text{for } t=1 \\ y_L & \text{for } t=2 \end{cases}$$

$$\text{where } y = \begin{cases} f(e_{s1}, e_{s2}) & \text{if S.F. stays} \\ f(e_{s1}, 0, e_{L2}) & \text{if S.F. leaves} \end{cases}$$

e_{s_i} = effort of strange farmer in period "i."

e_{L_i} = effort of landlord in period "i."

We shall now look at alternative scenarios under the "hostage model;" i.e., case 1, if the strange farmer leaves after the first period and case 2, if he stays for both periods.

5.5.3 Alternative Scenarios Under the Hostage Model:

Suppose the strange farmer leaves after the first period, then a landlord will be forced to enter the costly market for spot or casual labor if his peak labor demand is higher than what he himself could supply. If labor was in abundant supply, then landlords have a perfect insurance against the intertemporal uncertainties of labor supplies. Landlords need not worry about availability of labor as recruitment costs are significantly reduced by accessibility to unlimited pools of labor. But, in rural Gambia, peak demand for labor is coexistent with labor in short supply. This reduces a landlord's ability to significantly bargain with spot laborers during peak periods, as acquisition of and maintenance of such workers entails high costs. This suggests that landlords could incur significant losses (absent a replacement) should strange farmers leave in mid-season (i.e., at the end of the slack period).

The implication of this observation is that landlords, given the anticipated possibilities of such losses, will seek to minimize it through mechanisms of inducing the strange farmer to stay. Incentive mechanisms here may include raising the cost of premature leaving for the strange farmer. This may entail calculated measures of manipulating the "hos-

tage;" i.e., inducing the strange farmer to invest heavily in the "hostage" so that any intent of "fleeing" will be circumvented by the anticipated losses associated with the sunk asset. Raising the value of the "hostage" to the strange farmer (or alternatively raising the cost of premature leaving) may simply involve giving the strange farmer a sufficiently big plot or a plot of high soil quality, or it may involve interlocking the strange farmer into production loans (i.e. of seeds, farm implements, fertilizers, e.t.c.) which may indirectly induce him to "overinvest" in a "hostage."

It is conceivable, however, that a strange farmer, attracted by alternative income-generating possibilities, may choose to behave strategically by "underinvesting" in a "hostage." A landlord, though, through careful monitoring of the strange farmer's plot may detect such motives and then recourse to threats (to induce desirable behavior) or simply substitute the suspected "lemon" ("bad strange farmer") with another strange farmer during the slack period.

If a strange farmer stays for both the slack and peak labor periods, then (absent the influence of stochastic factors) the landlord will realize his expectations on his plot. Seen from the strange farmer's perspective, the labor-tying arrangement insures the strange farmer against the wage and hiring uncertainties associated with the agricultural production cycle.

5.5.4 Some Specific Implications of the Hostage Model:

What determines working hours and plot size in the strange farmer contract is not unrelated to the seasonality of Gambian agriculture. The average size of the strange farmer's plot size according to 1974-75 survey is 0.52 hectare (Swindell 1981, p.22). To deter the strange farmer from leaving during the peak labor demand period, we have discussed above that a landlord raises the cost of premature leaving by giving a strange farmer a sufficiently big plot. Landlords will be as much concerned with the quality as with the quantity of a "hostage." The optimum size of the "hostage" (strange farmer's plot) will be a function of both the size of the landlord's plot and the relative productivities of the plots. What landlords would deem as an optimum size "hostage" would be that size of a strange farmer's plot that is productive enough to deter the strange farmer from reneging on his labor commitment for the slack and peak periods.

