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Family Composition and Wage Employment in Small- Scale Economic Activities in Malawi

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Abstract

Despite rapid growth of formal sector employment, LDCs are often hard pressed to absorb their growing labor force. This paper finds that the small-scale non-farm sector can contribute significantly to employment generation. Moreover, because of the nature of non-farm household production, the disemployment effects of wage hikes are smaller than in the more conventional enterprise. The implication is that a small-scale non-farm focused development strategy can provide employment at above subsistence wages. These results are substantiated by the experience of Malawi.

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1 Introduction

An unexplored issue in the relationship between population growth and employment is the effect of family size and composition on labor demand in small-scale non-farm production. A related focus, and one on which this paper relies heavily, is the analysis of farm output in the household production model [Singh, Squire, and Strauss (1986a, 1986b)]. A crucial assumption is that small-scale non-farm activities depend on family labor in a manner similar to smallholder agriculture. The major thrust of this paper is two-fold. First, to show that small-scale non-farm activities provide an important source of employment for the growing labor force in the course of economic development. Second, to suggest that the household production framework is useful for analyzing employment in *non-farm* small-scale economic activities in low income societies. A primary difference between this study and earlier work is that we focus on the demand for labor in non-farm production while previous research stresses the supply of labor within the agricultural household.

An important concern for LDCs is the ability of low-income societies to provide enough jobs for the growing labor force. Subsistence agriculture often plays a major role in absorbing labor as employment of last resort. However, it is not sufficient to create employment at subsistence agricultural wages if the eradication of poverty is to be a significant objective of economic development. It has been argued [Naya (1985)] that small-scale non-farm economic activities provide an important source of employment,

comparing favorably to large-scale enterprises because of their lower cost per unit of labor. Thus, emphasizing the demand for labor in small-scale non-farm production is especially relevant for generating employment at above subsistence wages.

The paper is divided into five sections. Section 2 uses a multisectoral dualistic framework to examine sectoral change in Malawi. The purpose is to identify different labor markets and their changing relative size during economic growth. Section 3 describes the sample used to examine the small-scale non-farm sector in Malawi. Section 4 discusses the appropriateness of using standard theoretical labor demand models for the analysis of wage employment in small-scale activities in a low income society. The results suggest that a move to a modified household production model may very well produce important insights into the process of job creation in small non-farm establishments. This has very important policy implications, particularly with regards to wage policies. A key result is that the wage elasticity of labor demand is more inelastic in small-scale non-farm production than in the standard model of the firm. Finally, Section 5 provides conclusions and directions for further research.

2 Employment, Wages and the Labor Market in Malawi

A multisectoral framework provides an appropriate structure for examining the growth and relative importance of various important sectors in

Malawi. The framework used here is presented in Santiago and Thorbecke (1988) and emphasizes two sources of dualism: technological and geographic. Technological dualism is identified by differences between formal and informal sectors. Formal sectors comprise economic activities in which establishments hire labor and wage relations predominate. These enterprises also tend to be large-scale in size, using advanced technology and modern means of production. On the other hand, informal activities include small-scale activities relying mainly on self-employed and unpaid family workers. Technology is rudimentary, labor-intensive, and establishments are often located in make-shift and movable structures.

In reality, however, the distinction between formal and informal sectors is often vague. Instead of representing a pure dichotomy, the formal-informal typology forms a continuum of economic activities in which some informal enterprises do hire wage labor. Nonetheless, the primary distinction between formal and informal activities is reliance on labor markets and monetized wages to allocate labor, as opposed to the nuclear or extended family allocation of labor and the distribution of family income by member.

Dualism is also represented by geographic or regional differences. The primary distinction is between urban and rural areas. Urban areas comprise major cities and population concentrations above some designated level. Since the classification is mutually exclusive, rural refers to all areas other than urban centers. In addition, economic activities in rural areas include both farm and non-farm enterprises. Rural non-farm activities are often completely ignored in labor market studies although they have proven to

be important sources of additional income to farm households during slack periods of the agricultural cycle.

The multisectoral framework is illustrated in Figure 1. The 2 x 3 breakdown gives rise to six sectors: (i) the urban formal sector; (ii) the urban informal sector; (iii) the rural non-farm formal sector; (iv) the rural non-farm informal sector; (v) the rural farm formal sector; and (vi) the rural farm informal sector. Early models of dualistic development emphasized differences between urban industrial activities (urban formal sector) and subsistence agriculture (rural farm informal sector). For example, the surplus labor model assumes that economic development will result in the growth of the urban formal sector and the transformation of subsistence agriculture into its more commercialized counterpart (rural farm formal sector). Research has also shown that urban formal sector growth in LDCs is often unable to absorb the increasing numbers of migrating rural laborers resulting in the emergence of a growing urban informal sector. Knowledge of the relative growth and decline of these sectors is fundamentally important in the study of economic development. The framework can be used to study labor markets in transition, labor mobility, and sectoral income inequality.

[Figure 1]

A major problem facing the economy of Malawi in the coming years is the inability to provide jobs for its growing labor force. The difficulty is that the present and expected size of the labor force is simply too large

to be absorbed into formal sector employment alone. The problem is not that formal sector employment growth is slow, but rather, that its base is small. Under even the most optimistic scenarios, growth of formal sector employment simply cannot absorb the growing number of new job seekers.[1] The result is that some of the unabsorbed labor force will join the growing ranks of the unemployed, a large fraction will remain underemployed in smallholder agriculture, and some will be absorbed in precarious and unproductive informal activities.[2]

The economy of Malawi grew much more rapidly from 1968-77 than it did from 1977-86. This slowdown in economic activity is reflected in the growth of formal sector employment over the period (see Table 1). From 1968-77 formal sector employment grew rapidly, largely due to the expansion of the agricultural estate sector. The estate sector drew considerable labor from smallholder agriculture as formal rural farm employment more than tripled over that period.[3] Between 1977 and 1986 the growth of the estate sector slowed considerably as constraints to land availability tightened. The estate sector cannot, and should not, be counted upon to lead formal sector employment as it did during the 1970s.

