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Is there a Link between Quality of Employment and Indebtedness? The Case of Urban Low-income Households in Ecuador

By:

Maria Floro and John Messier

Determinants of the physical demand for gold:
Evidence from panel data

<u>Abstract</u>

In recent decades, there has been a marked increase in the informalization of employment in developing countries. The risk and insecurity associated with a growing number of informal sector jobs have important consequences in inducing or maintaining vulnerability. This paper explores the incidence of high indebtedness or financial stress among urban, low-income households in Ecuador and demonstrates its interconnectedness with the quality of employment. The implications are non-trivial in the sense that high debt service burden, as with the lack of credit access, can undermine investment and maintain low productivity and earnings. It can also lead to higher probability of loan default and to increase in interest rates or termination of credit line. There are also longer term welfare consequences in terms of households' ability to cope with future shocks such as illness. The analysis is based on a 2002 sample of men and women in urban, poor households in Ecuador. By means of tobit and regression analyses, the paper demonstrates that labor market informalization has led to higher incidence of indebtedness. Moreover, there are differentiated patterns of debt servicing among women and men in urban, poor households. The results provide a more nuanced yet illuminating picture of the interconnectedness of employment, financial stress and vulnerability. We argue that informalization of employment has consequences in other dimensions of vulnerability of households such as high debt servicing, and therefore requires rethinking of current economic and social policies in order to effectively reduce poverty.

Please address correspondence to:
Prof. Maria Floro,
Dept. of Economics, American University,
4400 Mass. Ave. NW, Washington, DC 20016, USA.
Email: mfloro@american.edu

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1. Introduction

Poor households in developing countries are exposed to multiple types of risks, ranging

from illness, theft, or job loss, to community level or aggregate risks including natural calamities,

epidemics, recessions, etc (Dercon 2004). These risks however, have become broader in scale and

scope for these households and their members as consequences of growing informalization of

employment, weakening of the bargaining power of labor, and the lack or inadequacy of social

protection. As a result, some costs and risks of adjustments associated with market fluctuations

are "shifted onto many of the self-employed and casualized workers as well as those engaged in

household maintenance and reproduction of both the unemployed and peripheral workers."

(Beneria and Floro 2006 p. 9).

This paper is concerned with two distinct but related areas of risks that urban, low income

workers and their households face in the context of growing informalization of employment. One

has to do with the risk associated with household debt and debt servicing that can lead to financial

stress. The other relates to the economic risks that result from the type of job held by the worker.

The analytical framework and empirical analysis presented in this study will explore the

interconnection between the debt servicing among urban, low-income workers and the quality of

their employment. [2] The study uses a 2002 survey data of 379 women and men in low-income

urban households in Ecuador with at least one member engaged in informal work.[3]. We hope that

in exploring the relationship between quality of employment and debt service burden, our study is

able to contribute towards a better understanding of these important dimensions of poverty and

vulnerability.

The paper is organized as follows. Section 2 develops an analytical framework for

examining the relationship between the quality of employment among urban poor workers and

debt servicing. In Section 3 we discuss briefly the main factors that have led to the recent

informal sector growth in Ecuador. Section 4 provides a description of the sample and their

employment characteristics using an indicator of job quality called JQI. It also introduces a debt service ratio measure called DSR using loan, amortization payment and earnings data at both the individual and household levels. In Section 5, we present the empirical specification and a discussion of the results. By means of Tobit and OLS analyses, we demonstrate that the level of debt servicing among workers and their households are inversely related to their quality of employment. The relationship is likely to be more significant when households are single parent-headed and when borrowers are women. Our results also show that a consumption shock in terms of incidence of a child being ill tends to translate into higher debt service ratio, especially among women worker-borrowers.   Section 6 presents concluding remarks and policy implications.

2. ANALYTICAL FRAMEWORK

Until recently, much of the literature on risk faced by the poor has focused on rural areas and typically addressed the impact that production and weather-related risks have on agricultural households. One type of risk that is prevalent among urban poor households has to do with insecure employment and self-employment characterized by high earnings variability. Such job-related risks range anywhere from loss of job (in both formal and informal sectors), theft, decline in terms of trade or prices, police harassment, excessive competition or bankruptcy.[4] Households in urban poor communities are typically more exposed to these risks due to the larger degree of their reliance on the market for income. Few have assets such as land and housing, particularly those in slums or squatter neighborhoods. The vulnerability of these households also has to do with the lack of protection against risk such as lack of access to health services, to pension schemes, precariousness in housing conditions, unsanitary neighborhoods and a polluted environment (Levin 1999).

To some extent, the range of jobs among urban low income workers is influenced by their individual characteristics such as education or skills, access to resources, markets, etc. and by the internal conditions of the informal sector. It is also affected, as Hart (2007), Guha-

Khasnobis et al (2007), Ranis and Stewart 1999 and Gibson and Kelley 1994 point out, by the pattern of formal sector growth and the nature of linkages between the informal sector and the wider economy. The extent to which the formal sector is able to generate stable, regular employment is historically specific and is dependent, among other things, upon the prevailing macroeconomic conditions (Gibson and Kelley 1994, Ranis and Stewart 1999). If the tendency is towards a slow absorption of the urban labor force by the formal sector and a growing flexibilization of labor contracts, then there is likely to be a rapid growth in both the number and types of informal sector activities. The pattern of formal sector employment, i.e. whether workers have regular, stable work contracts or, are absorbed as part-time, contractual or temporary workers, also influences the supply of labor in the informal sector. They are likely to move in and out of the informal sector as they attempt to make ends meet by combining one or two jobs (Hart 1973, Meagher 1995).