The size of the strange farmer's plot dovetails with the seasonality factor in an essential way. That is, if it is public knowledge that one region of the Gambia anticipates poor rainfall and all strange farmers flock to the other region, then this will relax the seasonal bottlenecks in labor supply during the peak season. Landlords will then have minimal incentives to give strange farmers large and productive plots, as the importance of committed labor is minimized by the anticipated availability of abundant labor pools throughout the farming season. Similarly, the introduction of a new technology that reduces the seasonal variation in

labor demand or the mechanization of peanut farming in the Gambia which reduced the condition of labor shortage would reduce wage differences between seasons and ultimately minimize landlord's incentive in giving large and productive plots to strange farmers. A condition of labor abundance and availability in both seasons, therefore, deemphasizes the need for committed labor and therefore translates into smaller "hostages" for committed laborers (strange farmers). Indeed, it is conceivable that a condition of labor abundance, if it is permanent, would over time alter the necessity for a strange farmer contract or simply render it defunct. We should note that the strange farmer contract is devised as a second-best response to given environmental constraints; e.g. labor shortage during peak season; hence, if these constraints change, it is only reasonable that contractual parameters would change or the contract itself may be rendered obsolete.

If we suppose an alternative situation in which a new technology is introduced that is labor using rather than labor saving (e.g., a new higher yielding variety of peanuts is introduced that is enormously sensitive to the quantity and timing of labor), then this would have the effect of further exacerbating the labor shortage during the peak season. In this case, wage differences between seasons would be increased and the necessity for committed labor would be heightened. For a landlord to retain a strange farmer in this context, he would have to give large and productive plots, or otherwise, a strange farmer would have significant incentives to flee into more profitable alternative opportunities.

As for working hours, in a notional 244 day working season a host expects a maximum of 840 hours of work from his strange farmer allocated in four 6 hour days a week (Robertson 1987, p.224). These figures reported by Robertson, however, leave us with some doubts. Eight hundred and forty hours of work allocated in four 6 hour days a week gives 140 working days in the farming season. The amount of hours a strange farmer works on his plot is directly related to the size of his plot. As Robertson (1987, p.224), notes "If the samalaa (strange farmer) himself has, on average, 0.52ha., he must invest around 300 hours of work, not much more than an hour a day throughout the season, or about three hours on the three days each week which are entirely his."

Apart from working hours being directly related to plot sizes, it is not unreasonable to speculate that seasonality would significantly influence working hours. Slack season would be characterized by lesser working hours for the strange farmer and the converse would be expected to hold in the peak season. Stretching working hours aside, peak season work would also be characterized by greater work intensity given the physical demands of harvesting, stacking, e.t.c, in rainfed agriculture.

If a new technology is introduced that is labor saving (e.g. mechanization of Gambia's hoe agriculture), then working hours for the strange farmer would be significantly reduced. Inasmuch, as the new technology is simple, divisible and labor-saving, its effect on strange farmer working hours would be pronounced. This is contraposed with the introduction of a new technology that is labor-using which we may conjecture would significantly increase strange farmer working hours.

In the subsequent section, we present another model of the strange farmer system, which focuses on an incentive argument. The model explains why landlords have an incentive to locate strange farmer plots near their own plots.

5.6 EFFORT SIGNALLING MODEL:

The incentive problems in the host's plot identified in earlier sections of this chapter is not unrelated to the plot division in the strange farmer contract. We argue that one attractive feature of the strange farmer contract, which other contractual arrangements do not have, is that it is an effort signalling device. The plot division signals effort information which can be used by landlords through the threat of expropriation of output differential to induce desirable performance. We should note that the output differential may be an imperfect surrogate for metering effort input; but given the general problems of measuring effort, output differential may be the best surrogate we can use in determining the magnitude and intensity of effort-input. One problem of Marshallian sharecropping we identified in the previous chapter was that it gives inadequate work incentives to the tenant. Furthermore, sharecropping does not have a mechanism for revealing the magnitude of a worker's shirking, even though it recognizes its existence.

