Labor Market Performance as a Determinant of Migration

July, 1989

Wim P. M. Vijverberg
Labor Market Performance as a Determinant of Migration
The Living Standards Measurement Study

The Living Standards Measurement Study (LSMS) was established by the World Bank in 1980 to explore ways of improving the type and quality of household data collected by statistical offices in developing countries. Its goal is to foster increased use of household data as a basis for policy decisionmaking. Specifically, the LSMS is working to develop new methods to monitor progress in raising levels of living, to identify the consequences for households of past and proposed government policies, and to improve communications between survey statisticians, analysts, and policymakers.

The LSMS Working Paper series was started to disseminate intermediate products from the LSMS. Publications in the series include critical surveys covering different aspects of the LSMS data collection program and reports on improved methodologies for using Living Standards Survey (LSS) data. More recent publications recommend specific survey, questionnaire, and data processing designs, and demonstrate the breadth of policy analysis that can be carried out using LSS data.
Labor Market Performance as a Determinant of Migration

Wim P. M. Vijverberg
ABSTRACT

Are migrants more productive workers than nonmigrants? It is an old question, which is further complicated by the fact that one should distinguish productivity at (rural) places of origin from that at (urban) places of destination. In principle, one would like to determine productivity of workers regardless of their migration status and then compare workers who choose to migrate with the overall population. Even recent empirical studies yield no conclusions for such unconditional comparison, since they only examine productivity of workers, given their migration status.

In a comparison of migrants with nonmigrants, both observed and unobservable productivity factors are relevant. This paper focuses more on the unobservable factors and their correlation between places of origin and destination. A human capital model of migration demonstrates that more productive workers at the origin would choose to migrate only if the correlation between origin and destination factors is strongly positive.

Longitudinal data drawn from the Côte d'Ivoire Living Standards Survey, 1985-86, are used to examine the pattern of migration in the light of labor market performance both of wage employees and non-farm self-employed workers. It is found that, indeed, the more productive workers migrate. Furthermore, the general direction of migration is toward cities. The conclusion is therefore that rural areas lose their productive workers and that urban areas may gain in productivity from the geographical shifts in population.
ACKNOWLEDGMENT

The author wishes to acknowledge helpful comments by Jacques van der Gaag and John Newman, Welfare and Human Resources Department, The World Bank; Lloyd J. Dumas, Simon Faz, and Vibhooti Shukla, School of Social Sciences, University of Texas at Dallas; T. Paul Schultz, Economic Growth Center, Yale University, and Oded Stark, Migration and Development Program, Harvard University.
1. INTRODUCTION

In an age of rapid urbanization, one may well wonder how the productivity of the work force in both urban and rural areas is affected by the geographical shift of people. Does the farm sector lose its productive workers? Does average productivity rise in urban areas when migrants move in? Indeed, does migration influence long-term national economic growth? These important questions were already posed three decades ago in a major study for the American Philosophical Society, yet empirical studies of migration have not been able to provide satisfactory answers.

A common finding in studies of migration is that workers appear to resolve the migration decision in a way that is optimal for them. That is, migrants appear to earn more at their destination than nonmigrants would have earned if they had also moved, and vice versa, although studies usually find only one such effect: either migrants sort themselves optimally, or nonmigrants make the correct choice.

Such findings allow no conclusion about the productivity of workers at locations where they actually do not reside. To say that migrants earn more at their destination than nonmigrants would have earned does not answer the question how productive these migrants would have been at the origin.

---

1/ Kuznets and Thomas (1957) and Kuznets (1964) introduce and summarize this study, entitled Population Distribution and Economic Growth, United States, 1870-1950.

relative to nonmigrants. Rather, it refers to average productivity, say, at the place of destination, given the outcome of the migration decision. However, we need to determine the average productivity of workers at the destination, given their labor market performance at the place of origin, regardless of the outcome of the migration decision. Once this is known, we desire to examine the productivity of those workers who choose to migrate in the light of the productivity of the overall population. In this comparison, both observed and unobservable productivity factors are relevant. Observed skill factors have long been studied (e.g., Kuznets, 1964; Hance, 1970). This paper focuses more on the unobservable factors and their correlation between places of origin and destination. Existing studies of migration have not measured the correlation nor do they show whether migrants are unusually origin-productive (i.e., tend to have positive unobservable productivity factors at the origin).

Cross section data are inadequate for answering this important question, because one must observe at least the individual's labor market performance before he migrates, and preferably also his labor market performance after he migrates. Thus, longitudinal data are called for. The

3/ To view the argument in a statistical light, positive sorting of migrants indicates a positive correlation between random factors in the destination wage and the migration decision. Positive sorting of nonmigrants indicates a negative correlation between random factors in the origin wage and the migration decision (which comes out negative, so that the origin wage is atypically high). The correlation pattern may make a negative correlation between random wage factors at the places of destination and origin likely but does not prove it. For example, two positively correlated variables may have an opposite correlation with a third variable (i.e., in this case, the randomness in the migration decision).
data set used for this study, the Côte d'Ivoire Living Standard Survey, measures migration status of individuals within one year of measuring labor market performance, but does not track migrants down at their places of destination. Nevertheless, as the theoretical model of Section 2 shows, one may derive a statement about the correlation in productivity on basis of pre-migration labor market performance and subsequent incidence of migration.

In Section 3, the construction of the appropriate measures of labor market performance is discussed. Section 4 reports the empirical results which show that workers who, given their observable personal characteristics, are more productive at the place of origin, are more likely to migrate. This implies a positive correlation between unobservable origin and destination productivity factors. Since most migrants in Côte d'Ivoire move from rural to urban areas (Section 5), this suggests that rural areas are losing their productive workers and that urban areas may gain in productivity from migration. It is noted that this is a further explanation of the general wage gap between urban and rural areas.
2. LABOR MARKET PERFORMANCE AND THE DECISION TO MIGRATE

This section examines a human capital model of migration in which the primary focus is the impact of labor market performance. A central theme of the model is the role of uncertainty about future labor market developments in the context of an intertemporal decision problem. The model allows a statement about the effect of certain and uncertain components of the wage on the decision to migrate.

2.1 The structure of the model

In line with the nature of the data to be used later on, assume that the individual resides currently (t=0) at the present (Q=0) location. At the end of the current time period, he decides whether to move to an alternative (Q=1) location. Let $U_t(Q)$ be the maximum utility obtained in period $t$ at location $Q$, and let this be a function of the wage rate at that moment and place, $W_t(Q)$, and a set of exogenous circumstances $X_t(Q)$. Life cycle utility from the present until the end of the planning horizon (t=T) at location $Q$ is then defined as:

$$
LCU(Q) = U_0(0) + \sum_{t=1}^{T} \frac{1}{(1+\rho)^t} U_t(Q)
$$

(1)

where

$$
U_t(Q) = U(W_t(Q), X_t(Q))
$$

(2)

and where $\rho$ is the rate of time preference. We shall assume that the individual maximizes the expected lifecycle utility function, so that (1) is conveniently rewritten as:
ELCU(1) = U(W(0), X(0)) + V_0(W(1), X(1)) \tag{3}

where \[ V_0(W(1), X(1)) = E_0 \left\{ \sum_{t=0}^{T} \frac{1}{(1+r)^t} U_t(1) \right\} \tag{4} \]

The expectation \( E_0 \) is taken with respect to information available at \( t=0 \).

\( W(1) \) and \( X(1) \) stand as generic terms for the entire future path of wages and circumstances at location 1. While future migration may take the individual away from location 1, it need not be specifically modeled here, since \( V_0 \) summarizes optimal behavior in the future, whether that will be repeat or return migration or settlement. Note also that while costs of migration are not explicitly mentioned in this model, they can be part of \( X(1) \) (see below).

The decision to migrate is based on a comparison between the expected lifecycle utilities at two locations:

\[ I^* = ELCU(1) - ELCU(0) \]
\[ = V_0(W(1), X(1)) - V_0(W(0), X(0)) \tag{5} \]

\[ I = 1 \text{ (migrate) if } I^* > 0 \]
\[ = 0 \text{ (stay) if } I^* \leq 0 \tag{6} \]

The focal point of the remainder of the discussion will be on the impact of \( X \) and, especially, \( W \) on \( I^* \).\footnote{The model is a variant of the Roy model as analyzed by Heckman and Sedlacek (1985) who model the individual as simply maximizing income.}
in this model. Amenities in the destination place are appreciated
\( \frac{\partial V}{\partial X} > 0 \) and so encourage migration. Urban pollution, a higher cost of
living, and increased cost of migration lower the maximum utility level
\( \frac{\partial V}{\partial X} < 0 \) and therefore deter migration. Note that X may be uncertain,
because information is incomplete, or future events are random (e.g.,
outbreaks of political unrest and their impact on one's life).