[Table 1]

Only 8.1 percent of total employment is in formal non-farm activities as of 1986 (see Table 2). The expansion of this sector is due, in good measure, to wage policies that encourage labor-intensive development. But a host of bottlenecks in the form of inadequate infrastructure, foreign exchange

constraints, limited managerial expertise and entrepreneurial development, and insufficient domestic demand have prevented industry and commerce from becoming a major contributor to employment. The development of this sector, in conjunction with rising agricultural productivity, holds the key to sustained economic development in Malawi.

[Table 2]

It is unlikely that immediate structural reform, resulting in needed foreign exchange, will promote substantive employment generation in the short-run. Apparently, firms have adjusted to the present economic slowdown by holding the line on nominal wage increases and allowing real wages to decline sharply rather than reducing their workforce. Thus, unused capacity attributable to an inability to obtain needed imported inputs (due to the foreign exchange constraint) has resulted in idle machinery and underemployed labor. In the longer-term, structural reform of industry will allow existing firms to use their labor force more effectively and add to their productive capacity.

Most private sector establishments are small and medium scale enterprises employing fewer than 20 workers.[4] Approximately 55 percent of all private sector establishments are small-scale, a figure that has remained constant over the last four years. However, this constancy masks important differences among industry groups. Most commercial agricultural activities employ 50 or more employees, a trend that appears to be on the increase. Industrial sector activities, primarily manufacturing and construction, are

predominately small-scale, although there is an increasing trend toward larger-scale enterprises. In contrast, the commercial sector is largely small-scale and will continue so. One advantage of small-scale enterprises is that they serve as a cost effective source of employment. For a poor country facing increasing demands for employment, expansion of small-scale enterprises offers the most direct avenue for providing significant numbers of jobs at above subsistence wage levels. The rapid growth of this sector is evident in Table 3.

[Table 3]

Small-scale activities span a broad range of different types of establishments, from tiny informal household production units using self-employed and unpaid family labor to larger registered establishments using wage employment. Although the sector produces and distributes a broad range of products, there is considerable concentration in a few select areas (such as food processing and clothing) and need for diversification. It is also noteworthy that small-scale enterprises provide an important link in the production-consumption chain that ties rural and urban populations. Improvements in distribution and transportation networks throughout the country are fundamental if economic development is to be shared nationwide. This cannot occur without small-scale enterprise development in rural areas. The void left by Asian traders in rural Malawi has not been filled and remains an obstacle preventing improvements in the welfare of the rural population. In sum, small-scale enterprise development provides

the basis for an emerging middle class, thus improving the prospects for a more equitable and self-sustaining process of economic growth.

The employment impact of the small-scale sector is considerable in both urban and rural areas. It is estimated that one-quarter of all small-scale establishments are in urban areas and three-quarters in rural areas. According to the 1986 READI survey, 57 percent of small-scale enterprises employed one or more workers with an average employment of 2.5 workers per establishment. This information makes it possible to estimate the direct employment effect of the small-scale sector on formal sector employment. The results suggest that from 1968 to 1986, small-scale enterprise related employees made up 40 percent of total formal sector employment (both agricultural and non-agricultural) and 65 percent of total formal non-agricultural employment.

Since small-scale enterprise employment is largely concentrated in rural areas (78 percent of the R.E.A.D.I. surveyed establishments were located in rural areas) and non-small-scale formal sector employment is largely urban, the contribution of small-scale enterprise to rural off-farm employment is especially noteworthy. The employment effect of a small-scale enterprise focused development initiative is significant because of its: (1) low effective cost per unit of labor compared with large firms; (2) low import use and stability in the face of external shocks; (3) potential for providing needed income in rural areas (thus improving the distribution of income); and (4) its intensive use of unskilled workers and female workers. The labor-intensive rural-focused nature of much of small-scale enterprise activity will,

in the medium term, significantly increase domestic demand for agricultural production and create necessary linkages between agriculture, industry and commerce, and between urban and rural areas.

By far the largest sector in Malawi is smallholder agriculture. It consists largely of subsistence farming on very small plots of customary land with some production of cash crops and participation in off-farm activities. It also includes small leaseholders, some of whom hire labor on a seasonal basis or as needed (ganyu labor) to produce cash crops. Smallholders with more land have been known to hire labor on a permanent basis. Various forms of communal labor are also common to smallholder agriculture. In effect, smallholders are not a homogenous group and reflect considerable socioeconomic differentiation.

Between 1966-77 smallholder agriculture increased slowly in contrast to estate agriculture. Although wages were very low in the estate sector, it did provide smallholders with alternative income earning opportunities. The encroachment of estate agriculture and leaseholding on customary lands reduced the ability of many smallholders to provide for themselves. Subsequently, sluggish growth of estate agriculture between 1977-86 reduced employment and income opportunities for smallholder households and exacerbated problems of land scarcity and low productivity.

The 1980/81 national sample survey of agriculture found average annual cash income per agricultural household to be MK137 (Malawi kwacha). For a six day workweek and fifty-two weeks per years, this comes to 48t (tambala) per day per working member. This figure corresponds roughly

to the nominal statutory minimum wage for a wage earner in rural areas in 1980/81. The sale of food and cash crops only provide 33 percent of smallholder average annual income, illustrating the precarious position that smallholder households face. Business activities, such as grocery shops, beer brewing, tailoring, carpentry and other handicrafts account for 28 percent of total income, while labor income contributes 15 percent. Those smallholder households that depend disproportionately on the production of food and cash crops for their livelihood are the groups most at risk. It is imperative for smallholders to have access to off-farm employment to complement their earnings from farming. Small-scale enterprise growth and expansion in rural areas, especially in non-traditional products, must play a major role in any strategy designed to increase smallholder productivity and income.