The strange farmer system, however, may seem advantageous in the sense of conveying useful "effort information" to a landlord through an

ingenious arrangement of plot division: one plot with maximum incentives (i.e. plot allocated to strange farmer) acting as a benchmark of worker performance against the other plot (i.e. landlord's). Since the plot division only naturally leads us to suspect such "signalling" possibilities and functions of strange farming, in what follows we explore the circumstances under which this "signalling" characteristic makes sense. The maximum incentives we suspect the strange farmer has in his own plot is reduced by the imposition of any penalty and, in this sense, the "signalling" we suspect becomes potentially useless. We should note that the problem of whether the output differential is a "good signal" is related to the wide latitude that the strange farmer has in choosing his level of effort. In short, the effort applied on both plots are interrelated and endogenous. For the landlord to benefit from the signal, optimal effort; i.e. e_j^* , has to be maintained on the strange farmer's plot and this can serve as a benchmark to measure any deviations from such an optimum as exemplified on the landlord's plot. We present the following model fully aware that the imposition of a penalty leads to potential reduction in the effort applied on the strange farmers plot and perhaps a negligible (or no) increase in the effort applied on the landlord's plot, eventually leading to an equalization of effort on both plots. We present the model despite its potential problems.

5.6.1 The Model:

Case I:

We first consider the simplest case of a strange farmer arrangement.

We assume:

- i) a landlord who owns land and does no work,
- ii) a worker (strange farmer) who owns no land but does all the work.
- iii) a total stock of land of homogeneous quality.
- iv) a division of this land between landlord and strange farmer that is 50:50.
- v) a weather distribution that is known and that influences the two plots indentially [*i.e.* let $\theta =$ weather; $\theta \sim \text{NIID}(0, \sigma_\theta^2)$].

Here, strange farmer's effort is the only variable input, and it is uniquely linked to output. Hence, the output on the landlord's plot is:

$$(1) \quad Y_L = f(e_L) \quad \text{where } e_L = \text{effort applied on landlords plot.}$$

On the strange farmer's plot, output is:

$$(2) \quad Y_S = f(e_S) \quad \text{where } e_S = \text{effort applied on strange farmer's plot.}$$

Without loss of generality, we will assume here that effort applied on strange farmer's plot is greater than or equal to the effort applied on

the landlord's (ie. $e_s \geq e_L$). The output difference between the two plots is:

$$(3) \quad Y_L - Y_S = d \quad \text{where } d = d(e_d); e_d = \text{effort difference.}$$

We should note here that "d" conveys information about strange farmer's shirking behavior. "d" is a function of effort and is therefore an "effort signal." The larger is "d," the greater is the strange farmer's shirking. The landlord, in principle, would be interested in minimizing "d" to zero; ie. reduce strange farmer shirking to the minimum possible. But in doing this, the landlord would have to impose penalties, thereby causing effort applied on the strange farmer's plot " e_s " to fall. Thus "d" will be smaller, but landlord's benefits may not be higher. Hence, "d" is an imperfect and, possibly, useless signal.

Case II:

We extend our discussion by relaxing assumption (iii) and make our model more realistic. We assume now that all our previous assumptions hold, except that now land is not of homogeneous quality; ie. the two plots are of different qualities. The landlord's plot is of quality " q_L " and the strange farmer's plot of quality " q_s ." So output on the landlord's plot is:

$$(4) \quad Y_L = f(e_L, q_L)$$

and on the strange farmer's plot is:

$$(5) Y_s = f(e_s, q_s)$$

The output difference here is:

$$(6) Y_L - Y_s = d(e_d, q_d) \quad \text{where } e_d = \text{effort difference; } q_d = \text{quality of land difference.}$$

We should observe now that the output difference is both a function of effort difference and quality of land difference. In this sense, "d" is still an "effort signal," albeit an imperfect one, since there is a "noise" component exerted by the quality of land difference between the plots.