For the purpose of this paper, let us be more precise about the
nature of uncertainty in the wages. Let us assume that the wage rate
\( W_t(z) \) can be decomposed into a certain component \( \mu_t(z) \), which may be viewed
as a market-determined average productivity, and two uncertain components, one
of which is known to some extent to the individual \( \eta_t(z) \) and another which
is unknown until the time period arrives \( \epsilon_t(z) \):

\[
W_t(z) = \mu_t(z) + \eta_t(z) + \epsilon_t(z)
\]  

(7)

\( \eta_t(z) \) might take the form of a random drift pattern such as
\( \eta_t(z) = \alpha_t \eta_{t-1}(z) + \theta_t(z) \), where \( \alpha_t \) is determined by local economic
conditions. When the local economy develops in such a way that there arises
more demand for this worker's skills, \( \alpha_t \) will exceed unity. If the particular
demand evaporates, \( \alpha_t \) is less than unity. \( \theta_t(z) \) makes the drift random.
\( \theta_t(z) \) is distinguished from \( \epsilon_t(z) \) in that \( \epsilon_t(z) \) is a one-time random shock,
whereas the effect of \( \theta_t(z) \) is retained in \( \eta_t(z) \) which will affect
future \( \eta_{t+1}(z) \): as such, \( \epsilon_t(z) \) masks the random drift in \( \eta_t(z) \).

At present, the individual resides at \( z=0 \) and so observes
\( \eta_0(0) + \epsilon_0(0) \). Together with past observations of this term, he can distill
an estimate of \( \eta_0(0) \), from which future values of \( \eta_t(0) \) can be predicted. Let 
\( \hat{\eta}_t(0) \) denote the individual's prediction of \( \eta_t(0) \). Then the population mean 
of \( \hat{\eta}_t(0) \) will equal 0, but individual predictions do not.

Predictions of \( \eta_t(1) \), denoted by \( \hat{\eta}_t(1) \), suffer from a lack of information. Since location \( z=1 \) is new, it is natural to assume that predictions of \( \eta_t(1) \) are formed on the basis of the correlation with \( \eta_t(0) \). 5/
Moreover, greater uncertainty implies that \( \text{Var} \left[ \eta_t(1) \mid \hat{\eta}_t(1) \right] > \text{Var} \left[ \eta_t(0) \mid \hat{\eta}_t(0) \right] \).

As an illustration, let \( \eta_t(0) \) and \( \eta_t(1) \) be jointly normally distributed, with mean 0, variance \( \sigma^2_z \) (\( z=0,1 \)) and correlation coefficient \( \rho_{01} \). The conditional mean of \( \eta_t(1) \) equals

\[
E[\eta_t(1) \mid \eta_t(0)] = \frac{\rho_{01} \sigma_1}{\sigma_0} \eta_t(0)
\]

and so the prediction of \( \eta_t(1) \) conditional on the prediction of \( \eta_t(0) \) is

\[
\hat{\eta}_t(1) = \frac{\rho_{01} \sigma_1}{\sigma_0} \hat{\eta}_t(0)
\]

5/ In the case of return migration, the individual has a past history of \( \eta_t(1) \) with \( t<0 \). Such information would aid in forming predictions \( \hat{\eta}_t(1) \) for \( t>1 \). Of course when past information about \( \eta_t(1) \) is older, one would rely more on the correlation with \( \eta_t(0) \) to form new predictions.
2.2 The impact of the person-specific component on migration behavior

The correlation between $\eta_t(0)$ and $\eta_t(1)$ turns out to be crucially important for migration behavior, as we shall now see. A change in $\hat{\eta}_t(0)$ induces a change in $\hat{\eta}_t(1)$, which together affect the utility gain from migration by an amount of:

$$\frac{\partial \hat{\eta}_t^*}{\partial \eta(0)} = \frac{\partial\nu_0(w(1), x(1))}{\partial \eta(1)} \cdot \frac{\hat{\eta}_t(1)}{\hat{\eta}(0)} - \frac{\partial\nu_0(w(0), x(0))}{\partial \eta(0)}$$

If $\rho_{01} = 0$, then $\hat{\eta}_t(1)/\hat{\eta}(0) = 0$ and $\partial \hat{\eta}_t^*/\partial \hat{\eta}(0) = -\partial\nu_0/\partial \eta(0) < 0$ since an increase in the local wage is certainly appreciated. If $\rho_{01} < 0$, the first term of (10) becomes negative, too, and migration is doubly unlikely. Clearly, then, an increase in the local $\eta_t(0)$ will lead to migration only if a positive correlation exists. In that case, the last term of (10) refers to the marginal utility of the local wage. The first term equals the marginal utility of the wage abroad multiplied by the amount that that wage rate is expected to rise. If the marginal utility values are equal, a greater than one-to-one increase in the expected value of $\eta_t(1)$ will insure a greater

---

6/ Note that, as before, the subscript t is dropped to indicate the generic path of the variable.

7/ While the implications of such assumption are more straightforward, there is no reason why equality would need to be the case. Wages at $\xi=1$ may be higher to start with so that, ceteris paribus, marginal utility would be lower. Moreover, $X(1)$ is unlikely to equal $X(0)$ and this would further affect the marginal utility of wages. Relaxing the assumptions of equal marginal utility does not change the implications qualitatively.
Thus, in view of the example of a normal distribution for \( \eta_t(0), \eta_t(1) \), migration is more likely when the correlation is more positive and when \( \eta_t(1) \) is more uncertain than \( \eta_t(0) \) (see equation (9)). The latter should not be confused with lack of risk aversion: it merely implies that, with opportunities abroad being more variable, a worker with good local opportunities \( \eta_t(0) > 0 \) is more likely to find even better wages abroad. He therefore migrates and tries his luck, since the expected pay-off is greater for him than for those with poor local opportunities (see also Pessimo, 1987). The model does exhibit risk aversion, as we shall see later.

Earlier studies have found that positive selection may be occurring in the migration decision (e.g., Schultz, 1982, Falaris, 1987). The common feature of such studies is that wages are observed only at the current place of residence. In the notation above, \( W_t(1) \) is observed for migrants and \( W_t(0) \) for stayers. Positive selection of migrants implies that migrants tend to have positive values of \( \eta_t(1) \) and stayers have negative values. Where stayers are examined separately in a study on Peru (Pessimo, 1987), selection was positive for Lima stayers and negative for rural stayers. That is, Lima

---

8/ Note that the condition \( \frac{\hat{\alpha}(1)}{\hat{\alpha}(0)} > 1 \) implies a form of "pull"-migration: the opportunities elsewhere improve more than those locally and therefore draw the better workers away. "Push"-migration is represented by \( 0 < \frac{\hat{\alpha}(1)}{\hat{\alpha}(0)} < 1 \), so workers with the poorest local prospects decide to migrate. If \( \frac{\hat{\alpha}(1)}{\hat{\alpha}(0)} < 0 \), push and pull factors combine to make the poorer workers migrate. This parallels Heckman and Sédlacek (1985, p. 1085).
stayers have comparatively higher \( \eta_t(0) \) than migrants, and rural stayers have lower values.\(^9\)

Positive selection is consistent with the migration model above: a ceteris paribus increase in \( \hat{\eta}_t(1) \) make migration more attractive. It is tempting to draw the implication that therefore the more productive workers are drawn away from the place of origin, but to arrive at such an implication, one must assume positive correlation, since neither \( \eta_t(0) \) for migrants nor its correlation with \( \eta_t(1) \) is measured. Moreover, equation (10) shows that this correlation must be sufficiently positive to yield a sample of migrants with simultaneously high \( \eta_t(1) \) and \( \eta_t(0) \).

The assumption of positive correlation may not seem unreasonable, but one can easily imagine a plausible scenario where correlation would be zero or negative. As an example, Hartog (1981) matched job characteristics to a small sample drawn from the 1970 U.S. Census and found two groups of aptitudes that are uncorrelated or slightly negatively correlated with each other. One group contains cognitive variables such as verbal and numerical ability; the other group consists of manipulative aptitudes such as finger and manual dexterity and motor coordination. Moreover, jobs appear to differ in the quantities employed of the various aptitudes (Fozard and Nutall, 1971). Now if those

---

\(^9\) Pessimo did not find a significant selectivity effect for migrants, however. Falaris (1987) combines the sample of stayers at a certain location and the movers to that location estimate a single wage equation. The selection is therefore the same for both. Such a model does not allow for a difference between \( \eta_t(0) \) of stayers and \( \eta_t(1) \) for immigrants.
jobs are regionally separated (e.g., rural vs. urban), workers will sort themselves occupationally and regionally, and the values of $\eta_t(0)$ and $\eta_t(1)$ will not be correlated. Further evidence that workers sort themselves by cognitive and manipulative aptitudes is found by Willis and Rosen (1979) in a study of educational attainment and subsequent earnings.10/

As a second example, childhood abilities may differ relatively little across the population but after initial choices are made and specialization occurs, abilities may start to differ widely, and then certainly be negatively correlated since one can hardly specialize in more than a few occupations (see Lydall, 1968). Even with an incomplete employment history to calculate an occupational experience measure from, it appears that Ivorian wage employees and non-farm self-employed workers have spent 35 percent of their lives since leaving school in their current occupation and farm workers have been farming for more than 67 percent of their lives (Vijverberg, 1988).