Smallholder agriculture is a repository of surplus labor in the absence of both alternative off-farm employment and a social network to provide compensation during spells of unemployment. Unfortunately, as the number of underemployed in rural areas increases, do does the demand on available resources in smallholder agriculture. Historically, a more common method of incorporating surplus labor into productive activities has been external migration. Migration to southern Africa has not only provided an important, albeit temporary, source of employment and income, but also foreign exchange. Official policy towards external migration has varied over the years, largely in response to domestic labor needs. Clearly, Malawi will have to continue to depend on this outlet if it is to absorb its growing labor

force into productive activities.[5]

Malawi's economic development has followed a labor-intensive path. The strategy of labor-intensive development is sound, given the rapid growth of population and labor force. Official wage policies, a largely non-unionized labor pool, and private sector wage restraint have provided an environment suitable for labor-intensive growth. Likewise, the freeing of domestic interest rates has avoided preferential treatment in the purchase of capital equipment, and hence, relative prices of capital and labor have tended toward equilibrium levels.

Government absorbs a large fraction of formal sector employment and has considerable influence on the structure of wages and wage growth through its minimum wage policies and role as wage leader. Minimum wages are established for both urban and rural areas with the latter fixed at almost two-thirds of the former (see Table 4). Revisions to the minimum wage are infrequent and small, giving way to rapid erosion of purchasing power by inflation. Although the 1980s has seen more frequent minimum wage revisions than the past, both urban and rural real minimum wages are still lower in 1986 than they were in 1981. Urban and rural real minimum wages in 1986 are approximately 80 percent of 1981 levels. In many respects, the statutory minimum wage serves as both floor and ceiling for unskilled workers and largely represents a level of income not far from subsistence.

[Table 4]

Even slight upward revisions in the minimum wage tend to result in a considerable shift in wage structure. This is an indication that a large fraction of the working population is employed at minimum wage levels. Nonetheless, the government has managed to encourage the private sector to hold the line on wage increases by allowing selective, as opposed to across the board wage hikes, and limiting public sector wage increases. There is no indication that the government will deviate from its strategy of labor intensive development. At present, real wages in the formal sector are approximately 75 percent of what they were nine years ago (see Table 4). The figure is even lower (58 percent) when one compares current industrial real wages with its counterpart nine years ago. The downward trend in real formal sector wages has not been smooth as minimum wage revisions over the period sought to recoup losses in purchasing power attributable to inflation. However, these small gains were quickly eroded.

One result of the government's tight wage policies has been to reduce wage differentials between and within sectors. Since the government is generally the wage leader, its ability to limit wage increases in public sector employment has reduced wage dispersion across industries. The wage gap between agriculture and industry, and agriculture and services, has declined in the last decade. It is very difficult to conclude whether the pattern of wage differentials accurately reflect differences in labor productivity across sectors. By influencing wages at both the upper and lower ends of the wage distribution, the government has been able to hold both inter-industry and occupational wage differentials to a minimum.

Urban and rural wage differentials also do not appear to be widening sharply. This has succeeded in reducing rural-urban drift and over-urbanization problems, so common in many developing countries. On the other hand, the policy of low urban wages that has constrained rural-urban migration has kept the smallholder population from making significant gains in agricultural productivity and incomes. The freeing of underemployed agricultural labor can only occur in an environment where productivity, wages, and employment are rising simultaneously in the formal sector. As long as underemployed labor continues to place demands on scarce agricultural resources, the economy will continue to face food shortages and lack of development.

The issue of wage differentials and rural-urban migration needs to be examined carefully. Women make up a large fraction of smallholder farmers, while men largely pursue income earning opportunities as estate laborers, urban workers, or migrants to South Africa, Zimbabwe and Zambia. Thus, remittances and transfers contribute significantly to rural household income (approximately 14 percent according to the 1980/81 National Sample Survey of Agriculture). An increase in the rural-urban wage gap might result in (i) increased out-migration of males, putting further stress on the family unit and women in particular, (ii) increased remittances to rural areas leading to higher household income, and (iii) out-migration of entire rural households leading to excessive pressure on urban infrastructure and services. Though one may argue convincingly that Malawi is underurbanized, the danger always exists that the transfer of human resources from rural to

urban areas could create a disbalance between the demands of the urban population and the ability of the metropolis to satisfy them. Visions of Mexico City, Calcutta, and Bombay leave one wary of introducing policies that might foment massive rural-urban migration.

Government led wage restraint has proven beneficial to a labor abundant economy such as Malawi. It is important, however, for wages to serve as signals that accurately reflect relative productivity across sectors, and hence, induce labor mobility from low to highly productive activities. It is necessary to carefully study whether the policy of wage restraint has impeded the growth of domestic demand and limited migration to the detriment of smallholder productivity. The implication is that a trade-off between employment growth and growth of effective demand must be avoided if economic development is to proceed uninterrupted.

3 The READI Survey

In 1986 a survey sponsored by the Government of Malawi and funded by USAID under the Rural Enterprises and Agribusiness Development Institutions (READI) Project provided information on small and medium scale enterprises. A 250 item questionnaire was distributed nationwide to illicit information on the characteristics of establishments, demographics of family ownership, structure of production, and other information about the nature of economic activities in small and medium scale establishments. This effort provided a total of 1,383 usable returns.[6]

Government institutions which license and interact with small and medium scale enterprises were initial sources for identifying establishments in these activities. Following this lead, enumerators were asked to provide as broad a coverage of business activities as possible and include in the sample "any business engaged in manufacturing, processing, assembling, provision of services, repairing or trading, owned and operated by Malawian private citizens." Only economic activities in fixed locations and those in which business owners were present were included. The survey excluded all activities involving crop and livestock production, forestry, and hunting.

Some interesting characteristics of this sector were made known from the survey results. This includes the following: (1) Almost 80 percent of establishments began with less than MK1,000; (2) 43 percent of all establishments had no employees while only 14 percent hire five or more workers; (3) more than 96 percent of all establishments sampled had a single owner; (4) 80 percent of the entrepreneurs worked full-time in their business; and (5) most of these entrepreneurs (56 percent) were between 30 and 49 years of age. Though Ettema's sample targeted the smallest of firms (40 percent of which were located in the open air), the nature of the small-scale sector that he presented has many similarities with the READI sample.