The landlord, faced with the "observed" effort signal "d," can extract information about the "true" effort signal through the mechanical process of "signal extraction" (See Sargent 1979, p.209). Doubts may be raised about whether landlords have the technical ability to utilize such a complex process of extracting information but, for analytical convenience, we assume that they have. We can formalize the landlord's signal extraction process as:

$$(7) \quad d = e_d + q_d$$

where d = observed effort signal, e_d = true effort signal, and q_d = noise or quality of land difference.

We define:

$$(8) \quad e_d = e_L - e_S \quad \text{where } e_d \sim N(\bar{e}, \sigma_e^2)$$

and

$$q_d = q_L - q_S \quad \text{where } q_d \sim N(0, \sigma_q^2); \quad E(q_d e_d) = 0.$$

Given these, the landlord will project the true signal "e_d" (an unknown) on what he can observe. So the linear least squares estimate of "e_d" is:

$$(9) \quad P[e_d | 1, d] = a_0 + a_1 d$$

and the linear least squares normal equations are:

$$(10) \quad \begin{aligned} a_0 &= E(e_d) - a_1 E(d) \\ &= E(e_d) - a_1 E(e_d + q_d) \\ &= \bar{e} - a_1 \bar{e} - a_1 (0) \\ &= (1 - a_1) \bar{e} \end{aligned}$$

and for:

$$(11) \quad \begin{aligned} a_1 &= \frac{E(d e_d)}{E(d^2)} = \frac{E[(e + q)e]}{E[e_d + q_d]^2} \\ &= \frac{E e_d^2 + \overset{=0}{E(e_d q_d)}}{E e_d^2 + 2 E e_d q_d + E q_d^2} = \frac{\sigma_e^2}{\sigma_e^2 + \sigma_q^2} \end{aligned}$$

From the results of (10) and (11), we substitute the values into equation (9) to get the least squares estimate of the true effort signal " \hat{e}_d ;" ie.:

$$(12) \quad \hat{e}_d = \hat{a}_0 + \hat{a}_1 d$$

$$= (1-a_1)\bar{e} + \frac{\sigma_{e_d}^2}{\sigma_{e_d}^2 + \sigma_{q_d}^2} d$$

$$\hat{e}_d = \bar{e} \frac{-\sigma_{q_d}^2 \bar{e}}{\sigma_{e_d}^2 + \sigma_{q_d}^2} + \frac{\sigma_{e_d}^2}{\sigma_{e_d}^2 + \sigma_{q_d}^2} d$$

We should note that $0 < a < 1$. Notice further too that the smaller the variance in the quality of land; ie. as $\sigma_{q_d}^2 \rightarrow 0$, the more the observed signal "d" conveys accurate information about the true effort signal; ie. " e_d ."

5.6.1.1 Result and Implication of this Model:

One result of this model is that the output differential between the plots become an unreliable effort signal if the variance of the noise component of the signal is very large. In this sense, landlords will have an incentive to minimize the noise by locating strange farmers' plots near

their own. Locating strange farmer plots near their own enables them to systematically gauge any strange farmer shirking and simplifies the signal extraction procedure.

A costless mechanism of obtaining shirking information is useful to a landlord because it can help him induce "correct" strange farmer behavior by adopting expropriation threats in the contract. A simple incentive rule in this regard may involve a reward scheme to the strange farmer like this:

$$R = \min (Y_L , Y_S)$$

where Y_S is strange farmer's plot output and Y_L is the landlord's. This scheme simply states that, given the possibilities of the strange farmer shirking on the landlord's plot, the landlord will reward the strange farmer by giving him the minimum of the outputs from the two plots.

5.6.2 Further Considerations and Implications of this Model:

5.6.2.1 Expropriation and Shirking Hazards:

The threat of expropriation of output differential could induce unscrupulous landlords to falsely claim poor performance by strange farmers and therefore lead to unfair output seizures. But such moral hazard behavior is non-sustainable, especially in the long run, because of rep-

utational considerations. An unscrupulous landlord who unfairly expropriates his strange farmer's output would most likely lose his reputation as a "good" landlord. In this sense, reputational considerations will induce "good behavior" on the part of a competing landlord to follow the earlier mentioned rule that "fair treatment of a strange farmer is the best policy."