In recent decades, increased global competition, firm restructuring, labor market flexibilization and economic reforms have helped bring about the conditions for the expansion of informal activities, casualized labor contracts and insecure working conditions. These, in fact, have extended the links between formal and informal sector activities, thereby making the distinction between the two types become increasingly blurred (Pérez-Sainz, 2000, Beneria and Floro 2006). It is not surprising that different types of employment with varying degrees of informality and quality of employment have proliferated (Chen et al, 2005, Levin 1999, ILO 2002, Ghai (2003), Anker et al (2003), Standing 1999). A wider range of occupations and ubiquitous forms of informalized employment than those first described in Hart (1973) seminal article now exist. [5]

In the developing countries, the urban poor often employ themselves and/or engage in varied types of informal sector activities, depending on their access to resources and on their capacity to take/absorb risk. Educational attainment and access to capital typically serve as determinants of inclusion and exclusion from certain types of activities such as mechanics repair,

tailoring, etc. These capital and skills requirements (that can also be perceived as barriers to entry) serve to restrict the absorptive potential of the more productive (and better quality of self-employed) activities in the informal sector, especially those with potential for enterprise and earnings growth.[6] As a result, such types of activities (e.g. retailing, petty sales, skilled trades; including automotive repair, appliance repair, etc.), small scale manufacturing (e.g. plasticware, packaging, etc.) are subject to some level of competition but not in any excessive manner. Such activities tend to provide relatively more stable earnings. Market conditions enable these informal sector workers to obtain high marginal returns to capital investment, allowing them to increase their earnings by expanding their enterprise activity and by developing their entrepreneurial skill over time (Das 2003, Meagher 1995).

The more vulnerable urban informal workers are likely to be concentrated at precarious jobs and low productive or value-added enterprise activities, where the ease of entry is accompanied by the disadvantages of excessive competition and stagnant, low-income markets. Activities such as mobile street vending, bottle collecting, on-street car washing, washing clothes, etc. are considered to be *low job quality* in the sense that they are precarious and survivalist in nature and hence prevent capital and skills accumulation. The potential for expansion and the earnings of these workers are likely to be severely limited both by the variability of the market and the excessively high degree of competition. The low returns to labor in such activities are sometimes offset by long hours of work, or by taking multiple jobs and other itinerant activities in order to meet minimum consumption needs.

Thus, in an era of increasing informalization of jobs, the mere existence of employment does not define the economic status and the ability of the worker to meet subsistence needs and to cope with shocks such as accidents, theft, illness or even death. The risks associated with employment itself have become relevant and more pronounced, not the least for those self-employed who use working and/or overhead capital in their enterprise activities.

Gender can also influence the choice of income earning activities among urban poor thereby differentiating the type of activities and level of earnings undertaken by women and men. Given their economic situation, urban poor households often rely on women's (and even children's) labor to supplement their income. These pressures have resulted in the occurrence of occupational segmentation among informal sector workers as pointed out in several studies. Moser (1981) first documented these labor market tendencies among urban poor workers in Ecuador during her fieldwork in the city of Guayaquil. She pointed out that in "areas where there is greatest potential for competition between men and women, gender is used as an essential element in the division of labor with women allocated in the less innovative activities." (p. 28). Her qualitative observations are borne out later by Meagher (1995), Das (2003) and Levin et al (1999) to name a few. Their research shows that gender-based segmentation tends to take place even in small-scale informal trading such as street selling with men dominating the more lucrative, more capital-using sales activities (e.g. beer retailing) while women dominate the low capital sales activities including mobile street food vending. Women may likely choose low end activities relative to men as a result of the interaction of gender roles and household risk coping strategies. In particular, the tendency of women to use non-labor resources including credit for consumption smoothing (e.g. an expenditure shock) results from prescribed gender roles and intrahousehold dynamics (Messier 2005). The long-term consequence is non-trivial in that their debt service burden can limit capital accumulation that is required for higher earning types of informal sector activities.

The quality of employment therefore needs to be seen as acting together with a number of other risk coping mechanisms including the use of credit, in the face of earnings shortfalls and/or expenditure shocks. Most *ex-ante* risk management and coping strategies of the poor - whether they involve self-insurance in the form of accumulated saving, or skills training, or mutual insurance such as social networks, etc –often prove to be inadequate or imperfect (Bardhan and Udry 1999, Ray 1998, Fafchamps and Lund 2003). Consequently, working members of the

household will tend to employ *ex post* coping strategies such as obtaining credit in order to meet unexpected shocks. One implication is that these workers run into a trade-off between the use of credit for production/enterprise and for consumption smoothing. It also involves decisions on how much debt service obligation they are willing to meet, given their liquidity constraint and the various needs they face. In this case, the mitigation of consumption risk may involve foregoing capital good purchase or meeting working capital needs in order to meet consumption shocks. The resulting earnings from lower quality jobs or capital constrained enterprises may only postpone rather than alleviate the risk faced by the household. The variability and low level of earnings from these types of jobs may end up shifting the risk away from the present shock and into lesser capacity to mitigate future shocks.

The above scenario becomes clear in the following situation. Suppose that the urban household experiences a h*ealth or health- related shock.* As widely documented, illness is a pervasive risk especially in areas where public health services are inadequate or missing. Risk of illness is often related to particular environmental risks that are linked to inadequate waste disposal, water supplies, and sanitation.[7] Health care costs are one of the significant causes of stress among the poor.[8] In the case of disability, illness creates additional health care costs, but also a further permanent effect via the loss of income earning capacity (Dercon 2004). Even a temporary disability may result in earnings loss, and thus the low-income period may be prolonged until the worker finds a new job.

When workers and their households have no access to insurance or have little means to address these shocks, their choice of *ex-post* coping mechanism involves difficult choices and may further preclude them from taking more risks and raising their income, thus perpetuating their vulnerability. This highlights the risk associated with heavy indebtedness that urban, low-income workers and their households also face. Heavy indebtedness, as measured by the debt service ratio, can involve multiple loans (from varied sources) and can lead to financial stress.

Although the literature on poverty alleviation has emphasized the credit needs of poor households, the implications of high debt servicing are non-trivial and therefore cannot be ignored. For one, high debt servicing, as with lack of access to credit, can lead to excessive work burden among household members in order to meet loan obligations (Floro and Dymski 2000). It can also lead to higher probability of loan default that can lead to higher interest rates or loss of credit access in the future. There are longer term welfare consequences of persistent heavy indebtedness as well. It not only undermines future investment in enterprise activity, but also the ability of urban, poor households to cope with future shocks. Hence, the *ex post* mechanism for mitigating consumption shocks is weakened. It can also lead to withdrawal of children from school, thereby undermining their development and acquisition of human capital. *Ex-ante* risk management is therefore reduced.[9] As Tesliuc and Lindert (2002) pointed out in their Guatemalan study, the poor have lower resilience than the rich to the effects of shocks. The probability of restoring household income to the level that prevailed before the occurrence of the shock declines with income.