A major issue discussed in the next section of this paper is the extent to which the size and age structure of the nuclear and extended family influences the allocation of labor between market and non-market activities. Some evidence is brought to bear on this issue in the READI (1986) report. It provides information on the number of members supported by the family

and the number of dependents (other than children) supported by the family. Among the results of the survey was that Malawian entrepreneurs have large nuclear and extended families. Over half the sample reported from six to ten dependents, other than children. This information makes it possible to examine whether dependents provide labor inputs into household production or merely serves as a recipient of a share of family income. Part of this relation may signify an intergenerational transfer of resources from children to older parents, something which would be common in societies with limited institutional income security networks for non-working individuals. Interestingly enough, only 8 percent of the establishments reported relatives employed in the firm.

The READI report also found that the number of dependents increased with both reported monthly sales and the number of wage employees of the firm. Ettema found that many entrepreneurs had direct ties to the rural smallholder sector. As he put it, "It should be added that many of those interviewed – ranging from 39 percent in Blantyre to 86 percent in Salima – are supported by a second 'business', normally subsistence agriculture." (p. 498). The relation between nuclear family and dependents may be more complex than simply support of older parents, especially since the number of dependents is so high. Since most of the entrepreneurs worked full-time in their business, it is likely that some dependents work in subsistence farming to support the family. At this point, some of these points are simply conjectural and subject to analysis in the next section. The READI sample provides a unique data set that allows for the examination of these and other

issues affecting small-scale non-farm activities. It is less useful, however, for making predictions about the size of the total population involved in small-scale non-farm activities in Malawi.

4 Family Size, Age Composition, and Employment

The neoclassical theory of the firm is quite straightforward in its approach to the employment of resources. Resources come together in a technical production function in a particular combination that responds to relative input prices. Moreover, input use is influenced by the quasi-fixed nature of resources and the extent to which the firm is a price taker in product and resource markets. Within this framework, the profit maximizing firm would use variable inputs up to the point where the input price equals the value of its marginal physical product. The prime determinant of the quantity of labor demanded, then, is the price of labor. Other relevant variables include the price of output, prices of other inputs, and factors which influence the productivity of labor. Empirical studies of labor demand also include controls, to distinguish differences across firms.

Theoretically, the impact of changes in the wage on the quantity of labor demanded is unambiguously negative. That is, increases in the wage rate will result in a decline in the number of workers hired (or the number of man-hours worked). The standard model of the firm incorporates characteristics of the firm to distinguish among different labor markets but it does

not include particular characteristics of ownership of the firm. The nature of ownership is divorced from the firm's decision-making process. A second feature is that the firm hires only in the market for labor and does not rely on non-market labor (unpaid family labor). These considerations may not be relevant for industrial societies, but they do play an important role in economic decision-making in low income societies where markets may be less developed and non-market relations more common.

An alternative to the standard theory of the firm is the household production model. Its primary contribution is integrating consumption and production decisions within the household. It is particularly relevant for studying low income societies and has successfully been applied to research on agricultural households. Thus, a major difference between the contemporary theory of the firm and the household production model is that, in the former, the firm is the unit of analysis while the household is the unit of analysis in the latter.

In the agricultural household model decisions are simultaneously made concerning the consumption of goods, the allocation of family labor between market and non-market activities, and the amount of agricultural output produced. The optimizing farm household seeks to maximize its consumption of market goods, leisure time, and an agricultural staple.[7] Likewise, household members divide the total time available to them among farm activities, non-farm activities, and leisure. The income derived from work in the labor market is used to consume goods, including food. Income can also be derived from the sale of farm output, produced with hired wage

labor or unpaid family labor. Finally, the household also benefits from the production of food for its own consumption.

The work of Becker (1981) is particularly relevant in the analysis of the family allocation of labor between market and non-market activities. A major tenent of this model is that the division of labor between husband and wife is partly determined by biological factors (at least initially), but also by differences in experiences and investments in human capital. According to this view, "... sexual differences in specialized investments reinforce any biologically induced sexual division of labor between market and household sectors and greatly increase the difficulty of disentangling biological from environmental causes of the pervasive division of labor between men and women." (p. 23)

Using data from rural households in the Philippines, Yotopoulos and Mergos (1986) find that the intra-family allocation of labor is related to gender and whether the household is engaged in tenant farming or is a landholder. A not so surprising finding is that men tend to specialize in farming and wage employment while women and children tend to specialize in household production. Furthermore, women and children tend to participate in wage employment and farm production to a greater extent than men participate in household production. Of particular note is the substitution of children's and women's time in household production, leading the author's to conclude that children serve to reduce the time women spend in arduous agricultural activities. This phenomenon is common in tenant households and has important implications for fertility and population

growth in rural areas.

There are advantages to using family labor instead of wage labor from the perspective of household production. Transactions costs associated with the hiring of labor are lower in the case of family labor. In modern societies employers hire workers based on information provided by interviews, credentials, and intermediaries. In low income societies the family plays a major role in the provision of this information. This is particularly important when knowledge of the quality of potential employees is not readily available from educational institutions, civil service examinations, or employment bureaus. In the household production setting, information of this sort would be very costly for farm families to obtain. Thus, the household uses workers they are more familiar with, all things considered equal.

A related point is that families play a major role in economic decision-making in the absence of well developed markets.[8] Familial relations influence the nature of economic exchange. Hence, the second major point is that family labor reduces the firm's costs of monitoring and supervision. Household production activities provide an important source of income and security for its members. Household members have a vested interest in the firm's success, something which is less likely to occur with wage employees.[9] Since household members rely on the distribution of family income for subsistence (generally in the form of in-kind commodities) there is less need to directly supervise their activities.

A greater degree of specialization is possible within the household when family size is large. Since extremely high transactions and monitoring costs

occur in the absence of a well developed labor market, family labor is an important substitute for wage labor. Thus, we would expect larger families in societies with a non-monetized labor market and limited exchange. Changes in family size occur very slowly over time, and hence, family members act as quasi-fixed inputs of production compared to non-family wage employment. In sum, family and non-family labor inputs are not perfect substitutes in the household production process.