Another possible hazard from the adoption of such expropriation clauses is that the strange farmer may be induced to shirk on his own plot and eventually equalize output on both plots. In this case, both contracting parties lose (because of inefficient performance) from the adoption of the aforementioned incentive rule. Here, the outcome is identical to that of sharecropping; i.e., the incorporation of a "threat clause" in the contract drives a wedge between the strange farmer's effort and his reward. Variations on the incentive rule could include giving the minimum of the plots' outputs to the strange farmer plus half of the output differential, but such would be equivalent to increasing the share of the tenant in sharecropping.

5.6.2.2 Joint Effort and Problems of Signal Extraction:

There are also signalling problems associated with this model. Our model assumed that effort is supplied only by the strange farmer on both plots of land. We did this for simplicity. If we relax this assumption and examine the case of the landlord working jointly with his strange

farmer on the former's plot, then our signal extraction problem becomes increasingly more complicated. In such a case, we must separate the effects of the landlord's effort on the final output to get reliable estimates of strange farmer's shirking.

5.7 EFFICIENCY IMPLICATIONS OF OUR TWO MODELS:

Our "hostage model" suggests a constrained (second-best) efficiency, in the sense that Gambian landlords and strange farmers invent the strange farmer contract as a flexible adaptation to certain factor market imperfections (or to environmental constraints in general) to achieve maximum output. The implication of this observation is that any attempts at tenancy reform of this system should proceed with some caution. To the extent that the current environmental constraints prevail in rural Gambia, it is not clear whether attempts to reform the strange farmer system would improve the situation of the intended beneficiaries (contracting parties or otherwise).

What we can safely assert (given the implication of the "hostage model") is that the system as it stands performs a useful role. The fact that it has survived the rigors and stubborn tests of time (i.e., over a century of persistence) and the fact that it is rational agents who continue to operate within such an institutional configuration suggests, if nothing else, that the system should not be discarded without careful deliberation.

It is, of course, possible that over time the current constraints may change (e.g. labor may become more abundant through the augmenting effects of population growth, or labor-saving technology may be introduced, or shifts may take place to a cash-crop that is less labor-using or whatever the case). If these changes should take place, then the necessity for labor-tying (as our "hostage model" explains) may be minimized and therefore the policy prescription from such a story would be different. As the situation stands, all our "hostage model" tells us is that, without being convinced of better alternatives, we should not "mess up" an institutional device that performs a useful role.

As for our "effort signalling model," the incentive rule we adopted seems to imply inefficiency. But if the incentive rule is adopted, even though the strange farmer contract may seem like a complicated way to do sharecropping, the strange farmer contract's feature of providing partial effort incentives makes it pareto superior to the wage contract. In a repeated contract setting, we can conceive the "signalling model" to do very well, since information about worker (strange farmer) shirking could be used to improve on future contracts. But, as our general story has it, strange farmer contracts are not repeated with the same landlord which make "shirking information" useful only if we can find an incentive rule operative in a non-repeated contract context and which spells efficiency.

One such possible type of incentive scheme is a tournament incentive, which, in fact, is utilized by "kafo" (communal work group) labor. One strange farmer could be pitted against another and the one with the