The above discussion suggests that the welfare losses related to poor quality of employment and lack of insurance are well beyond those in terms of current income fluctuations and other transient effects on consumption and other welfare indicators. They involve permanent or chronic poverty effects, implying substantial welfare costs, both in terms of inducing or maintaining vulnerability (inability to cope with shocks) in the short run and of perpetuating poverty in the long run.

2.2 The Model

A brief analytical model is presented here to examine the interconnectedness between debt service burden and the nature of employment, specifically the quality of jobs, undertaken by household members. We take into account the fact that households involved in informal sector activities are often both units of production and consumption. Workers in these households

therefore make credit demand and credit allocation decisions as they perform their roles as household members and as income earners. These decisions are complex especially among poor households for they involve an assessment of household consumption smoothing needs, expected earnings and the longer run consequences of borrowing. Urban poor households often face a multitude of risks in their day to day lives, such as precariousness in housing conditions, theft and petty crimes, unsanitary neighborhoods and polluted environment so they determine some reservation resource level including credit line for dealing with these risks. This is taken together with the decision on how much to borrow for production investment that can raise their earning capacity.

The model developed here extends the literature of risk by examining the consequence of low job quality or job precariousness associated with certain types of informal sector activities on debt service burden. For the sake of simplicity, the model will consider a one-(working) person household (with or without dependents) so that the individual and household well-being are assumed to be synonymous. The model below can easily be expanded into a two-(working) person household but this is beyond the scope of the paper.

2.3 Worker's Earnings, Risk and Capital Investment

Let household well-being be defined as the development of human capabilities of its members, whether working or non-working, by means of access to and consumption of basic commodities such as food, healthcare, education, shelter, etc. as well as through participation in activities. This means that there are two arguments that enter into the well-being function: one refers to the flows of tangible goods obtained through the market (C_m) and the other refers to those services obtained through home production (C_h). These considerations suggest that the household well-being function for a one-(working) person household I can be written as:

$$W_i = w(\bar{C}_{hi}, C_{mi})$$
$$\bar{C}_h > 0 \qquad \qquad (1)$$
$$C_m > 0$$

where W_i =   well-being of household i,

C_{hi} =   vector of home production goods and services that go into the maintenance of the

household such as cooked meals, clean house, childrearing, etc.

C_{mi} =   vector of market purchased goods and services.

In this model, we assume that the production of C_h is fixed, and that C_m depends on worker i

earnings.[10]

The household faces a full income constraint, Y_f. Assume that the household receives

income in the form of wage earnings of Y_i and non-labor income, A. The budget-income

constraint on meeting consumption, C_m is denoted by

$$C_m = Y_f = \bar{A} + Y_i \qquad \qquad (2)$$

where $\bar{A}, Y_i \geq 0$. Among urban poor households, A is likely to be low so we ignore it in the

basic model.

The earnings (Y_i) depend on the amount of investment capital (K), the skills of the

worker (H), the amount of labor hours worked (l^m) and the economic risk associated with job

occupation j called θ. The last term, which is assumed independent and randomly distributed,

refers to the economic risk faced by the worker in terms of excessive competition, police

harassment, bad weather, theft or accident. This risk varies from occupation to occupation and

also according to the quality of employment. For purposes of this paper, we hold human capital

and labor hours fixed in the model and will drop them from the analysis.[11]

$$Y_i = g(K_i, H_i, l_i^m, \theta)$$
$$\frac{\delta Y}{\delta K} \geq 0, \frac{\partial^2 Y}{\partial K^2} < 0; \frac{\delta Y}{\delta \theta} \leq 0, \frac{\partial^2 Y}{\partial \theta^2} < 0 \qquad \qquad (3)$$

In this study, we argue that a low job quality is associated with high risk (θ) and a high job quality implies relatively low risk (θ). Lower quality jobs are prone to more volatility in earnings and are more susceptible to risk of theft, police harassment and even accidents. Their precariousness also results from having no written contracts, no fixed location, etc. Hence, we have the following job-related risk argument:

$$\theta_{it} = \theta(JQI_i) \tag{4}$$

The degree of risk associated with the type of enterprise or job also discourages capital investment as the expected marginal return from investment is low. Hence the demand for capital by worker i is given as:

$$K_i = \psi_i \Box k(JQI_i, \varepsilon_i) \tag{5}$$

where ε pertains to some given individual risk preference. The term ψ in equation 5 is a job-determined coefficient of capital dependence. This coefficient ψ is a non-negative number that is based on the given relations of production (i.e. whether the worker provides his own tools and materials or not), the technology available, and the returns to scale. A large ψ implies that the job of the worker e.g. petty goods sales requires him/her to supply the capital inputs, and that the technology applied in the delivery of the service allows for an increase in earnings or revenues by increasing the capital investment.

The worker's expected earnings in a given period t is influenced by the quality of his/her job in two ways. First, the quality of employment measured by JQI, affects the economic risk faced by the worker. Secondly it influences the demand for investment capital for use in the economic activity. Substituting equations 4 and 5 into 3 results in following:

$$Y_i = g(\psi_i \Box k(JQI_i, \varepsilon_i), \theta(JQI_i)) \tag{3a}$$

or,

$$Y_i = j(JQI_i, \varepsilon_i) \tag{3b}$$

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in which the effect of JQI on the expected earnings of a worker is shown by differentiating

equation 3b with respect to JQI:

$$\frac{\delta Y}{\delta JQI} = \frac{\delta Y}{\delta K}\underset{+}{\frac{\delta K}{\delta JQI}} + \frac{\delta Y}{\delta \theta}\underset{-}{\frac{\delta \theta}{\delta JQI}} \tag{6}$$

The sign on the first term is positive showing that a high JQI leads to greater demand for

capital investment that is expected to increase earnings. The second term shows that a high JQI is

associated with lower job-related risk and lower risk leads to higher expected earnings. Therefore,

$$\frac{\delta Y}{\delta JQI} \geq 0.$$

2.4 Demand for Credit

In our story, we take into account the fact that a variety of loan sources exist in urban

areas at different prices (interest rates). The supply of credit includes those from informal lenders,

kin, friends, cooperatives, microfinance institutions as well as formal financial institutions. We

therefore focus our story on the household demand for credit which involves: a) production loan

(B_k), and b) consumption loan (B_c). Let B_k and B_c be ≥ 0.