In summary, the correlation between $\eta_t(0)$ and $\eta_t(1)$ is still an open question, which can be answered only by means of panel data showing whether people migrate subsequent to participation in the local labor market. Preferably, one would want to observe also the labor market performance after migration (see also Stark and Bloom, 1985).

10/ Wage equations did show positive selectivity in the educational choice: in addition to the aptitude variables, there are other unobservable characteristics raising the wage as a high school (or college) graduate that predisposes that student to quit schooling (or continue for a college degree). But as in studies on migration, evidence of selectivity does not imply positive correlation between unobservable productivity components of both alternatives: we cannot take positive correlation for granted.
2.3 The impact of the wage norm on migration behavior

As given before in equation (7), the wage rate is composed into three components. The impact of these \( \eta_t(\lambda) \) and \( \epsilon_t(\lambda) \) has been examined. What remains to be discussed is the effect of \( \mu_t(\lambda) \) which is called the wage norm: it is the population-averaged wage for people with the particular set of personal characteristics.

First of all, if a background variable raises a migrant's wages \( \mu_t(1) \) more than local wages \( \mu_t(0) \), migration becomes more attractive. Thus, if more education puts a worker on a higher step of the occupational ladder and if the local ladder is shorter than that in another (perhaps urban) location, migration is likely.\(^{11}\)

Related to this and especially relevant for less developed countries with a strongly regionally centralized labor market of skills, workers with more skills and therefore higher wages may not have many alternative locations to migrate to. Market centralization thus implies a negative relation between \( \mu_t(0) \) and \( I^* \).

Secondly, labor market studies often assume a diminishing marginal utility of income. In our model, if the second order derivative of \( U \) with respect to \( W_t(\lambda) \) is negative, people are risk averse. This implies that an equal increase in the wage norms in both locations, preserving the spread of the distribution of wages, discourages migration. In other words,

\(^{11}\) Note that this is more relevant for workers at the beginning (i.e., not during) of their working lives. Since the empirical analysis focuses on migration subsequent to labor force participation, we will likely find more support for the two causes for negative association than for this positive association.
if $\mu_t(0)$ rises by the same amount as $\mu_t(1)$, migration is less likely.\textsuperscript{12} The intuition is that, with a higher mean value of wages and a declining marginal

\textsuperscript{12} For a proof of the statement, consider a change in the wages at time $t$. Let $g_{\lambda}(W_t(\lambda))$ be the density function of $W_t(\lambda)$ at location $\lambda$, with mean $\mu_t(\lambda)$ and variance $\tau^2_{\lambda}$. Even though there are other terms in the formula for $I^*$, we focus on those pertaining to a single period $t$. Also, suppress for simplicity the argument $X_t(\lambda)$. We can rewrite $I^*$ by using a Taylor expansion of $U(W_t(\lambda))$ around a value $W^*$:

$$I^* = E_0[U(W_t(1))] - E_0[U(W_t(0))]$$

$$= \int \{U(W^*) + U'(W^*) (W_t(1) - W^*) + \frac{1}{2} U''(W^*) [(W_t(1) - W^*)]^2 \} g_1(W_t(1)) dW_t(1)$$

$$- \int \{U(W^*) + U'(W^*) (W_t(0) - W^*) + \frac{1}{2} U''(W^*) [(W_t(0) - W^*)]^2 \} g_0(W_t(0)) dW_t(0)$$

$$= U'(W^*) (\mu_t(1) - \mu_t(0)) + \frac{1}{2} U''(W^*) \left( (\tau_1 - \tau_0) + (\mu_t(1) - W^*)^2 - (\mu_t(0) - W^*)^2 \right)$$

Then differentiating $I^*$ with respect to an equal change in $\mu_t(0)$ and $\mu_t(1)$ yields:

$$\frac{\partial I^*}{\partial \mu} = U''(W^*) (\mu_t(1) - \mu_t(0)) < 0.$$ 

Note that this effect is stronger for people with a greater degree of risk aversion ($U''/U'$), given the value of $U'$. Furthermore, note that $\partial I^*/\partial \tau_1 < 0$: increased uncertainty elsewhere deters migration. However, the increase in $\tau_1$ might be caused by increased variability in $\eta_t(1)$, in which case the expected return to migration $\eta_t(1)$ might rise for workers with a positive $\eta_t(0)$ if the correlation $\rho_{01}$ between and $\eta_t(0)$ and $\eta_t(1)$ is indeed positive (see equations (9) and (10). Such workers are then faced with greater risk and a greater potential pay-off, and the likelihood of migration might change either way. A similar argument can be made for changes to $\tau_0$. 

utility of them, the potential utility payoff of a favorable wage outcome abroad declines. Also, greater uncertainty abroad or greater certainty locally generally lessens the likelihood of migration (see footnote 12).

A third effect of $\mu_t(\xi)$ may be found in the context of family ties and remittances (Stark and Katz, 1985). A migrant may face a difficult initial period upon arrival at the place of destination, and so may need some initial support from the family back home. After being settled, the migrant remits money back to the family as an ex-post insurance fee and for reasons of altruism and future inheritance. A family wanting to optimize the use of family resources would send the member with the highest wage abroad, ceteris paribus, or, since $W_t(1)$ is uncertain, the highest value of $\mu_t(1) + \eta_t(1)$.

In that case, initial support is likely to be lower, and the potential remittance flow is greater. To the extent that $\mu_t(1)$ is correlated with (and is higher than) $\mu_t(0)$, a higher value of $\mu_t(0)$ would raise the chance of the person migrating—but the prediction is feeble. Moreover, note that our model should be expanded to include the behavior of all household members simultaneously to take proper account of these arguments.13/

13/ Another family effect is the possibility of diversification (Stark and Levhari, 1982): the variance of family income is lower if some of the earners migrate, and more so if the correlation between wages locally and abroad is negative. This serves as a caveat on the hypotheses derived in section 2.2.
2.4 Summary

A model integrating labor market performance and migration needs to address the question of how much information an individual has about the value of his time at all alternative locations. Labor market performance is known at the current location at the present time—a fact emphasized in the model by the term $U_0(0)$ in equations (1) and (2)—and so uncertainty about future wage rates at the place of origin should be less than that at a place of destination.

The decomposition of wages into a wage norm (a market-averaged value), a person-specific random value and a mean-zero random variable allows one to draw out the following implications about the influence of current labor market performance on future migration behavior:

(1) A higher wage norm leads to a lower likelihood of migration. This is particularly true in LDC's where labor markets for skilled workers are more centralized. The implication might be compromised by family-related arguments, but the model of this paper focuses on individual behavior and is inadequate for household-level decision making.

(2) A positive deviation from the norm leads to a greater chance of migration only if the person-specific random wage component at the place of destination is sufficiently positively correlated with that at the place of origin. Such correlation is often taken for granted in studies of migrants after migration has taken place but since arguments in favor of zero or negative correlation can be brought to bear, it remains an empirical matter of great significance.
(3) The total wage, as a sum of the norm and the deviation, has an indeterminate impact on migration behavior.

These implications will be subjected to a test in the following sections.
3. **The Data**

The impact of labor market performance on the decision to migrate will be tested with data drawn from the Côte d'Ivoire Living Standard Survey (CILSS), gathered in 1985/86. Some background information is useful to appreciate the definition of who are migrants and what is known about them.

In 1985, the CILSS was administered to 1600 households.\(^1\) They contained in total 13274 members, of whom 7703 are between 12 and 65 years of age.\(^2\) One half of the households were randomly selected to be reinterviewed in 1986. While there are 800 of these so-called panel households, migration status of their members can be ascertained for only 736 households, due to sample attrition of various kinds.\(^3\)

Migrants in this study are those members of the 1985 panel households who moved out of the survey area between the 1985 and 1986 interviews. They represent 75 percent of those who reportedly had moved out of the household

---

\(^1\) Due to extraneous circumstances, data on 12 households were initially incomplete. These households have been dropped from the analysis.

\(^2\) Including "visitors" who stayed with the household for less than three months in the year before the interview, the sample size actually contains 14,398 individuals.

\(^3\) Forty-four of the panel households disappeared because either the dwelling was found empty or destroyed, or the panel household refused to participate in the second year. Another 20 households had moved away completely and new households were found at the dwelling, who could not tell what happened with the original occupants. It is thus plausible that the incidence of migration among these 64 excluded households is higher than among the 736 included households. This might bias the empirical results against finding evidence for our hypotheses.
and 9 percent of all members in the 736 panel households in 1985.\footnote{The 736 panel households had 6190 members in 1985. Of these, 17.2 percent were not present in 1986. Some migrated (51.6 percent), others moved but stayed within the survey area (17.2 percent), a few died (5.3 percent), and the rest vanished for unspecified or unknown reasons (17.2 percent).}

This paper examines the effect of labor market performance on the incidence of migration. Since it is difficult to get accurate measures of productive performance in agriculture, this study focuses on wage workers and the non-farm self-employed. For simplicity of terminology, these two groups make up the "labor force."