highest output on his landlord's plot receives the winning prize (See the work of Lazear (1986, pp. 9-10) on this score). Landlords could all contribute equally to a village head's fund which will be used to buy a prize. At the beginning of the farming season, landlords will announce to their strange farmers that they are competing with other strange farmers, and that high performance on their landlords' plots could win them the village prize. Or similarly, a landlord with more than one strange farmer could adopt such an incentive scheme for his strange farmers. The problem with this latter scheme is that it may be susceptible to cooperative behavior and bribery. If the number of strange farmers are small, then others could cooperatively minimize their performance to increase the chances of their collaborator being the winner. Hence, inefficiency may result. But if cooperative behavior is ruled out, it is conceivable that this incentive scheme would induce strange farmers to behave efficiently because of the anticipated prize linked to superior effort on the landlord's plot. In the former case (i.e., the case of a competitive village prize for the winning strange farmer), however, cooperative behavior may be much more difficult, but the costs of monitoring performance on all landlords' plots by a neutral party may be quite prohibitive. A less costly way is to have landlords report the performance of their strange farmers, but such would be susceptible to "lie-telling;" i.e., perverse incentives may be created that make landlords to make reporting false information into a dominant strategy.

We should note that even though our "effort signalling model" suggests inefficiency, the inefficiency should not make us discard the model.

The model has some attractive, internally consistent properties which make it potentially useful for future exploitation. We believe that the "effort signalling model" as presented above does well in explaining the plot division in the strange farmer contract but fails the test of implying efficiency. It fails the test of efficiency precisely because we could not generate satisfactory incentive schemes consistent with the general story of the model and yet implying efficient outcomes. But if the thrust of this study were to search for optimal incentive rules and contracts, then we would have focussed on alternative incentive rules that would make this model to suggest efficiency. As our study stands, our energies were focussed on providing possible explanations for the strange farmer arrangement. The "effort signalling model" tries to provide one such possible explanation, and its descriptive implication suggests that it is not rational for a landlord to set up a scheme which thwarts the strange farmer's (cultivator's) incentives. Perhaps future theoretical research should focus on generating optimal incentive rules; i.e., incentive rules that induce the the strange farmer to maintain the potential maximum incentives on his plot and yet increase his effort on his landlord's.

5.8 CONCLUSION:

This chapter analyzed the structure of the strange farmer contract and developed two models to explain it. The "strangeness" of the strange farmers is argued as posing severe problems for contract enforcement,

as there is no perfect legal system in place to ensure adherence to terms contracted upon. Our first model, the "hostage model," explains how the allocation of a specific plot to a strange farmer serves as a self-enforcing mechanism in the strange farmer contract. Through the allocation of a plot whose reward goes to the strange farmer, a landlord can capture the advantages of tied-labor both in terms of smoothening farming operations and also reducing seasonal fluctuations in spot-labor recruitment costs. The "hostage" also enables the landlord to capture the increased productivity benefits of feeding an attached worker. Our second model, the "effort signalling model," explains the plot division in the strange farmer system as a way of signalling strange farmer shirking to the landlord. Through the use of a plot with maximum incentives (ie. that allocated to a strange farmer) as a benchmark to measure strange farmer performance on his plot, a landlord can incorporate expropriation clauses in the contract to induce desirable performance. One implication of this model is that landlords will be motivated to locate strange farmer plots near their own to reduce the noise exerted by quality of land differences between plots and, therefore, to better gauge strange farmer shirking. Our analysis ends with a discussion of the potential problems of the model.

CHAPTER 6

CONCLUSION AND SUGGESTIONS FOR FUTURE RESEARCH

This study analyzed the configuration of institutions, agents and processes which led to the emergence and intertemporal evolution of the strange farmer system. We argued that strange farming emerged as a flexible response to West Africa's spatial, unequal dispersion of resources and it minimizes excess burden through the ingenious arrangement of farming in the coast (near ports of export) as opposed to farming in the hinterland. Strange farming, as a form of coastal farming (i.e. in the Gambia), represents an advantageous form of resource use since it minimizes the formidable transaction costs that farming and transporting produce from the hinterland entails.

We argued that the historical evolution of strange farming is concomitant with the adaptive linking of a mono-cashcrop (peanut) economy to the vicissitudes of the world market for primary commodities. This invariably meant that the inflow and role of strange farmers (as migrant laborers) were subject to the differential vulnerability of world market forces, and the creation of such outlets for profitable trade (as captured by Adam Smith's "vent-for-surplus" theory) did also open otherwise subsistence farmers to the shocks (and sometimes coercive swings) of world market prices.