By way of illustration, a worker i may borrow B_{ki} in order to meet his/her job-related

capital investment needs. On the other hand, B_{ki} is zero if the worker chooses not to augment

his/her capital by borrowing, whether for buying additional inventories or raw materials, hiring an

additional worker, renting a commercial space or purchasing equipment.

Next, we consider a worker whose income is insufficient to meet the necessary basic

goods for household survival. We make the assumption of a minimum consumption level and

corresponding level of income for the sake of simplicity and to highlight the importance of those

goods and services that are necessary for the reproduction and maintenance of the household.

Such goods e.g. food, water, medical care, etc. have a sense of urgency among poor households

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and thus have lexicographic priority over other goods. We assume that the state of well-being

depends on market purchases or C_{mi} which in turn is dependent on the ability of the worker to

earn income that is sufficient to meet the minimum consumption requirement[12]. That is,

$$
\begin{aligned}
W_{it} &= W(C_{\min}) \\
W_{it} &\geq 0 \ if \ Y_{it} \geq C_{\min} \\
W_{it} &< 0 \ if \ Y_{it} < C_{\min}
\end{aligned}
\tag{7}
$$

Assuming that non-labor income A is zero in equation 2, then C_{it} is equivalent to Y_{it}, and C_{min} is

equivalent to Y_{min}. The term Y_{min} is the subsistence or poverty threshold income needed to obtain

the necessary goods and services for household survival. It is obvious that any maximization of

household well-being would require meeting C_{min} so that well-being does not deteriorate or W

falls.

Furthermore, the household has to deal with a multitude of risks and faces a random

shock with an occurrence probability of χ that increases C_{min} by a fraction ρ.[13] Let χ range from

0 to 1.The term χ is close to 1 in communities with poor or no sewer system, inadequate water

supply and little or no protection from crimes, and in households with no access to health

insurance schemes, etc. The fraction ρ is a non-negative number that depends on the nature and

severity of the shock and the related cost to recover or mitigate its adverse effect. Substituting

equation 7 into 2, the full income-budget constraint becomes:

$$
[(1-\chi)C_{\min}] + [(\chi)(1+\rho)C_{\min}] = Y_f = A + Y_{\min}
\tag{8}
$$

in which the first term of the LHS of equation 8 refers to a "good" state while the second term of

the LHS refers to a "bad" state in which the shock occurs.

Rearranging equation 8 results in:

$$
Y_{\min} = (1+\chi\rho)C_{\min} - A
\tag{8b}
$$

where ρ and $\chi \geq 0$ and $C_{\min} > 0$.

Any earnings shortfall that results in $Y_i < Y_{min}$ is then met by using past savings or by

obtaining credit to deal with the shock. Thus, the demand for consumption loan, B_c is determined

as follows:

$$B_c = Y_{it} - Y_{min} = Y_i - [(1 + \chi\rho)C_{min} - A]$$
$$\text{where } B_c = 0 \text{ if } Y_i \geq [(1 + \chi\rho)C_{min} - A] \qquad (9)$$
$$B_c > 0 \text{ if } Y_i < [(1 + \chi\rho)C_{min} - A]$$

By substituting equation 3b into equation 9, we get:

$$B_c = b_1(Y_i, \chi, \rho, C_{min}, A) = b_1(JQI_i, \varepsilon_i, \chi, \rho, C_{min}, A) \qquad (9b)$$

Now consider B_k as the effective demand for production loan by worker i. This is determined by

the capital usage required of his/her job, K and an exogenously determined interest rate, r.

Hence, the effective demand for production loan is determined as:

$$B_k \ = \ p\,(K_i, r) \qquad (10)$$

$$= \ p\{\psi\,[k(JQI_i, \varepsilon)]\}$$

$$= \ p(JQI_i \mid \psi, \varepsilon)$$

Note that B_k is zero in the following situations: a) the worker has access to credit, say, from a

moneylender, but is unwilling to accept the terms offered by the lender; b) the worker does not

have demand for investment capital (K =0), since given the precariousness of his job, faces a low

marginal returns; c) the worker does not have demand for investment capital (K =0), since their

job does not require capital investment; or d) the worker is willing and able to self finance both

capital and consumption (including expenditure shock) requirements.Given the supply of credit,

L_0, the total credit obtained by worker i is the sum of B_c and B_k .

$$L_{ol}) = B = B_c + B_k \qquad (11)$$

Or, by substituting in equations 9a and 10a in 11:

$$B = B(JQI_i, \varepsilon_i, \chi, \rho, C_{min}, A, r) \qquad (11b)$$

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The effect of JQI on total household debt is shown by differentiating equation 11b with respect to JQI.

$$\frac{\delta B}{\delta JQI} = \underbrace{\underbrace{\frac{\delta B}{\delta Y}}_{-}\underbrace{\frac{\delta Y}{\delta JQI}}_{+}}_{-} + \underbrace{\underbrace{\frac{\delta B}{\delta K}}_{+}\underbrace{\frac{\delta K}{\delta JQI}}_{+}}_{+} \tag{12}$$

As shown above, there are two competing effects of JQI on the level of debt. The first is referred here as the *earnings effect*. Higher (lower) quality jobs are associated with higher (lower) earnings and this reduces (increases) the need to borrow for consumption smoothing and for meeting an expenditure shock. Therefore, the earnings effect is negative or $\frac{\delta B}{\delta Y}\frac{\delta Y}{\delta JQI} < 0$. The second term, $\frac{\delta B}{\delta K}\frac{\delta K}{\delta JQI}$ in equation 12 is referred to as the *capital investment effect*. Note that in general, $\frac{\delta B}{\delta K} \geq 0$ and higher demand for capital tends to be associated with higher JQI. In other words, the overall effect of job quality on total debt is ambiguous and would depend upon the relative magnitudes of the income and capital investment effects.