There are 3562 persons between 12 and 65 years of age, of whom 730 are classified as labor force participants (43 percent in wage jobs, 57 percent self-employed). After omitting observations with missing information, we are left with 547 workers, of whom 40 migrated between 1985 and 1986. While the small proportion of migrants may work against finding strong statistical evidence, the fact that we analyze labor market performance so shortly before migration takes place may work in our favor: the most recent information likely carries more weight in the worker's prediction of his future.

Table 1 reports variable definitions and descriptive statistics. Labor market performance consists of two aspects: the norm which is interpreted as a predicted value determined by regression analysis, and a deviation from the norm, which is the regression residual. For wage earners, the wage norm WAGE-P is derived from a log-wage regression parallel to Van der Gaag and Vijverberg (1989), applied to all who held a wage job at any point
during 1985. Regression estimates are reported in Table A.1 of Appendix A. Since the implications of the model refer to differences in the absolute wage (see section 2.3), WAGE-P is calculated as the antilog of the predicted log-wage.\(^{18/}\) WAGE-R is the standardized residual of the log-wage regression.\(^{19/}\) Standardization was done to facilitate comparison of its effect with that of the residual of self-employed workers.

Labor market performance in family enterprises is derived from measured enterprise profits. Regression estimates, parallel to Vijverberg (1988) and reported in Table B.1 of Appendix B, yield a norm for (sector-specific) enterprise profits and a residual. Dividing the norm by total family hours of work in the enterprise gives us the market-averaged productivity of labor in self-employment (HRPROF-P), which is assigned to every (usually, one) family worker in the enterprise. The residual is standardized (HRPROF-R) and also assigned to every family worker.

Since the sample is self-selected, i.e., consist of members of panel households who choose to hold a wage job or be self-employed in a non-farm activity, one may want to estimate the migration equation conditional on being in the sample. Probit estimates of such an activity choice model are reported

\(^{18/}\) More precisely, WAGE-P = \(\exp(\text{predicted log-wage} + \text{estimated variance of the residual}/2)\).

\(^{19/}\) An alternative residual measure would be WAGE - (WAGE-P). While this is formally more in line with the theoretical model, there is a long literature preferring the log-wage equation for its better fit. In the model estimated below, the absolute residual yields parameter estimates with the same sign but t-statistics between 1 and 1.5: it may be expected that the estimates are sensitive to a few large residuals belonging to workers with high wages.
in Table C.1 of Appendix C, accompanied by some further explanation of the employed variables. Since the migration equation is estimated by probit which is based on the normal distribution, the common correction factor $\Lambda$ is entered, calculated as the ratio of density $\phi$ and the probability of being in the sample $1-\Phi$ with its argument estimated with the activity choice choice.

Table 1: Variable Definitions and Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Migrants (N=40)</th>
<th>Stayers (N=507)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC</td>
<td>Years of schooling</td>
<td>3.58 (4.12)</td>
<td>3.80 (4.83)</td>
</tr>
<tr>
<td>AGE</td>
<td>Age in Years</td>
<td>32.78 (12.15)</td>
<td>35.91 (11.56)</td>
</tr>
<tr>
<td>FEMALE</td>
<td>Index: 1 = female</td>
<td>.45 (.50)</td>
<td>.46 (.50)</td>
</tr>
<tr>
<td>HEAD</td>
<td>Index: 1 = household head</td>
<td>.38 (.49)</td>
<td>.45 (.50)</td>
</tr>
<tr>
<td>HHSIZE</td>
<td>Household size</td>
<td>10.53 (8.36)</td>
<td>9.66 (5.90)</td>
</tr>
<tr>
<td>WAGE</td>
<td>Hourly wage(^a)</td>
<td>2.28 (5.10)</td>
<td>3.06 (6.91)</td>
</tr>
<tr>
<td>WAGE-P</td>
<td>Predicted wage(^a)</td>
<td>1.74 (3.93)</td>
<td>3.74 (8.12)</td>
</tr>
<tr>
<td>WAGE-R</td>
<td>Residual of log-wage equation(^b)</td>
<td>.13 (.60)</td>
<td>-.03 (.48)</td>
</tr>
<tr>
<td>HRPROF</td>
<td>Profits of enterprise per hour of family labor(^a)</td>
<td>1.63 (2.33)</td>
<td>.35 (19.46)</td>
</tr>
<tr>
<td>HRPROF-P</td>
<td>Predicted hourly profit(^a)</td>
<td>.20 (2.69)</td>
<td>3.81 (24.32)</td>
</tr>
<tr>
<td>HRPROF-R</td>
<td>Residual of profit equation(^b)</td>
<td>.28 (1.10)</td>
<td>-.01 (.73)</td>
</tr>
<tr>
<td>$\Lambda$</td>
<td>Correction factor $\phi/(1-\Phi)$</td>
<td>1.12 (.47)</td>
<td>1.01 (.49)</td>
</tr>
</tbody>
</table>

\(^a\) In CFA 100's. Wage variables equal zero if individual worked only in non-farm self-employment. Profit variables equal zero if individuals only held wage jobs.

\(^b\) Standardized in the original sample to mean 0 and variance 1.
The parameter estimates of the migration equation will now therefore indicate the impact of the variable on the migration behavior of a person randomly chosen from the population at large, rather than from the population of workers. This is all the more interesting since one cannot even estimate a deviation from the norm (e.g., WAGE-R) for those engaged in farm or household production and thus a similar migration equation cannot be estimated with a sample drawn from the total population.

A comparison between migrants and stayers indicate that migrants earn (statistically significantly) lower predicted wages or profits but have positive deviations from the sending area's wage norm. They also come from larger households. The small differences in age, education, gender and headship are statistically insignificant. These patterns in fact foreshadow the probit estimates to which we now turn.

---

20/ The coefficient of LAMBDA measures the correlation between the random disturbances in the migration and activity choice equations. The robustness of its estimate depends on the degree to which LAMBDA is identified. Appendix C discusses the identification issue in more detail.

21/ Wage and profit equations with a sample correction for labor market participation allow one to identify the wage offer made to a randomly drawn person, based on his observable characteristics. Unobservable characteristics cause a variation of actual wage offers extended to individuals. Some accept and others reject that individual offer. The wage norm is therefore best defined as the average accepted wage: it is what the market pays on average to its workers, which, with positive selectivity, is above the average wage offer. Non-workers then receive and reject average individualized wage offers below the average wage offer, but while one can calculate the average difference with the norm, the specification of the migration equation calls for a variable WAGE-R for each sample observation. This is unobservable. Furthermore, note that the equations in Appendices A and B are estimated without a correction factor LAMBDA, and the estimate labor market performance conditional on participating in the labor force. As just argued, this reflects the right concept of the wage norm.
4. **ESTIMATES OF THE DETERMINANTS OF MIGRATION**

Table 2 reports the probit estimates of the effect of determinants on migration. The first column employs a standard migration equation. Educational attainment measures opportunities elsewhere, which in Côte d'Ivoire might be few outside a small number of urban centers. Consequently, its effect may not be positive as is found often in other studies. Age has the familiar negative impact. Females and household heads might have a different migration

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimates (t-statistics)(^{b)})</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>Intercept</td>
<td>-1.203 (2.76)</td>
</tr>
<tr>
<td>EDUC</td>
<td>-0.012 (0.57)</td>
</tr>
<tr>
<td>AGE</td>
<td>-0.012 (1.32)</td>
</tr>
<tr>
<td>FEMALE</td>
<td>-0.122 (0.57)</td>
</tr>
<tr>
<td>HEAD</td>
<td>0.008 (0.03)</td>
</tr>
<tr>
<td>HHSIZE</td>
<td>0.010 (0.76)</td>
</tr>
<tr>
<td>WAGE</td>
<td></td>
</tr>
<tr>
<td>WAGE-P</td>
<td></td>
</tr>
<tr>
<td>WAGE-R</td>
<td></td>
</tr>
<tr>
<td>HRPROF</td>
<td></td>
</tr>
<tr>
<td>HRPROF-P</td>
<td></td>
</tr>
<tr>
<td>HRPROF-R</td>
<td></td>
</tr>
<tr>
<td>LAMBDA</td>
<td>0.134 (0.19)</td>
</tr>
</tbody>
</table>

- Log-like. -140.75 -142.06 -130.10 -128.05

\(^{a)}\) The value of the log-likelihood function with all slopes equal to 0 is -143.12.

\(^{b)}\) The t-statistics are not corrected for the inclusion of the predicted correction factor LAMBDA.
aptitude, but no effect is found. The positive effect of household size corresponds with the hypothesis of Stark and Katz (1985) about family effects on migration. The correction factor LAMBDA is insignificant in this and all other probit estimates. The correlation coefficient, here estimated at .134, between random factors in activity choices and migration behavior is generally so small that correcting the standard errors of the estimates for the use of the prediction of LAMBDA will never change the reported uncorrected t-statistics appreciably. Thus, no correction is calculated.