But families do change over time as child-bearing years decline and members age. The aging of the family tends to reduce the availability of family labor, increasing their relative price. This is partially affected by rising earnings with age, more so for those family members that have invested time in household production for the market.[10] The opportunity cost of working in household production rises with market wages, leading family members to seek employment outside the family as they age. As the price per unit of labor time rises in the household relative to wage labor, household production increasingly relies on non-family wage labor. This implies that as family members age, the number of wage employees in household production would rise.

The household production model has shown to be a useful framework in which to analyze farm production. It is conceivable that the household production model could provide a framework to understand the nature of employment in small-scale non-farm activities. To determine whether this is a fruitful direction for research, we attempt to estimate a standard labor demand function for small-scale non-farm enterprises. The empirical model

can be written as:

$$\epsilon_i = f(w_i, \mathbf{x_i}, \mathbf{z_i}; \epsilon_i) \tag{1}$$

where ϵ_i is an (n x 1) vector of wage employment by establishment; w_i is a (n x 1) vector of average wages per unit of time by establishment; $\mathbf{x_i}$ is a (n x m) matrix of characteristics of the labor market by establishment; $\mathbf{z_i}$ is a (n x k) matrix of characteristics of the owner and his/her household; and ϵ_i is an (n x 1) vector of random effects.

The endogenous variable, ϵ_i, is measured by the number of wage employees in the small-scale non-agricultural establishment. The average wage per establishment, w_i, is determined by dividing the establishment's monthly wage bill in MK by the total number of wage employees. Differences between firms in labor market participation are captured by $\mathbf{x_i}$ and include such variables as location (urban dummy variable), sales (monthly sales in MK), and industry (seven industry dummies are included in addition to the constant term). Household and employer characteristics are captured by $\mathbf{z_i}$ and include the owner's sex, educational attainment, period of time outside Malawi as a migrant,[11] the number of children in the household, the number of household dependents other than children, and the average age of the owner's children.

The estimation of equation 1 by ordinary least squares is presented in Tables 5. Table 6 includes coeficient estimates when we attempt to ascertain whether the gender of the owner's children is a relevant consideration. The results suggest that w_i and elements of $\mathbf{x_i}$ and $\mathbf{z_i}$ explain variations in employment across small-scale establishments. In the standard labor de-

mand model the elements of $\mathbf{z_i}$ would not be statistically significant. They are incorporated in the random disturbance term, ε_i. Table 5 shows that the standard labor demand model needs modification to incorporate features of small-scale non-farm production in low-income societies. Effects of changes in the wage rate, w_i, must also be reanalyzed. Consider that the monthly wage rate has a perverse sign in both Tables 5 and 6. This is possibly attributable to a lack of controls to identify the labor markets in which these firms compete. Endogeneity and truncation bias are also possible problems of estimation not accounted for in the analysis.

[Table 5]

[Table 6]

It is also likely that the wage effect in household non-farm production operates differently from the standard labor demand model. An increase in the wage rate will, on the one hand, increase the relative cost of wage labor, reduce wage employment, and induce more use of family labor. On the other hand, it will increase the opportunity cost of family member's time in household production compared with wage employment. This will induce family members to seek employment outside the home, thus reducing the available family labor input. It may result in increased demand for wage labor, especially considering that family labor is quasi-fixed and limited in supply. The theoretical effect of an increase in the wage rate on household non-farm employment will dampen the traditional disemployment effect of the standard model. This may partly be responsible for the perverse sign

on the wage rate, but awaits further theoretical and empirical analysis.

Other variables that generally impact labor demand such as location of enterprise, monthly sales, and industry type prove statistically significant in the empirical model. Urban establishments tend to hire more wage employees than do rural establishments. Table 6 also suggests that firm's with greater monthly sales tend to hire more wage employees. Differences in types of production activities by the small-scale enterprise tend to have a differential impact on the employment size of establishments.

The most important finding of this study is that the size and composition of the household productive unit *does* influence employment in the small-scale firm. Household characteristics are important determinants of the use of wage employment in non-farm establishments as shown by the statistical significance of some of the variables in matrix $\mathbf{z_i}$. These results imply that farm and non-farm small-scale activities have much in common in their relation to family and wage employment. Moreover, it highlights the special character of small-scale enterprise production in low-income societies compared with counterparts in modern societies.

Not all of the characteristics of the enterprise owner prove relevant to understanding variations in wage employment across small-scale activities. The owner's sex, marital status, and years outside of Malawi do not significantly influence differences in the extent of wage employment in these establishments. Concerning the first two variables, it should be noted that the most of the small-scale enterprises of the READI sample were owned and operated by married males. One would expect a more significant co-

efficient for the years of migration variable. To the extent that migration provides the owner with human capital that enhances the success of the firm, the coefficient should be positive and statistically significant. The sample does show that those owners with migratory experience used the proceeds from their travels to initially finance their business. That this experience was translated into usable skills is not substantiated by the empirical findings.[12]

The most interesting results correspond to the household characteristics variables. These include the number of children and other dependents and the average age of the household's children. In Table 5, the coefficient on family size is negative as one might expect, but not statistically significant. The expectation would be that fewer wage employees are needed, to the extent that household size is larger. The number of household dependents (other than children) and the age of the children are both determinants of the employment size of small-scale non-farm establishments in Malawi. However, the results suggest that the extended and the nuclear family play different roles in household economic activities.

The larger the extended family (made up of dependents other than the owners immediate family), the greater the number of wage employees hired by the establishment. A possible explanation is that the extended family benefits from household income but does not directly contribute to it in the form of wage or non-wage labor input.[13] Then the relevant question is "What claims do non-child dependents have on the household enterprises income?" One possibility is that the extended family provides a form of

insurance for the family engaged in non-farm production. Ettema found that many of the small-scale enterprise entrepreneurs had farm holdings though they did not directly work the land. It is conceivable that other family members may work the land for the benefit of the larger household. The extended family serves as insurer for the larger family unit, providing foodstuffs and even employment should household non-farm production falter.