5 Debt Service Burden

Borrowing carries the obligation to service the debt and in this section, we examine the factors that determine the debt service burden of a worker or household. Let outstanding debt service, DS of an individual worker be given as:

$$DS_i = \sum_{j=1}^{m}\frac{(1+r)B_i^j}{s} \tag{13}$$

where
$$DS_i \begin{cases} > 0 \text{ if } B_i > 0 \\ = 0 \text{ otherwise} \end{cases}$$

and where j = 1,2….m number of loans of worIer i and s is the number of payments over the entire loan payment period. Substituting equation 11a into 13 gives:

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$$DS = h(JQI_i, \varepsilon_i, \chi, \rho, C_{\min}, A, r, s) \tag{13b}$$

Next, we define the debt service ratio (DSR) as the debt service divided by the earnings of woIker i or, $\quad DSR_i = \dfrac{DS_i}{Y_i}$ (10)

Substituting equation 3b and 13b into 14 leads to:

$$DSR_i = d(JQI_i, \varepsilon_i, \chi, \rho, C_{\min}, A, r, s) \tag{15}$$

Differentiating equation 15 with respect to JQI results in:

$$\frac{\delta DSR}{\delta JQI} = \frac{\delta DSR}{\delta B}\frac{\delta B}{\delta JQI} + \frac{\delta DSR}{\delta Y}\frac{\delta Y}{\delta JQI} \tag{15b}$$

Since $\dfrac{\delta B}{\delta JQI} = \dfrac{\delta B}{\delta Y}\dfrac{\delta Y}{\delta JQI} + \dfrac{\delta B}{\delta K}\dfrac{\delta K}{\delta JQI}$, we substitute this into equation 15b to get:

$$\frac{\delta DSR}{\delta JQI} = \underbrace{\frac{\delta DSR}{\delta B}}_{+}\underbrace{\left[\underbrace{\frac{\delta B}{\delta Y}}_{-}\underbrace{\frac{\delta Y}{\delta JQI}}_{+} + \underbrace{\frac{\delta B}{\delta K}}_{+}\underbrace{\frac{\delta K}{\delta JQI}}_{+}\right]}_{?} + \underbrace{\underbrace{\frac{\delta DSR}{\delta Y}}_{-}\underbrace{\frac{\delta Y}{\delta JQI}}_{+}}_{-} \tag{11}$$

It can be noted that the first term, $\dfrac{\delta B}{\delta Y}\dfrac{\delta Y}{\delta JQI}$, is the *earnings effec*t on the demand for

credit in equation 15. Better quality jobs are associated with higher earnings and individuals with

higher earnings are likely to have a lower loan demand to meet consumption smoothing and

expenditure shocks. Therefore the *earnings effect* is negative. The second term, $\dfrac{\delta B}{\delta K}\dfrac{\delta K}{\delta JQI}$, is

the *capital investment effec*t, which is positive. The last term shows the *servicing debt* effect.

That is, a higher JQI is likely to lead to higher Y and this reduces the overall debt service ratio.

Overall, the impact of a change in job quality on debt service ratio is ambiguous and would

depend on which of the above effects of JQI is likely to dominate. If a low JQI leads to greater

borrowing for consumption smoothing and the income effect dominates, then $\dfrac{\delta DSR}{\delta JQI} < 0$. That

is, workers with precarious or low quality jobs face another form of vulnerability associated with

heavy debt service burden that leads to financial stress. As noted in the previous section, this has serious, long term implication for the wellbeing of the worker and his/her household.

3. Economic Restructuring and the Rise of the Informalized Poor in Ecuador

We now examine the relationship between quality of employment and household indebtedness using Ecuador as a case study. The dramatic expansion of Ecuador's informal economy in the last decade took place in the context of a severe political and economic crisis in the latter half of the 1990s as well as persistently high income inequality and poverty (Vos and de Jong 2001).[14] During this period, Ecuador also experienced worsening inequality accompanied by persistent low level of per capita income. The Gini index of income inequality increased from 52 to 54 between 1995 and 1999 (Parendekar, Vos and Winkler 2002). Using a consumption-based poverty measure for 1999, the extreme poor accounted for 21% of the total population (12.4 million) and the poor accounted for 52 percent of the population (UNDP 2003)[15]. At the end of 1999, the minimum wage, in real terms was 40 percent of its 1980 value in Sucres and open unemployment rate reached 11.5% in 1998-99. Disaggregating by sex, the female unemployment rate (16%) in 1998 was nearly double that of the male unemployment rate (8.4%).[16] By 2001, after Ecuador adopted the US dollar as its currency the real minimum wage was reduced to 20 percent of its 1980 value (CELA 2002).

The problem of unemployment was significantly worse among the poor. The poorest 20% of the population saw unemployment rates increase to 24% in 1999, while that of the richest 20% hovered around 5 percent throughout the period. At the same time, underemployment remained at about 60% of the economically active population (CELA 2002). Poverty, already a serious problem in Ecuador at the start of 1990's, increased significantly particularly in the urban areas with poverty rates rising from 28% in 1997 to 42.7% in 2000 with formal sector contraction and a cut in government services (INEC 2001).

The severity of the economic crisis in Ecuador has led to a rapid movement of people in search of jobs. Urbanization is accompanied by the shift of the population from the agricultural areas to the urban centers. Given the inability of the urban economy to absorb the newly arrived migrants, many found refuge either through international migration, or by working in the urban informal markets (Herrera 2004). Many of the low-income neighborhoods of Quito and Guayaquil have become the quintessential "informal sectors" with the majority of its inhabitants surviving from work in micro-enterprises, street vending and varied types of informal jobs and precarious work.