Columns (2) and (3) enter the gross labor market performance measures (WAGE and HRPROF) and their components, respectively. The results are exactly as predicted by the theory of section 2. A higher level of the norm reduces migration. Furthermore, a larger positive deviation from the norm makes subsequent migration more likely, which points to a strong positive correlation between the person-specific components in the wages at the origin and destination locations—something often conjectured but never empirically demonstrated. The combination of the norm and the deviation makes the gross effect ambiguous, witnessed by the insignificant coefficients in column 2.

In column (4), controlling variables used in column (1) are combined with the labor market performance measures. Not surprisingly, since column

\begin{footnotesize}
\begin{enumerate}
\item The sample size is too small to test for differences between males and females, or heads and others, in the remaining slope coefficients.
\item Note that the deviation components are standardized, and that WAGE-R derives from the log-wage regression. Thus, the gross effect is not a sum of the effects of the two components.
\end{enumerate}
\end{footnotesize}
(3) produces a better explanation of migration behavior than column (1) in view of the likelihood values, the results found above hold up well.

Another feature of the results is that a decrease in the wage norm raises migration less than a decrease in hourly profits (see columns 3 and 4). This makes intuitive sense, since the self-employed have more freedom in their decision-making and less job security than wage employees. On the other hand, the wage residual has a stronger effect on migration than the profit residual. This points to a stronger correlation between $\eta_t(0)$ and $\eta_t(1)$ for wage workers. Quite likely, self-employed workers are more dependent on the unknown local infrastructure at the place of destination, whereas wage workers focus on alternative jobs at established enterprises at the place of destination. Thus, the self-employed may face more uncertainty.

Several checks were made to examine the robustness of the estimates. First of all, regional dummy variables (residence in Abidjan or in other urban areas) were insignificant when entered. Their effect may well already be captured by educational attainment.

Second, the CILSS data allow an alternative measure of enterprise performance in the form of self-reported earnings from self-employment (rather than derived profits as used here). In previous research, the earnings measure was judged to be less reliable than the profit variable (Vijverberg, 1988), and while, consistent with the earlier finding, it showed less explanatory power in explaining the phenomenon of migration, the direction was the same and generally still significant.

Third, the sample used above classified those who moved within the survey area as nonmigrants. However, some of these reportedly moved for
reason of work of self or family. For the purpose of this study one might consider such people to be migrants as well. Under such more liberal interpretation of the migration concept, the number of migrants rises from 40 to 53. The effect of the labor force performance variables is jointly statistically significant at the 1 percent level, shows the same signs as found in Table 2, and is somewhat weaker in size. The latter is expected on basis of the theoretical model, since the degree of uncertainty is less for such short-distance moves.

Fourth, the parameter estimates were interpreted in light of a single-person migration model. The determinants of family migration are more complex (e.g., Mincer, 1978; Stark and Katz, 1985), and if migrants move for family reasons, we may misinterpret the estimates. In our sample, the 40 migrants come from 36 separate households, of which 7 migrate entirely (and produce 9 migrants for our sample). These households consists of 3, 3, 4, 6, 6, 9 and 20 members. In 16 other households, the sample migrant is accompanied by one or more persons.24/ One might argue that since the sample contains wage and non-farm self-employed workers only, and is therefore made up of mostly the main earners,25/ the family likely follows the individual, rather than the other way around. But family migration exists, and the caveat is clearly appropriate.

24/ One case shows 15 people moving out of a household of initially 22 members.

25/ In an extended family, the head may not be the main earner (anymore). Indeed, this appears to be the case here (see Table 1).
The empirical analysis does not control for preferences for amenities or access to public programs that might affect the decision to migrate. This may bias the estimates (Schultz, 1988). For example, migrating households may have stronger preferences for school quality, for which they can afford to pay only if their incomes are higher. This suggests an upward bias on the estimated effect of all productivity measures, which apparently does not dominate in view of the results reported in Table 2.

As a final note, the empirical results may be viewed as a purely econometric test of whether labor market performance is exogenous to the migration decision (Smith and Blundell, 1986): the statistical significance of WAGE-R and HRPROF-R rejects exogeneity.26/ The human capital model of migration explicitly demonstrates the reason for simultaneity.

---

26/ To follow Smith and Blundell (1986) strictly, one should enter WAGE and WAGE-R, rather than WAGE-P and WAGE-R, and similarly for self-employment profits. The present positive estimate of the effect of WAGE-R is biased downward, since the impact of WAGE-P (which equals the parameter of WAGE) is negative.
5. IMPLICATIONS FOR NONPARTICIPANTS

The migration equation was estimated with a selectivity correction term that accounts for the fact that the sample consists of labor force participants only, i.e., wage employees and non-farm self-employed workers. The estimated behavioral pattern should therefore be valid for farm workers and non-workers as well. Such is even more plausible if basic characteristics are similar between participants and nonparticipants. Table 3 describes the CILSS panel members between 12 and 65 years of age by migration and participation status. Part A compares adult-equivalent household consumption expenditures: except in the rural areas, migrants come from households with a lower level of welfare, irrespective of participation status. Part B lists reasons of migration: school is more important for nonparticipants who seek education not available in their region. Rural residents cite non-economic reasons more often, corresponding to the equality of expenditures found in part A of the table. Part C shows migrant destinations: there is a marked urban-bound tendency for both groups.

Altogether, nonparticipants are very similar to participants, and drawing broader implications from the migration equation estimates appears justified.

27/ For more information on this variable, see Glewwe (1987). Note that because of the small numbers of migrants, the difference between migrants and nonmigrants is significant only for participants in Abidjan and nonparticipants in other urban areas.
Table 3: Characteristics of CILSS Panel Members, Aged 12 to 65, by Participation and Migration Status

<table>
<thead>
<tr>
<th></th>
<th>Participants</th>
<th></th>
<th></th>
<th></th>
<th>Nonparticipants</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abidjan</td>
<td>Other Urban</td>
<td>Rural</td>
<td>Abidjan</td>
<td>Other Urban</td>
<td>Rural</td>
<td>Abidjan</td>
<td>Other Urban</td>
</tr>
<tr>
<td>A. Per Capita Consumption Expenditures (1000 CFA)(^a)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Migrants</td>
<td>687</td>
<td>359</td>
<td>262</td>
<td>514</td>
<td>314</td>
<td>215</td>
<td>(781)</td>
<td>(249)</td>
</tr>
<tr>
<td></td>
<td>(722)</td>
<td>(350)</td>
<td>(200)</td>
<td>(633)</td>
<td>(302)</td>
<td>(179)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonmigrants</td>
<td>702</td>
<td>416</td>
<td>257</td>
<td>633</td>
<td>395</td>
<td>212</td>
<td>(722)</td>
<td>(350)</td>
</tr>
<tr>
<td></td>
<td>(722)</td>
<td>(350)</td>
<td>(200)</td>
<td>(633)</td>
<td>(302)</td>
<td>(179)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Reason for Migration Among Migrants (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work (Self/Family)</td>
<td>28.6</td>
<td>41.2</td>
<td>26.7</td>
<td>50.0</td>
<td>40.2</td>
<td>30.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marriage</td>
<td>14.3</td>
<td>8.8</td>
<td>20.0</td>
<td>11.5</td>
<td>6.5</td>
<td>28.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School</td>
<td>0.0</td>
<td>5.9</td>
<td>0.0</td>
<td>11.5</td>
<td>26.2</td>
<td>13.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other/Unknown</td>
<td>57.2</td>
<td>44.1</td>
<td>53.3</td>
<td>26.9</td>
<td>27.1</td>
<td>28.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Destination of Migrants (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>42.9</td>
<td>50.0</td>
<td>53.3</td>
<td>34.6</td>
<td>54.2</td>
<td>52.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Town</td>
<td>0.0</td>
<td>26.5</td>
<td>13.3</td>
<td>26.9</td>
<td>28.0</td>
<td>11.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large Village</td>
<td>0.0</td>
<td>14.7</td>
<td>6.7</td>
<td>7.7</td>
<td>9.4</td>
<td>17.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Village</td>
<td>14.2</td>
<td>2.9</td>
<td>20.0</td>
<td>7.7</td>
<td>6.5</td>
<td>5.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camp</td>
<td>0.0</td>
<td>2.9</td>
<td>0.0</td>
<td>7.7</td>
<td>.9</td>
<td>11.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other/Unknown</td>
<td>42.9</td>
<td>2.9</td>
<td>6.7</td>
<td>15.4</td>
<td>.9</td>
<td>1.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Observations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Migrants</td>
<td>7</td>
<td>34</td>
<td>15</td>
<td>26</td>
<td>107</td>
<td>145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonmigrants</td>
<td>246</td>
<td>221</td>
<td>205</td>
<td>389</td>
<td>440</td>
<td>1720</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) Annual, modified by equivalency scale (Glewwe, 1987).
6. DISCUSSION

Migration is an inherent characteristic of an economy with growth and a changing structure (Thomas, 1954; Kuznets, 1966). Migration may itself have an impact on the rate of speed of economic growth, because migrants are a select group of workers (Kuznets and Thomas, 1957; Kuznets, 1964; Berg, 1965). In fact, Hance (1970) summarizes a long literature on migrants as follows:

"...there can be little doubt that migration does have the effect of draining away from the rural areas, either temporarily or permanently, some of the strongest, most able, most energetic young men and ...there is a tendency for those with a better education to leave their indigenous communities or to eschew assignment in government, education and other services in rural areas." (p. 196),

and Kuznets and Thomas (1957) state:

"...there are marked differentials by sex, age, race, family status, education, health, and many other social and demographic characteristics, and migrants... are probably preselected, also, for their capacity to detach themselves from their traditional surroundings. For these reasons, [migrants] may be among the most productive from the standpoint of economic growth." (p. 3)

This study too, focuses on the productive characteristics of migrants. The comparison is now not with the average person in the population, but, inspired by a human capital model of migration, we seek to compare migrants with a reference group (based on education, experience and other demographic traits). Under the assumption that wages and profits from self-employment measure productivity, we find that, in Côte d'Ivoire, migrants are more productive than non-migrants in their reference group--thus sharpening Hance's generalized statement on the characteristics of migrants.