We discussed the overall structure of resources in the Gambia; i.e. land tenure system, different types of labor, and deliberately ignored capital since it is not so germane to the strange farmer contract. We, however, noted that any understanding of strange farming as an institutional response to more gainful resource use entails examining how it dovetails with these other resources in an essential way.

In the final part of our study, we examined in detail the structure of the strange farmer contract and compared it to alternative contractual arrangements. We argued that the reason why we do not observe the prevalence of wage contracts in rural Gambia is because risk-averse landlords will generally find it unattractive. Moreover, wage contracts generally exhibit incentive problems because of the unobservability of a worker's effort and the costliness of monitoring and measuring effort, which suggests that wage contracts, in in this environment, are generally suboptimal. Fixed-rent contracts similarly are unattractive to risk-averse tenants because in a risky environment as Gambia's rain-fed agriculture, no tenant will opt for such contracts. Hence, such contracts are also suboptimal. Sharecropping contracts, which represent a compromise between wage and fixed-rent contracts, are also suboptimal in this environment because of the incentive problems created by a worker (tenant) being rewarded less than his full marginal product. Of course, here, our concern is with Marshallian sharecropping since Cheung's sharecropping is generally impracticable. Yet, in Marshallian sharecropping, if contracts are repeated, then reputation could be used to remedy the incentive problems. But, in the Gambian environment,

tenants have little interest in accumulating reputation; hence this results in the inconsequential nature of reputation effects.

We argued, however, that strange farming has certain combined attractive features that these other contractual arrangements do not have. Given the "strangeness" of the strange farmers, strange farmer contracts circumvent certain labor market imperfections (asymmetries, e.t.c.) and contract enforcement problems experienced in this environment. In other words, strange farming provides a resource-economizing way of providing timely and committed labor through the intertemporal linking of labor markets and acts as an effort signalling device.

Our study ends with the implications of the results of our study for tenancy reform. We argue that the strange farmer system, as it stands, minimizes excess burden and serves a useful role. Therefore, any attempts to reform it, without being convinced of better alternatives, would be foolhardy.

Pleas for tenurial reform, from aid officials and planning counsellors, have continued to echo since the Gambia's attainment of political independence (Robertson 1987, p.263). But such pleas receive their justification from untutored radical views which argue that in the strange farmer contract, "neither party benefits, only the more distant entities of the state and parasitic international capital (Robertson 1987, p.262)." In our view, such a position flies in the face of sound analytic judgement. It may well be that the Gambian state and "parasitic international capital" benefit from the arrangement, but that does not preclude the contracting parties from benefiting from the arrangement. Indeed, if the strange

farmer contract is so seemingly inefficient as the aforementioned position would have us believe, then why has it continued to persist for over a century? For those of us who believe in economic rationality, the fact that the arrangement has continued to flourish and that it is rational gain-maximizing agents who continue to operate within it suggests that the system must have resource-economizing properties. The view that rational contracting agents would continue to operate in a system which makes them both "worse off" simply defies rational economic sense.

We recommend that future research should be directed at examining the sizes of strange farmer and landlord plots and their yields. Questions should be investigated such as: Are their yield differentials between host's and strange farmer's plots? If so, what accounts for them? Does contract terms reveal much variation across space and, if so, what determines such variation? What is the relative incidence of strange farmer contracts on locals and non-Gambian migrants? How would changes in the legal environment, say a law which redistributes land and permits land sale, affect the structure of the strange farmer contract? Or how would a change to other crops affect strange farming? Is the contract mutually or parasitically exploitative? If so what is the relative power and position of landlords and strange farmers in the contract specific arrangement? These, in my view, are just a host of research questions that need empirical (and perhaps theoretical) exploration and should contribute to our greater understanding of this strange farmer phenomenon.

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