4. Empirical Analysis and Results

4.1 The Data

The following empirical analysis of the impact of job quality on borrowing patterns is based on an urban, low income 2002 household and individual survey data collected as part of a multi-country collaborative research project. The 2002 survey was conducted among 379 individuals in 194 households in six urban poor communities in the cities of Quito and Guayaquil in Ecuador, with at least one household member engaged in the informal sector. These communities were randomly selected to provide representation of the diversity of urban poor neighborhoods, the selection also took into account the presence of local contacts such as community leaders and researchers in the areas. The 194 households in our sample were then selected in a purposive manner: one of every six households in a neighborhood roster or mapping such that it has at least one member engaged in informal sector work. Our individual sample is comprises of 379 respondents, both heads and spouses, in couples and in single/parent households. Interviews covered both couples and single-parent headed households. The survey employed multiple (2-3) visits and contained questions on demographic info, employment info, credit, savings, income sources and household decision making with respect to financial matters.[17]

Not all households in our sample pool their income nor their loans, hence credit information were collected from household heads and spouses separately. Each of the loans were identified if they are jointly borrowed by husband and wife or individually, in the case of couples households. Each respondent was asked for details on all loans in cash or kind in the past twelve months including the source, the amount borrowed, interest rate, number of loan payments, collateral and co-signer requirements, time involved in obtaining the loan and the consequences of late or non-payment. Detailed employment information for both spouse and head were also collected to help identify the nature of their jobs including location of enterprise, number of paid and unpaid workers, costs and revenues, current earnings and past earnings trends, terms of contract (if relevant), access to benefits, variability in earnings, etc.

Although attempts were made to help in recall, our survey data have some limitations. First, given the sensitive nature of credit especially from informal sources, it is possible that some households are unable to share full credit information. Additionally, a number of the loan contracts are verbal in character so that it is possible that some respondents have difficulty recalling whether they ever borrowed or not. Hence, despite our efforts, there is likely a problem of underestimation. A caveat regarding earnings data is also worth noting. We provide here some estimation of earnings despite some limitations since this is important in the calculation of debt service burden.[18] It is well-recognized in the literature that income data of agricultural households are fraught with problems. This is also true among those engaged in informal sector employment although for different reasons. Therefore incomes obtained by household surveys have measurement errors. In our survey, we attempted to help the worker respondents calculate their net earnings by asking detailed questions on their operating and fixed costs , their labor hours, any paid or unpaid (family) workers' hours, and wages or revenue sales in the past week.

4.2 Characteristics of the Sample Households and Respondents

Tables 1 and 2 present the pertinent characteristics of the household sample and their respondents. The majority (128) of the households are male-headed, although a third (66) of the heads are female. The majority of female heads are in single parent households that comprise nearly forty percent (40%) or 79 of the total household sample as a result of divorce, separation, widowhood, or migration of spouse. In several cases, the 'de facto' female headship in Ecuador is brought about by the migration of the husband or partner to another city or country.[19] The mean age of heads and spouses are 42 and 38 years of age respectively. With regards to education, heads have slightly more years of schooling (10 years) compared to the spouses (9.2 years). For the most part, the households in our sample heavily rely on labor earnings. Spouses earn less on average $206 per month, compared to the household head $292.

[Tables 1 and 2 about here.]

Overall, more than 85% of the households do not own any land including the house plot which they presently occupy (see Table 2). Given the focus of the survey, it is not surprising that (income) poverty rate in the household sample is higher than the national average. Over 73% of all households surveyed live below the poverty threshold compared to the national average of 61.3% in 2002 (SIISE 2004). Poverty is more heavily concentrated in Guayaquil with 87% of the households living in poverty. Only 26.8% of all households in the sample are above the poverty line and are considered non-poor.

The combined work patterns of household members shows how these households straddle between the formal and informal sectors. In some cases, household arrangements are such that one member works in the formal sector while another is engaged in informal sector activity. In other cases, household members are engaged in different types of informal activities. The majority (203 or 66%) of respondents reported their main or primary occupation to be in the informal sector compare to those in the formal sector (24% of respondents). About 10% of the sample, mostly spouses, are currently not employed.

(Table 3 about here.)

There appears to be some gender/based occupational segregation within the informal sector as shown in Table 3. Women are over represented in grocery/retail, food vending, dress making and domestic service work while men tend to predominate in construction work, skills trade (e.g. mechanics repair, tailoring, etc) and driver. Men are also more likely to be employed as wage and salaried workers in the formal sector compared to men, with 37 (28.5%) working in the formal sector compared to only 10 (6.8 %) women.

(Table 4 about here.)

We use the Job Quality Index (JQI) measure developed by Messier and Floro (2007) as an attempt to capture the quality of (primary) employment among our respondents. This composite index includes pertinent characteristics of jobs in the formal and informal sector that influence the ability of workers to meet their basic needs and its value ranges from 0 (low) to 1 (high). (See Appendix A for a description of the construction of the index.) Hence, this measure is defined in relation to their ability to provide adequate earnings, to balance domestic work, market work and leisure, and access to insurance (e.g. health, old age, etc.).

(Table 5 about here.)

Table 5 provides the JQI measure for men and women worker-respondents in the different job occupational categories. It shows that, overall, men in urban, low-income households on average have a higher JQI than women. Workers in regular, formal sector jobs e.g. government employee, bank clerk, security guard, etc. have relatively higher JQI index (close to 1), while casual or daily domestic service workers have the lowest. Among informal sector workers, those engaged in skilled trade such as carpenters, electricians and mechanics as well as dress makers and barbers/hair stylists have higher quality jobs (higher JQI) than those engaged in highly competitive class of job such as mobile food vendors, street peddlers and water sellers.

4.3. Household Indebtedness and Debt Service Ratio

About forty-four percent (43.8%) or eighty five of our household sample do not have any loans in the past year.[20] Fifty six (56%) percent of the households who had credit in the past year obtained one or more loans from a variety of sources: relatives, friends, informal lenders, microcredit organizations and banks in the last year. As shown in Table 6, the major sources of credit of the individuals in our sample are bank lenders and kin. Kinship loans account for 31.8% of all lending, indicating the presence of socialized income-maintenance scheme in these communities, based on either extended kinship ties or locational affinity. About a fourth (24.8%) have borrowed from formal financial institutions, particularly commercial banks. About 18% of individuals also obtained loans from informal sources including moneylenders, employers, subcontractors and storeowners.[21] Microcredit was accessed only by 7.8% of respondents.

[Table 6 about here.]

The average loan size of kin loans or loans from relatives and friends are typically small, about one-fourth the size of the bank, savings cooperatives and informal loans. (See Tables 7 and 8). Annualized, nominal interest rates on kin loans were negligible while those of informal loans are, on average, nearly two and half those offered by commercial banks, microcredit and savings cooperative. On the other hand, informal loans allow smaller amortization payments over a longer time period and have a lower probability of collateral or cosigner requirement, which may explain their frequent use.