The human capital model of migration shows that more productive workers will migrate only if there exists a strong positive correlation
between the person-specific productivity component at the origin and
destination. In that case, a more productive (relative to the reference group
at the sending area) person expects a higher-than-average rate of productivity
(i.e., wage or profit) at the destination. Given the pattern of migration in
Côte d'Ivoire, this implies that Ivorian rural areas are losing their more
productive workers and, unless Ivorian workers have consistently false
expectations, urban areas gain.\(^{28}\) We may speculate also, that, since
migration has long-lasting demographic consequences (Kuznets and Thomas, 1957;
Pryor, 1979), the regional sorting of workers through migration is a further
contributing factor to any observed rural-urban wage gap.

The evidence of positive selectivity of migrants at the place of
origin implies a positive correlation between person-specific productivity at
origin and destination places but does not measure it directly. The strongest
evidence derives from direct estimation, and that is feasible only if the
interviewer tracks down a migrant after he has left the survey area. Tracking
him down is obviously costly. Moreover, it is well-known that migrants need
time to adjust in their new environment and that only after a few years they
exceed the performance of their new local workers. Thus, data of multiple
annual observations are needed to clinch the argument that migrants are indeed
more productive workers than nonmigrants.

\(^{28}\) This follows from the human capital model when we interpret the
destination's wage equation to hold for all workers (current and
immigrating) at the destination. Indeed, that is how a competitive labor
market with perfect information would absorb immigrants. Alternatively,
the model's destination wage equation could describe a separate wage
structure for migrants, which might be valid if the labor market is
imperfect. In that case, the model yields no comparison between migrants
and destination residents but still implies that migrants are more
productive than stayers in the sending as well as the receiving area.
Thus, urban areas still gain relative to a random relocation process of
workers.
### APPENDIX A

Table A.1: Estimates of the Wage Equation

Dependent Variable: log of hourly wage rate

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (St.dev)</th>
<th>Parameter (t-stat)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-</td>
<td>3.005 (13.65)</td>
</tr>
<tr>
<td>Nationality: 1 = Non-Ivorian</td>
<td>.16 (.37)</td>
<td>-0.033 (-0.37)</td>
</tr>
<tr>
<td>Sex: 1 = Female</td>
<td>.21 (.41)</td>
<td>-0.056 (-0.71)</td>
</tr>
<tr>
<td>Years of elementary school</td>
<td>4.21 (2.67)</td>
<td>.104 (2.33)</td>
</tr>
<tr>
<td>Years of junior high school</td>
<td>1.76 (1.85)</td>
<td>.102 (2.42)</td>
</tr>
<tr>
<td>Years of senior high school</td>
<td>.56 (1.12)</td>
<td>-0.010 (-0.11)</td>
</tr>
<tr>
<td>Years of university training</td>
<td>.38 (1.34)</td>
<td>.223 (6.64)</td>
</tr>
<tr>
<td>Years of technical training</td>
<td>.99 (1.57)</td>
<td>.085 (3.20)</td>
</tr>
<tr>
<td>Years of apprenticeship</td>
<td>.74 (1.79)</td>
<td>.006 (.29)</td>
</tr>
<tr>
<td>Years of occup. specific exper.</td>
<td>8.88 (8.18)</td>
<td>.106 (6.05)</td>
</tr>
<tr>
<td>Years Squared</td>
<td>145.65 (236.40)</td>
<td>-0.217(^a) (-3.70)</td>
</tr>
<tr>
<td>Years of general experience</td>
<td>11.50 (9.45)</td>
<td>.075 (4.23)</td>
</tr>
<tr>
<td>Years Squared</td>
<td>221.45 (374.96)</td>
<td>-0.078(^b) (-2.16)</td>
</tr>
<tr>
<td>Years of Schooling(^*)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of occup-spec. exper.</td>
<td>56.49 (69.49)</td>
<td>.024(^a) (.10)</td>
</tr>
<tr>
<td>Years Squared</td>
<td>836.30 (1628.37)</td>
<td>.024(^b) (.28)</td>
</tr>
<tr>
<td>Years of general exp.</td>
<td>47.08 (51.94)</td>
<td>-0.486(^a) (-2.13)</td>
</tr>
<tr>
<td>Years Squared</td>
<td>532.02 (946.07)</td>
<td>.003(^b) (.03)</td>
</tr>
<tr>
<td>Residence: 1 = Abidjan</td>
<td>.51 (.50)</td>
<td>.160 (1.66)</td>
</tr>
<tr>
<td>Residence: 1 = Other Urban</td>
<td>.33 (.47)</td>
<td>.114 (1.13)</td>
</tr>
<tr>
<td>Ability in Reading, Writing, Arith.</td>
<td>2.24 (1.26)</td>
<td>.159 (2.57)</td>
</tr>
<tr>
<td>Diploma: 1 = elem. school diploma</td>
<td>.62 (.49)</td>
<td>.402 (2.73)</td>
</tr>
<tr>
<td>Diploma: 1 = junior high diploma</td>
<td>.32 (.47)</td>
<td>.608 (4.13)</td>
</tr>
<tr>
<td>Diploma: 1 = dip. beyond jun. high</td>
<td>.15 (.36)</td>
<td>.642 (2.50)</td>
</tr>
<tr>
<td>Diploma: 1 = technical diploma</td>
<td>.30 (.46)</td>
<td>.011 (.11)</td>
</tr>
</tbody>
</table>

\(^a\) Estimate * 100

\(^b\) Estimate * 1000

\(R^2\) = .659
### Table B.1: Estimates of Family Enterprise Profit Functions
**Dependent Variable: monthly profit**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (Std.dev)</th>
<th>Parameter Estimates (t-stat)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing, N = 79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-</td>
<td>16,960 (9.90)</td>
</tr>
<tr>
<td>Monthly hours of family labor</td>
<td>195.16 (85.67)</td>
<td>0.019 (0.48)</td>
</tr>
<tr>
<td>Value of capital stock&lt;sup&gt;a&lt;/sup&gt;</td>
<td>92.75 (106.67)</td>
<td>0.137 (3.80)</td>
</tr>
<tr>
<td>Number of other unpaid workers</td>
<td>0.73 (1.32)</td>
<td>4.491 (1.52)</td>
</tr>
<tr>
<td>Residence: 1 = Abidjan</td>
<td>0.24 (0.37)</td>
<td>26.349 (2.35)</td>
</tr>
<tr>
<td>Residence: 1 = Other Urban</td>
<td>0.39 (0.42)</td>
<td>0.625 (0.07)</td>
</tr>
<tr>
<td>1 = Enterprise operating from fixed location</td>
<td>0.83 (0.32)</td>
<td>-22.428 (-2.31)</td>
</tr>
<tr>
<td>Sex: 1 = Female&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.17 (0.32)</td>
<td>-2.970 (-0.27)</td>
</tr>
<tr>
<td>Nationality: 1 = Non-Ivorian&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.35 (0.41)</td>
<td>13.243 (1.59)</td>
</tr>
<tr>
<td>Ability in Reading, Writing, Arith&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.13 (1.16)</td>
<td>4.353 (1.28)</td>
</tr>
<tr>
<td>Years of occup, specific experience&lt;sup&gt;b&lt;/sup&gt;</td>
<td>14.72 (11.55)</td>
<td>0.102 (0.29)</td>
</tr>
<tr>
<td>Years of general experience&lt;sup&gt;b&lt;/sup&gt;</td>
<td>14.60 (9.56)</td>
<td>0.180 (0.43)</td>
</tr>
<tr>
<td>Years of apprenticeship&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.35 (2.86)</td>
<td>-1.937 (-1.60)</td>
</tr>
<tr>
<td>R&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td>.555</td>
</tr>
<tr>
<td>Services, N = 43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-</td>
<td>-31.167 (-6.63)</td>
</tr>
<tr>
<td>Monthly hours of family labor</td>
<td>184.66 (86.29)</td>
<td>0.096 (1.25)</td>
</tr>
<tr>
<td>Value of capital stock&lt;sup&gt;a&lt;/sup&gt;</td>
<td>172.97 (381.36)</td>
<td>-0.045 (-2.71)</td>
</tr>
<tr>
<td>Number of other unpaid workers</td>
<td>0.64 (1.13)</td>
<td>6.538 (1.21)</td>
</tr>
<tr>
<td>Residence: 1 = Abidjan</td>
<td>0.39 (0.39)</td>
<td>29.173 (1.17)</td>
</tr>
<tr>
<td>Residence: 1 = Other Urban</td>
<td>0.47 (0.40)</td>
<td>-3.901 (-1.7)</td>
</tr>
<tr>
<td>1 = Enterprise operating from fixed location</td>
<td>0.85 (0.28)</td>
<td>7.626 (3.4)</td>
</tr>
<tr>
<td>Sex: 1 = Female&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.53 (0.40)</td>
<td>6.297 (2.29)</td>
</tr>
<tr>
<td>Nationality: 1 = Non-Ivorian&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.39 (0.39)</td>
<td>-39.285 (-2.56)</td>
</tr>
<tr>
<td>1 = Has 5 or more years schooling&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.21 (0.33)</td>
<td>47.781 (2.11)</td>
</tr>
<tr>
<td>Years of occup, specific experience&lt;sup&gt;b&lt;/sup&gt;</td>
<td>10.83 (11.47)</td>
<td>0.341 (0.45)</td>
</tr>
<tr>
<td>Years of general experience&lt;sup&gt;b&lt;/sup&gt;</td>
<td>18.44 (7.33)</td>
<td>1.412 (1.53)</td>
</tr>
<tr>
<td>Years of apprenticeship&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.50 (1.93)</td>
<td>5.938 (1.64)</td>
</tr>
<tr>
<td>R&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td>.451</td>
</tr>
</tbody>
</table>