The empirical results show that as the household's children age, the small-scale non-farm establishment increases its employment of wage labor. This is consistent with a rising age-earnings profile for household members, and hence, increasing opportunity cost of unpaid family labor. Moreover, these results appear to be independent of the gender of household members. There is a limit to the number of family members that can be called upon to work in the household enterprise. As this number declines over time due to the aging of the family, the establishment relies to a greater extent on wage employment. Thus, the incentive for using household labor in small-scale non-farm production is strong in low-income societies with limited development of labor markets. With a fully developed labor market which minimizes transactions and monitoring costs, family and wage labor would be closer substitutes in production.

5 Conclusions

This paper provides a non-mathematical treatment of decision-making in the non-farm household. Primary consideration has been the household use of wage employment in non-farm production. This differs from the traditional emphasis on the household allocation of labor in farm production. The evidence suggests that unpaid family labor and wage employment are not perfect substitutes in small-scale production. There are advantages, but also limits, to using family labor over wage labor. Family labor is limited by the number of available household members, whose opportunity costs of working outside the labor market increase with age.

The study also has relevant policy implications. We argue that small-scale non-farm activities have the potential for making important contributions to employment. This is all the more important given recent projections for population growth in Malawi. Moreover, it is quite plausible that wage increases will have smaller disemployment effects for small-scale establishments than for large enterprises. The difference is that household production characterizes smaller rather than larger firms.

There is considerable scope for expanding the theoretical and empirical focus of this research. Theoretically, it is necessary to specify a household utility function and a production function for non-farm activities. Household labor, including extended family members, must be allocated between farm, non-farm, z-goods production, and leisure.[14] The empirical model must be refined to account for the truncation bias that exists when large-

scale enterprises are omitted from the sample. Likewise, it is necessary to correct for the lack of observations on wages for establishments which only use unpaid family labor. These improvements can only strengthen the main thrust of this paper – that the household production model applies to small-scale non-farm activities as well as farm production.

NOTES

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1. If labor force participation rates remain unchanged over the next five years, economic activity will have to generate from 110 to 130 thousand new jobs each year to preclude increases in labor underutilization. Unfortunately, if total employment continues to grow as it has over the last ten years, the economy will experience a shortfall in jobs for approximately 30 to 36 thousand workers per year over the next five years.

2. Population growth remains the primary impetus to labor force growth in Malawi. Current and expected population growth rates for Malawi are higher than average for sub-Saharan Africa. This is largely the result of high and sustained birth rates and small and moderate declines in mortality rates. The total fertility rate of 7.6 percent in 1986 is among the highest for low income countries in sub-Saharan Africa. Furthermore, the population is very young (46 percent of the population is less than 15 years of age) and population density is on the rise (from 59 to 85 persons per sq. km. between 1977 and 1988). Nonetheless, urbanization is very low (11 percent of the population lives in urban areas as of 1987), although it has been increasing at a rapid pace of 7.0 percent per year from 1966 to 1987. This translates into estimates of annual labor force growth of 3.2 to 4.0 percent

over the next ten to thirty years.

3. Rural wage data is notoriously poor, and it is not possible to conclusively determine the direction of wages in the estate sector during the 1970s. But, low productivity and increasing population pressure on smallholder land, with limited off-farm employment opportunities, fomented labor mobility from the subsistence smallholder sector to commercial farms. Increased commercial lending and considerable acreage expansion (a tenfold increase between 1970 and 1980) in tobacco estates provided the appropriate environment for the growth of the sector during the 1970s.

4. In the remainder of this section when reference is made to small-scale enterprises we are referring to those establishments with fewer than 20 employees.

5. Since 1977, between 14 and 20 thousand workers per year were under contract to work in the mines in South Africa, constituting 10 to 12 percent of foreign migrants in South Africa. The attraction of working in the mines is obvious when one compares the difference between the statutory minimum wage in Malawi and starting wages in South African mines. Between 1972 and 1988 the minimum underground wage in South Africa has gone from two to ten times the highest statutory minimum wage possible in Malawi. These earnings have translated into remittances which have averaged MK29 million per year between 1980-85. This represents a considerable contribution to scarce foreign exchange.

6. It is noteworthy that with the earlier work of Ettema (1984), Malawi has provided useful information on small-scale economic activities. Ettema

excluded entrepreneurs with a value of capital greater than MK25,000 while the READI survey did not. Ettema also excluded the trade sector.

7. Becker (1981) emphasizes the difference between commodities and goods. Commodities provide a utility enhancing function and result from the combination of goods and time. This is a more realistic description of the arguments of the household utility function.

8. See Ben-Porath (1980) for a discussion of this issue.

9. This response on the part of household members may be partly due to altruism and trust among family members.

10. By household production for the market is meant those commoditites produced in the home for market consumption as opposed to those commodities produced for home consumption.

11. The READI survey reports that 33 percent of all entrepreneurs in small-scale enterprises sampled worked outside Malawi for more than nine months, comparing favorably to the national average of 35 percent of the male population (ages 15 and older). Moreover, 51 percent of those entrepreneurs who worked abroad found that this experience helped them start their enterprise (primarily by providing initial capital) and the majority returned to rural areas. Thus the migratory experience seems to be a common characteristic of many Malawian small-scale entrepreneurs.

12. Part of this argument is based on the belief that a more "successful" establishment would be able to cover their quasi-fixed costs of family labor and wage-employment.

13. Only 7 percent of the sampled establishments hired any relatives at

all.

14. Z-goods production refers to household production of commodities for the household rather than the market.

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Figure 1
Schematic Representation of Labor Markets in Malawi

Sector	Formal Activities			Informal Activities
Urban	Wage Employment in Large-Scale Enterprises and Public Sector Employment	Wage Employment in Small-Scale Enterprises		Self-Employed and Unpaid Family Workers
Rural Non-Farm	Wage Employment in Large-Scale Enterprises and Public Sector Employment	Wage Employment in Small-Scale Enterprises		Self-Employed and Unpaid Family Workers
Rural Farm	Commercial Estates (Wage or Wage-Equivalent Relations)	Wage Employment on Small Leaseholder Farms	Small Leaseholder Agriculture	Small-Holder Agriculture and Subsistence Farming

Table 1
Population, Labor Force, and Employment in Malawi
(in thousands)