Next, we examine the extent in which low income households, and specifically their member-borrowers, are indebted. Household-level and individual-level debt service ratios (DSR) are estimated as the ratios of required debt payments to disposable personal income at the household and individual levels respectively. These are calculated as the ratio of monthly (principal and interest) payments on outstanding household debt to monthly household earned income[22]

[Table 7 about here.]

Concerns regarding high levels of household indebtedness are not new. A number of studies in developed countries have addressed this issue, particularly in the context of rising levels of household indebtedness in recent decades amidst long spells of economic growth.[23] Households (or individuals) with debt service obligations that exceed 0.4 or 40% of their incomes are typically considered to be financially stressed. Using this standard definition for our sample Table 9 shows that the mean DSR among households is 0.184.[24] Nearly one third of these households, however, have monthly debt payment obligations exceeding 0.4 ratio or 40% of their monthly income and therefore are considered to be financially stressed. This suggests that economic hardships among low income households not only entail lack of credit access; it also involves heavy indebtedness. We also find that at the individual level, women respondents have a higher average DSR (.357) compared to men (with .112).[25] This implies that the servicing of debt may not be equally shared among household members as well.

[Table 9 about here.]

5. Model Estimation and Results

The extent in which household-level and individual-level debt service burdens are influenced by the employment characteristics of its members, specifically those held by the head and spouse (when present) is examined using OLS and Tobit analyses. The dependent variable in our analysis is the monthly debt service ratio which serves as a measure of debt service obligations, at the household and individual levels. This is calculated as the total value of the debt payment obligations in the past month divided by total monthly income. The loan payments include both full loan principal and interest amount due that month as well as the monthly amortization dues for those loans that must be paid on installment basis. Household income refers to the sum of incomes from all sources, both labor earnings (wages, salaries or net revenues from enterprise) and non-labor incomes (transfer payments, pensions, remittances etc.). Individual incomes used in the calculation of individual debt service ratio include labor market

earnings and non-labor income (if any) received by the respondent. If the individual has no

outstanding debt payments, a value of zero is reported.

The specification of the models involves job quality index (JQI), and a consumption

expenditure shock as the main regressors. This instrumental variable, JQI reasonably captures the

pertinent characteristics of jobs in both the formal and informal sectors reflecting the quality of

employment. We also include two proxies for consumption shocks namely, having an ill adult

and having an ill child in the last six months. In addition, we include individual and household

characteristics as control variables namely, education, age and presence of young children. The

length of city residence and a city dummy variable are included as well to take into account the

effect of any unobservable city-level characteristics.

We estimate first two basic models to examine individual and household-level factors

that may influence the dependent variables, F_j and P_j.

$$F_{ij}^* = X_{ij}\beta^1 + Z_j\gamma^1 + \varphi_{ij} \tag{12}$$

$$P_{ij}^* = X_{ij}\beta^2 + Z_j\gamma^2 + \varepsilon_{ij} \tag{13}$$

The observed dependent variable, F_j, in the first model (Model 1) is the debt service ratio

of household j. In this model, we take the household as the standard unit of analysis. In Model 2,

the observed dependent variable, P_j, refers to the individual level debt service ratio. Here we take

the analysis a step further, by identifying the specific borrower within the household. While there

are issues of fungibility when it comes to credit, the answer given by our sample respondents to

the question: "Who is responsible and whose earnings are mainly for paying the loan?" suggests

that there are clear demarcations of loan repayment responsibilities within the Ecuadoran

households. The issue regarding loan repayment responsibility is relevant not only to

understanding the economic choices but also the relative vulnerability of women and men

members in low income households.

The X_{ij} and Z_j are vectors of observable characteristics at the individual and household levels respectively. Both β^κ and γ^κ with $\kappa=1,2$ are unknown parameters to be estimated. The random error terms, ω_{ij} and ε_{ij} have two components:

$$\begin{aligned} \omega_{ij} &= \chi_{ij} + \zeta_{ij} \\ \varepsilon_{ij} &= \eta_{ij} + \mu_{ij} \end{aligned} \qquad (14)$$

where η_j and χ_j are the unobserved household-specific effects, and ζ_{ij} and μ_{ij} are random individual terms uncorrelated with the household error component. Since our data contains heads and spouses in couples households, the error terms are not independent across individuals leading to biased standard errors for the coefficient estimates. Consequently, we obtain unbiased estimates of variance by calculating robust (Huber/White) standard errors and cluster around households.

The dependent variable, namely the debt service ratio, can take on zero values in the two models, Model 1 and Model 2. Due to data limitations, we can observe some households with zero debt and hence zero debt service ratio, but we are unable to distinguish between the following household types: a) those who want credit, but are unable to obtain them at agreed terms; b) those who don't need/want credit; and c) those who have borrowed in the past twelve months and have paid all their loans prior to the month observed. The Tobit model is deemed appropriate in this case since the dependent variable is continuous, but its range is constrained to nonzero values resulting in observations that are left censored at zero. Our model specification is based also on the assumption that the decision making faced by the household and its members involve deciding simultaneously whether or not to borrow and if so, how much. For each model, we make several Tobit estimations using the following household subcategories, namely couples (Model 1B) and single parent (Model 1C), and for individuals (Model 2A), women (Model 2B) and men (Model 2C) subsamples. The results are given in Tables 10 and 11. A third model is also estimated on the individual debt service ratios among borrowers using ordinary least squares

regression (Model 3A). Estimations are then made for women borrowers (Model 3B) and men

borrowers (Model 3C) separately. The results are given in Table 12.