<sup>a</sup> Measured in CFA 1000's.  
<sup>b</sup> Variable refers to person designated as the family member best informed about the enterprise.

---

**Notes:**
- Table B.1: Continued
### Table B.1 continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (St.dev)</th>
<th>Parameter Estimates (t-stat)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Commerce, N = 250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-</td>
<td>24,462 (2,00)</td>
</tr>
<tr>
<td>Monthly hours of family labor</td>
<td>165.85 (95.79)</td>
<td>.066 (2.28)</td>
</tr>
<tr>
<td>Value of capital stock(^a)</td>
<td>4.58 (4.42)</td>
<td>1.643 (2.70)</td>
</tr>
<tr>
<td>Number of other unpaid workers</td>
<td>.33 (.70)</td>
<td>.693 (.18)</td>
</tr>
<tr>
<td>Residence: 1 = Abidjan</td>
<td>.26 (.38)</td>
<td>21.136 (2.54)</td>
</tr>
<tr>
<td>Residence: 1 = Other urban</td>
<td>.29 (.39)</td>
<td>12,251 (1.58)</td>
</tr>
<tr>
<td>1 = Enterprise operating from fixed location</td>
<td>.84 (.31)</td>
<td>-8,543 (-.94)</td>
</tr>
<tr>
<td>Proportion of total revenue home consumed</td>
<td>.10 (.13)</td>
<td>-29,880 (-1.48)</td>
</tr>
<tr>
<td>Nationality: 1 = Non-Ivorian(^b)</td>
<td>.26 (.37)</td>
<td>-2,159 (-.31)</td>
</tr>
<tr>
<td>1 = Has 5 or more years schooling(^b)</td>
<td>.14 (.30)</td>
<td>3,904 (.39)</td>
</tr>
<tr>
<td>Years of occup. specific experience(^b)</td>
<td>6.45 (6.68)</td>
<td>-8.0 (-1.85)</td>
</tr>
<tr>
<td>Years of general experience(^b)</td>
<td>22.48 (9.55)</td>
<td>-1.28 (1.28)</td>
</tr>
<tr>
<td>(R^2)</td>
<td>.108</td>
<td></td>
</tr>
</tbody>
</table>

| Non-Food Commerce, N = 121 | | |
| Intercept | - | 21,178 (.48) |
| Monthly hours of family labor | 210.33 (105.60) | .098 (1.21) |
| Value of capital stock\(^a\) | 5.37 (8.52) | .556 (.52) |
| Number of other unpaid workers | .37 (.65) | 16,920 (1.21) |
| Residence: 1 = Abidjan | .35 (.40) | -7,597 (-.27) |
| Residence: 1 = Other Urban | .25 (.36) | 5,653 (.02) |
| 1 = Enterprise operating from fixed location | .78 (.34) | -40,182 (-1.39) |
| Proportion of total revenue home consumed | .09 (.15) | -22,747 (-.36) |
| Sex: 1 = Female\(^b\) | .51 (.41) | -39,345 (-1.64) |
| Nationality: 1 = Non-Ivorian\(^b\) | .33 (.39) | 21,587 (.87) |
| 1 = Has 5 or more years schooling\(^b\) | .17 (.31) | 34,960 (1.01) |
| Years of occup. specific experience\(^b\) | 7.61 (6.73) | 1,302 (.94) |
| Years of general experience\(^b\) | 24.05 (10.86) | 1,219 (1.30) |
| \(R^2\) | .103 | |

\(^a\) Measured in CFA 1000's.

\(^b\) Variable refers to person designated as the family member best informed about the enterprise.
Estimating the Activity Choice Equation

The explanation variables in the probit analysis on activity choice refer to the attractiveness of the various time allocation alternatives. Those who are active as a wage employee or as a self-employed worker in a non-farm family enterprise are called participants. Those who do not and instead spend their time on farming, home production or leisure activities are classified as nonparticipants. Thus, explanatory variables include determinants of wage rates, residential location, and household composition (see Table C.1).

Most variables are self-explanatory. The household technology index is a scale from 0 to 5, measuring the presumed labor intensity of household activities. It is constructed as the sum of five dichotomous variables: (a) \( I_1 = 1 \) if wood is used as fuel for meals (=0 if fuel is charcoal, gas, electricity or other); (b) \( I_2 = 1 \) if drinking water comes from a well, river, lake, spring, or collected rain water (=0 if drinking water comes from a indoor or outdoor faucet, water vendor, water truck or other); \( I_3 = 1 \) if laundry and bath water come from a well, river, lake, spring or collected rain water (=0 if water comes from an indoor or outdoor faucet, water truck or other source); \( I_4 = 1 \) if garbage is dumped, buried or burned (=0 if garbage is collected by a truck); \( I_5 = 1 \) if the toilet is a pit latrine or absent or other (=0 if there is a flush toilet). This index is strongly correlated with regional residence: it equals 0 for 58 percent of residents in Abidjan, it equals 5 for 92 percent of rural residents, and it is uniformly spread for residents of other urban areas.
Indicators of opportunities in non-farm self-employment or farming are omitted since they are only measured in those households that are engaged in these activities. Thus, while it would have been appropriate to include variables measuring the availability of capital for farm and non-farm self-employment, such variables are unobserved for those households not utilizing the available capital.

The estimates of the participation equation are used in the construction of the variable LAMBDA. In this methodology, identification is always an important issue: is LAMBDA based on exogenous variables that differ sufficiently from those in the migration equation to be able to extract a reliable estimate of the correlation coefficient? Identification is based on household composition variables (which in the migration equation are summed as HHSIZE), the residence variables, the household technology index, and the quadratic terms of education and age. This is a stronger basis for identification than often found in empirical two-stage estimation models.

The list of identifying variables was, as a check on robustness, expanded with dummy variables reflecting whether the individual had received any apprenticeship or technical training, and with variables measuring livestock size. These variables may be considered predetermined, as expressions of past occupational choices. Estimates of the migration equation are hardly affected, and the parameter of LAMBDA is closer to 0. As an example, the third column of Table 2 would read \(-1.187 \ (5.70); \ -0.050 \ (2.18); \ 0.320 \ (1.91); \ -0.115 \ (3.22); \ 0.186 \ (1.79)\); and \(-0.046 \ (0.28)\).
Table C.1: Probit Estimates of Activity Choice  
Dependent Variable = 1 if wage employee or non-farm self-employed worker in 1985, = 0 otherwise