	1966	1977	1987	Average Annual Growth Rate (%) 1966-1977	Average Annual Growth Rate (%) 1977-1987
Total Population (all ages)	4,039.6	5,547.5	7,982.6	2.88	3.64
Urban	203.3	470.6	878.1	7.63	6.24
Rural	3,836.3	5,076.8	7,104.5	2.55	3.36
	1968	1977	1986	1968-1977	1977-1986
Labor Force (a)	1,775.5	2,288.3	3,171.5	2.82	3.63
Formal Sector Employment (b)	164.6	309.0	427.8	7.00	3.61
Agriculture, Forestry and Fishing	44.2	155.1	185.1	13.95	1.96
Industry (c)	34.5	59.8	101.8	6.11	5.91
Services (d)	55.9	94.1	140.9	5.79	4.48
Unallocated	30.0	0.0	0.0	.	.
Informal Sector Employment (e)	44.9	84.3	116.7	7.00	3.61
Smallholder Agriculture and Residual	1,566.6	1,848.4	2,435.4	1.84	3.06
Unemployed	.	46.6	191.6	.	15.71

Table 1

(continued)

Source: Data obtained from various publications of the National Statistical Office as well as published and unpublished documents of the World Bank, Employment Aspects of Economic Development in Malawi, May 8, 1981.

(a) Labor force estimate for population ten years of age and older. Estimated by applying 1977 ratio of labor force ten years of age and older to total population, all ages, to population census estimates.

(b) Formal sector figures are primarily from NSO, Reported Employment and Earnings. The unallocated are based on an estiamte of 30,000 employees working in small establishments (those with less than 20 employees) not covered in figures for 1968.

(c) Includes mining and quarrying, manufacturing, electricity and water, and building and construction.

(d) Includes wholesale and retail trade, hotels and restaurants, transport, storage and communications, financing, insurance and business services, and community, social and personal services.

(e) Figures based on constant 1977 ratio of formal to informal sector employment. Excludes self-employed in agriculture, forestry, and fishing.

Table 2
Estimates of Sectoral Employment and Share of Total Employment in Malawi, 1968, 1977, and 1986 (in thousands)

		Formal (Wage-Employment)		Informal (Self-Employment)		Total	
Urban	1968	90.3	(5.1%)	5.9	(0.3%)	96.2	(5.4%)
	1977	115.4	(5.1%)	13.0	(0.6%)	128.4	(5.7%)
	1986	182.0	(6.1%)	25.7	(0.9%)	207.7	(7.0%)
Rural Non-Farm	1968	30.1	(1.7%)	39.0	(2.2%)	69.1	(3.9%)
	1977	38.5	(1.7%)	71.3	(3.2%)	109.8	(4.9%)
	1986	60.7	(2.0%)	91.0	(3.0%)	151.7	(5.0%)
Rural Farm	1968	44.2	(2.5%)	1,566.6	(88.2%)	1,610.8	(90.7%)
	1977	155.1	(6.9%)	1,848.4	(82.4%)	2,003.5	(89.4%)
	1986	185.1	(6.2%)	2,435.4	(81.8%)	2,620.5	(88.0%)
Total	1968	164.6	(9.3%)	1,611.5	(90.7%)	1,775.7	(100.0%)
	1977	309.0	(13.8%)	1,932.7	(86.2%)	2,241.7	(100.0%)
	1986	427.8	(14.3%)	2,552.1	(85.6%)	2,979.9	(100.0%)

Notes: Sums do not always add to 100% due to rounding.

The distribution of urban formal and rural non-farm formal employment is 3/4 urban and 1/4 rural, based on estimates of the National Physical Development Plan.

The Distribution of urban formal and rural non-farm informal employment is 13.2% urban informal, 86.8% rural non-farm informal for 1968; 15.4% urban informal, 84.6% rural non-farm informal for 1977; and 22% urban informal, 78% rural non-farm informal for 1986. The distribution is initially based on the R.E.A.D.I. survey with some adjustment for urban gjrowth.

The informal rural farm sector consists of smallholder agriculture and residual.

Table 3
Estimates of Sectoral Employment Growth, 1968-1977 and 1977-1986 (average annual growth rates)

Sector	Period	Formal (Wage-Employment)	Informal (Self-Employment)	Total
Urban	1968-77	2.7%	8.8%	3.2%
	1977-86	5.1%	7.6%	5.3%
Rural Non-Farm	1968-77	2.7%	6.7%	5.1%
	1977-86	5.0%	2.7%	3.6%
Rural Farm	1968-77	13.9%	1.8%	2.4%
	1977-87	2.0%	3.1%	3.0%
Total	1968-77	7.0%	2.0%	2.6%
	1977-86	3.6%	3.1%	3.2%

Source: Based on Table 2.

Table 4

Nominal and Real Daily Earnings (including in-kind benefits) By Industry(a)
(in Malawi Kwacha)

	CPI(b)	All Industries	Agriculture(c)	Industry(d)
1977	70.0	1.21 (1.73)	0.50 (0.71)	1.64 (2.34)
1978	75.9	1.42 (1.87)	0.58 (0.76)	1.73 (2.28)
1979	84.5	1.50 (1.77)	0.58 (0.69)	1.85 (2.19)
1980	100.0	1.75 (1.75)	0.64 (0.64)	2.29 (2.29)
1981	111.8	1.98 (1.77)	0.77 (0.69)	2.42 (2.16)
1982	122.8	2.31 (1.88)	0.99 (0.81)	2.94 (2.39)
1983	139.4	2.18 (1.56)	0.89 (0.64)	2.83 (2.03)
1984	167.3	2.36 (1.41)	0.97 (0.58)	2.62 (1.57)
1985	184.9	2.52 (1.36)	1.08 (0.58)	2.72 (1.47)
1986	210.7	2.73 (1.30)	1.09 (0.52)	2.88 (1.37)

Table 4

(continued)