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (St.dev)</th>
<th>Parameter Estimate (t-stat)</th>
<th>[Marginal Prob. Impact$^a$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-</td>
<td>-3.673 (-15.43)</td>
<td></td>
</tr>
<tr>
<td>Nationality: 1= Non-Ivorian</td>
<td>.11 (.31)</td>
<td>.399 (5.05)</td>
<td>[13.50]</td>
</tr>
<tr>
<td>Sex: 1 = Female</td>
<td>.54 (.50)</td>
<td>-.240 (-4.25)</td>
<td>[8.26]</td>
</tr>
<tr>
<td>Age in years</td>
<td>30.20 (15.09)</td>
<td>.166 (15.22)</td>
<td>[1.45]</td>
</tr>
<tr>
<td>Age squared</td>
<td>1139.48 (1074.93)</td>
<td>-.020$^b$ (-13.74)</td>
<td></td>
</tr>
<tr>
<td>Years of schooling</td>
<td>2.88 (3.78)</td>
<td>-.015 (-3.4)</td>
<td>[-.03]</td>
</tr>
<tr>
<td>Years of schooling squared</td>
<td>22.59 (40.50)</td>
<td>.011$^b$ (.44)</td>
<td>-</td>
</tr>
<tr>
<td>Ability in Reading, Writing, Arith.</td>
<td>1.21 (1.43)</td>
<td>-.043 (.68)</td>
<td>[1.47]</td>
</tr>
<tr>
<td>Residence: 1 = Abidjan</td>
<td>.19 (.39)</td>
<td>.784 (6.00)</td>
<td>[26.53]</td>
</tr>
<tr>
<td>Residence: 1 = Other urban</td>
<td>.23 (.42)</td>
<td>.892 (10.90)</td>
<td>[30.18]</td>
</tr>
<tr>
<td>Household Technology Index</td>
<td>3.59 (1.88)</td>
<td>-.048 (-1.79)</td>
<td>[-1.62]</td>
</tr>
<tr>
<td>No. children 0-4 years</td>
<td>1.69 (1.63)</td>
<td>.082$^b$ (.42)</td>
<td>[1.28]</td>
</tr>
<tr>
<td>No. children 5-11 years</td>
<td>2.45 (1.93)</td>
<td>.020$^b$ (.12)</td>
<td>[1.07]</td>
</tr>
<tr>
<td>No. other females 12-50 years</td>
<td>2.71 (2.07)</td>
<td>.040$^b$ (.26)</td>
<td>[.14]</td>
</tr>
<tr>
<td>No. other males 12-50 years</td>
<td>2.32 (1.97)</td>
<td>-.066 (-4.33)</td>
<td>[-2.25]</td>
</tr>
<tr>
<td>No. other elderly over 51 years</td>
<td>.96 (1.11)</td>
<td>-.051 (-1.85)</td>
<td>[-1.72]</td>
</tr>
</tbody>
</table>

Log-likelihood value               | -1421.51      |

$^a$) Marginal impact is the percentage change in the probability of being observed as a wage employee or self-employed worker, in response to a unit change in the explanatory variable.

$^b$) Estimate * 10.
REFERENCES


Kuznets, Simon (1966), Modern Economic Growth, Rate, Structure and Spread (New Haven: Yale University Press)


Distributors of World Bank Publications

ARGENTINA
Carlos Hirsch, SRL.
Caterina Guimarães
Fernando Guzmán
511 16, 6th Floor-Off. 415/465
330 Buenos Aires
AUSTRALIA, PAPUA NEW GUINEA, FIJI, SOLOMON ISLANDS, VANUATU, AND WESTERN SAMOA
D.A. Books & Journals
11-13 Station Street
Millburn 3129
Victoria
AUSTRIA
Conrad und Co.
Graben 31
A-1011 Vienna
BAHRAIN
Bahrain Research & Consultancy
Associates Ltd.,
P.O. Box 2138
Manama 317
BELGIUM
Micro Industry Development Assistance Service (MIDAS)
House St. Road 7A
Dhaka 202
Belgium
BIC
Publications des Nations Unies
Av. du Race 202
1006 Brussels
BRAZIL
Publicacao Tecnica Internacional Ltda.
Rua Professor Gomes, 209
01405-030 Sao Paulo, SP
BANGLADESH
Government of Bangladesh
Av. du Ra 202 Kuturr Ptivate Mad Bag 5095 CH 1602 Lauban
Guatemala City
NEW ZEALAND
Liberton Publclations B.V.
P.O. Box 219
7200 BA Lochmor
BANGLADESH
Guatemala City
NEW ZEALAND
InOct-Pubhctiou b.v.
P.O. Box 219
7200 BA Lochmor
BANGLADESH
Guatemala City
NEW ZEALAND
New Market
Auckland
NIGERIA
University Press Limited
Three Cinema Building
Private Mail Bag 5065
Ibadan
NORWAY
Norwegian Information Center
Bertrand Norsvan vol 2
P.O. Box 4322 Birkeland
N-0020 Oslo 6
OMAN
MEMBER Information Services
P.O. Box 184, Seeb Airport
Muscat
PAKISTAN
Ministry of Agriculture
65, Bahria-e-Qaadi-e-Azam
P.O. Box No. 729
Lahore 3
PERU
Editorial Desarrollo SA
Apartado 3070
Lima
PHILIPPINES
National Book Store
731 Ayala Avenue
P.O. Box 1914
Metro Manila
POLAND
OFOR
Paweł Kalinowski J.Nakło
01-003 Warsaw
PORTUGAL
Livraria Portugal
R. 21C Carmen 75-74
1300 Lisbon
SAUDI ARABIA, QATAR
Jain Book Store
P.O. Box 2196
Riyadh 1471
SINGAPORE, TAIWAN, KURMA, BRUNEI
Information Publications
Flora Rd.
Singapore 138-02-01
08-01 Industrial
24 New Industrial Road
Singapore 1953
SOUTH AFRICA
For single titles:
University of the Witwatersrand
P.O. Box 1141
Cape Town 8000
For subscription orders:
International Subscription Services
P.O. Box 4322
1420 Pretoria
1420 Pretoria
SPAIN
Memorial Press Libro, S.A.
Casilla 27
28081 Madrid
SRI LANKA AND THE MALDIVES
Laker House Bookshop
P.O. Box 256
For subscription orders:
Cordovered A. Gardner
Mawatha
Colombo 2
SWITZERLAND
For single titles
Libertine Payot
A. rue Commende
Case postal 381
CH-1211 Geneva 3
For subscription orders:
Libertine Payot
Service des Abonnements
Case postal 381
CH-1211 Geneva 3
TANZANIA
Oxford University Press
P.O. Box 5099
Dar es Salaam
THAILAND
Central Department Store
206 Siam Road
Bangkok
TRINIDAD & TOBAGO, ANGUILLA
Rabrides, A. B. Baldado
DOMINICA, GRENADA, GUYANA,
JAMAICA, MONTSERRAT, ST.
KITTS & NEVIS, ST. LUCIA,
ST. VINCENT & GRENADINES
Systematic Studies Unit
49 West Street
Cape Town
Tunisia
El-Jem
WEST AFRICA
Africa Book Service P.O. Box 41095
Riyadh 1471
AFRICA BOOK SERVICE
P.O. Box 41095
Riyadh 1471
AFRICA BOOK SERVICE
P.O. Box 41095
Riyadh 1471
AFRICA BOOK SERVICE
P.O. Box 41095
Riyadh 1471
AFRICA BOOK SERVICE
P.O. Box 41095
Riyadh 1471
AFRICA BOOK SERVICE
P.O. Box 41095
Riyadh 1471
AFRICA BOOK SERVICE
LSMS Working Papers (continued from the inside front cover)

No. 35  The Demand for Medical Care in Developing Countries: Quantity Rationing in Rural Côte d’Ivoire
No. 36  Labor Market Activity in Côte d’Ivoire and Peru
No. 37  Health Care Financing and the Demand for Medical Care
No. 38  Wage Determinants and School Attainment among Men in Peru
No. 39  The Allocation of Goods within the Household: Adults, Children, and Gender
No. 40  The Effects of Household and Community Characteristics on the Nutrition of Preschool Children: Evidence from Rural Côte d’Ivoire
No. 41  Public-Private Sector Wage Differentials in Peru, 1985–86
No. 42  The Distribution of Welfare in Peru in 1985–86
No. 43  Profits from Self-Employment: A Case Study of Côte d'Ivoire
No. 44  The Living Standards Survey and Price Policy Reform: A Study of Cocoa and Coffee Production in Côte d'Ivoire
No. 45  Measuring the Willingness to Pay for Social Services in Developing Countries
No. 46  Nonagricultural Family Enterprises in Côte d'Ivoire: A Descriptive Analysis
No. 47  The Poor during Adjustment: A Case Study of Côte d'Ivoire
No. 48  Confronting Poverty in Developing Countries: Definitions, Information, and Policies
No. 49  Sample Designs for the Living Standards Surveys in Ghana and Mauritania / Plans de sondage pour les enquêtes sur le niveau de vie au Ghana et en Mauritanie
No. 50  Food Subsidies: A Case Study of Price Reform in Morocco (also in French, 50F)
No. 52  Public-Private Sector Wage Comparisons and Moonlighting in Developing Countries: Evidence from Côte d’Ivoire and Peru
No. 53  Socioeconomic Determinants of Fertility in Côte d’Ivoire
No. 54  The Willingness to Pay for Education in Developing Countries: Evidence from Rural Peru
No. 55  Rigidité de salaire: donnée microéconomique et macroéconomique sur l’ajustement du marché du travail dans le secteur moderne (August 1989; in French only)
No. 56  The Poor in Latin America during Adjustment: A Case Study of Peru
No. 57  The Substitutability of Public and Private Health Care for the Treatment of Children in Pakistan
No. 58  Identifying the Poor: Is “Headship” a Useful Concept?