	Services(e)	Urban Minimum Wage(f)	Rural Minimum Wage(g)	Subsistence Income(h)
1977	2.12 (3.03)	0.40 (0.57)	0.25 (0.36)	0.39 (0.56)
1978	2.61 (3.44)	0.40 (0.53)	0.25 (0.33)	0.39 (0.52)
1979	2.89 (3.42)	0.40 (0.47)	0.25 (0.29)	0.39 (0.46)
1980	3.20 (3.20)	0.45 (0.45)	0.30 (0.30)	0.44 (0.44)
1981	3.51 (3.14)	0.70 (0.63)	0.50 (0.45)	0.68 (0.61)
1982	3.77 (3.07)	0.81 (0.66)	0.58 (0.47)	0.79 (0.64)
1983	3.97 (2.85)	0.81 (0.58)	0.58 (0.42)	0.79 (0.57)
1984	4.17 (2.49)	0.81 (0.48)	0.58 (0.35)	0.79 (0.47)
1985	4.45 (2.41)	1.00 (0.54)	0.70 (0.38)	0.95 (0.51)
1986	4.69 (2.23)	1.11 (0.53)	0.77 (0.36)	1.04 (0.49)

Table 4

(continued)

(a) The computation of daily earnings is based on a six-day workweek and 52 weeks per year. Earnings are defined as the total cash amount (gross of tax) paid to employees during the reference period. Included are all cash payments, acting and duty allowances, gratuities, bonuses and leave grants. In the case of expatriates, government allowances which are not paid in Malawi are excluded. Terminal gratuities and other lump-sum payments are also excluded. Also included are benefits-in-kind which are defined as the value, at cost to the employer, of supplying meals, rations and housing on a free or subsidized basis. Real earnings appear in parentheses and are constructed using the low income Blantyre consumer price index with base 1980 = 100.

(b) Blantyre low income household consumer price index (1980 = 100) used to deflate nominal earnings.

(c) Includes agriculture, fishing, and forestry.

(d) Includes mining and quarrying, manufacturing, electricity and water, and construction.

(e) Includes wholesale and retail trade, restaurants and hotels, transport, storage and communications, financing, insurance, real estate, and business services, and community, social and personal services.

(f) Statutory minimum wage for Blantyre.

(g) Statutory minimum wage for all areas other than Blantyre, Lilongwe, Zomba, and Mzuzu.

(h) Based on the 1980/81 Census of Agriculture estimate of annual household income of MK 137. Figures for other years were computed using estimates of rural or urban minimum wage growth (whichever was smallest).

Table 5

Ordinary Least Squares Estimates of Coefficients of the Employment Function

Variables	Coefficient	Standard Error
CONSTANT	-0.4953	4.2257
SEX	-1.4116	1.9667
MARITAL STATUS	0.0097	0.1120
LEVEL OF EDUCATION	4.5684*	1.1626
YEARS OF MIGRATION	0.0732	0.0714
NUMBER OF CHILDREN	-1.2646	1.5571
NUMBER OF DEPENDENTS	0.4533*	0.1173
AGE OF CHILDREN	0.2514*	0.1257
URBAN	0.0007*	0.0001
MONTHLY SALES	5.4773	3.9488
AVERAGE MONTHLY WAGE	15.4291*	1.3368
FOOD	4.6008	3.7217
CLOTHING	7.3866	3.7076
WOOD	7.8427*	3.6857
MANUFACTURING	3.2234	3.4367
TRADE	0.7013	3.5888
RESTAURANTS	3.7591	3.5889
SERVICES	0.6545*	0.0823
NO. OF OBSERVATIONS	772	
R-SQUARED	0.3855	
STANDARD ERROR	12.6501	

Note: *Statistically significant at the 10% level.

Table 6

Ordinary Least Squares Estimation of Employment Equations

Variables	(1)	(2)	(3)
CONSTANT	5.5183*	5.7944*	5.3326*
	(1.8791)	(1.8552)	(1.8635)
SEX	1.2221	1.1612	1.1835
	(0.8716)	(0.8611)	(0.8715)
MARITAL STATUS	0.4308	0.4623	0.3967
	(0.6926)	(0.6925)	(0.6897)
LEVEL OF EDUCATION	0.0375	0.0324	0.0406
	(0.0524)	(0.0523)	(0.0523)
YEARS OF MIGRATION	-0.0337	-0.0298	-0.0340
	(0.0297)	(0.0295)	(0.0296)
NUMBER OF SONS	-0.1573	-0.0999	---
	(0.1182)	(0.1090)	---
NUMBER OF DAUGHTERS	0.1177	---	0.0754
	(0.0991)	---	(0.0910)
NUMBER OF DEPENDENTS	0.0721	0.0658	0.0747
	(0.0494)	(0.0492)	(0.0494)
AGE OF SONS	0.0472	0.0670*	---
	(0.0357)	(0.0289)	---
AGE OF DAUGHTERS	0.0276	---	0.0516*
	(0.0374)	---	(0.0300)
URBAN	0.7190	0.7116	0.7221
	(0.5208)	(0.5206)	(0.5210)
MONTHLY SALES	0.0003*	0.0003*	0.0003*
	(0.00005)	(0.00005)	(0.00005)
AVERAGE MONTHLY WAGE	0.1178*	0.1193*	0.1165*
	(0.0140)	(0.01394)	(0.01395)
FOOD	-8.0610*	-8.0300*	-7.9016*
	(1.7255)	(1.7247)	(1.7209)
CLOTHING	-8.3809*	-8.3812*	-8.1987*
	(1.6368)	(1.6321)	(1.6279)
WOOD	-7.4572*	-7.5160*	-7.2644*
	(1.6363)	(1.6342)	(1.6287)
MANUFACTURING	-6.5418*	-6.6651*	-6.3598*
	(1.6326)	(1.6285)	(1.6284)
TRADE	-8.5573*	-8.5023*	-8.4066*
	(1.5056)	(1.5026)	(1.5000)
RESTAURANTS	-5.1839*	-5.1962*	-4.8959*
	(1.5986)	(1.5938)	(1.5866)
SERVICES	-6.8691*	-6.8722*	-6.6919*
	(1.5795)	(1.5774)	(1.5702)
NO. OF OBSERVATIONS	744	744	744
R-SQUARED	0.2617	0.2592	0.2590
STANDARD ERROR	5.4602	5.4618	5.4628

Note: * Statistically significant at the 10% level.