5.1. Determinants of Household Debt Service Ratio

The results of the Tobit estimations for household debt service ratio are reported in Table

10. The first column (Model 1A) shows results for all households in the sample. Since this is at

the household level, the JQI for each adult worker (head and spouse, if present) is included. To

address the issue of comparability between single-headed and couples households, a dummy

variable for the presence of two workers is used to create an interaction effect. A zero is then

reported for spouse JQI if there is no spouse, or the spouse is not working for pay. A female

dummy indicates if the household head is female. Table 10 shows that the marginal effect of the

spouse JQI is negative and significant (at 10% level) indicating that the more precarious the job

of the spouse, the greater is the household debt service burden. In other words, the *earnings* effect

of JQI tends to predominate over capital investment and servicing debt effect. But the JQI of the

head is only weakly, albeit positively correlated. A (10%) increase in the educational attainment

of the head seems to increase the household debt service by 1.9% percentage points. Those

households with young children are likely to have lower debt service ratio. However, having an

ill child in the past six months has a large (by 1.42 percentage points) and positively significant

impact. This suggests that households are vulnerable to financial sI-a-vis high debt servicing

when a health-related shock especially among children, occurs.

(Table 10 about here.)

Model 1B in the second column of Table 10 restricts the observations to households with

both head and spouse present (couples households). In this case, we include both the JQI of men

and women on the premise that both their employment characteristics are likely to affect the

amount of credit borrowed and the household's ability to repay. The female dummy variable

indicates a female headed household. Model 1C in the third column applies the Tobit estimation to single headed households with the female dummy indicating the head to be female.

The decomposition of the household sample provides some striking results. Among couple households, we find the JQI of both heads and spouses to be negative and significantly correlated with the dependent variable. This implies that men and women members with low quality jobs tend to have higher household debt servicing, a greater propensity for the household to be financially stressed. The coefficient of the female dummy is negative and significant which suggests that if the head is female (a rare occurrence among couples households), then the household DSR is likely to be lower. Higher schooling of the head seems to increase the household debt service ratio. The significance of the city dummy coefficient implies that households in Quito are likely to incur higher debt and thus face greater debt servicing. This may be due to some unobserved city effect e.g. easier access to credit and hence more access to loans.[26]

On the other hand, the coefficient of JQI of the head in single- parent households is found to be positive and significant. This implies that the quality of employment is associated with higher debt service burden. There are two plausible explanations for this outcome. First, single-headed households are likely to have lower income (*income* effect), given the fewer number of workers compared to couple households so that it is more difficult to service debt. Secondly, the better quality job of the single head is likely to increase the credit demand due to the capital requirements of such activities, hence the *capital investment* effect of JQI predominates. The effect of a consumption shock in Model IC such as presence of an ill child is strongly positive and significant, with marginal effect of 3.65 percentage points. This suggests the particular vulnerability of single parent (mostly female)-headed households to financial stress when such shocks occur.

5.2. Determinants of Individual Debt Service Ratio

Since not all households pool their incomes nor their loans, we extend our analysis to the debt servicing of individual members. In this analysis, we focus on those individual loans to which designated borrowers of the household are responsible for. Table 11 reports the results for all individuals (Model 2A), for all women respondents (Model 2B) and for men respondents (Model 2C). [27] The results for Model 2A shows that overall the JQI has a negative and significant effect which is consistent with our findings at the household level in Table 10. The coefficient of the female dummy which indicates the sex of the respondent. is found to be positive and significant, suggesting that women are more likely to face higher debt servicing compared to men. The effect of schooling, city dummy as well as the ill child dummy on the individual debt service ratio are consistent with the results that we obtain at the household level.

[Table 11 about here.]

Models 2B and 2C examine the effect of JQI on debt servicing of men and women separately. Table 11 shows that the JQI coefficients for women and men are both negative and siIicant, but the marginal effect is much larger for women (2.9 percentage points) than for men (0.11 percentage points), implying that a change (decline or improvement) in the quality of jobs for women has a larger (increase or decrease) effect on their debt service burden than among men. Having an ill child in the household tends to increase the debt service ratio significantly for women (about 3 percentage points) but not for men. This suggests that a shock such as illness of a child adversely affect the debt service burden of female household members but not necessarily that of male members. A plausible explanation for this has to do with gender roles in Ecuadorian society, in which women as main care providers are expected to reduce their workdays to care for the ill child which adversely affects their earnings, borrow in order to meet any medical expense; or both.

5.3. Determinants of Debt Service Burden among Individual borrowers

The preceding models do not make any distinction between borrower and non-borrower respondents. This section empirically investigates the relationship of borrowers' JQI and their

level of DSR. Table 12 reports the OLS estimation among respondents with outstanding debt. Interestingly, Model 3A results show that the JQI of those who borrowed has a positive but not significant effect. [28] The statistically significant and positive coefficient of the female dummy indicates that women borrowers are more likely to have higher DSR than men borrowers. This indicates that the *debt servicing* effect of women's relatively lower earnings (compared to men's) and the *capital investment* effect of higher JQI tend to predominate.

Those borrowers who have fewer years of living in the city are likely to have higher DSR than those who are more settled urban dwellers. This may be explained by the difference in credit access and loan source between the latter and the more recent migrants.[29] Similar to the results in Tables 10 and 11, the shock dummy variable (having an ill child) has a significant and positive effect for all borrowers. This suggests that a major source of vulnerability for these low-income households comes from unexpected consumption shocks such as that of child illness.

To tests the robustness of the above results, we examine whether or not there is any difference in the determinants of DSR among women-borrowers and the DSR among men-borrowers. Among women borrowers (Model 3B), the JQI effect is positive and significant (at the 10% level) on their DSR. The change in the coefficient sign for women's job quality index as we more from all individuals sample to borrowers subsample is surprising at first glance. A probit test on the effect of JQI on the incidence of borrowing and a kernel density diagram of DSR and JQI show a bimodal relationship in which women with very low JQI and high JQI tend to be non-borrowers or have no outstanding debt, compared to those with low-moderate and moderate JQI.[30] In particular, there seems to be a threshold (high) JQI in which women workers prefer or are able to self-finance their enterprise and at the same time do not have to use credit to cope with consumption shock. Women workers with low-moderate and medium quality jobs tend to participate in the credit market and as the quality of their employment in the informal sector improves, their individual debt relative to their earnings increase. This implies that the *capital*

investment requirement of their informal sector jobs dominates over the e*arnings and servicing debt* effects of JQI.

In contrast, we find that the quality of men's jobs (JQI) has a negative but not significant effect on their DSR (Model 3C). We also find that education has a positive and significant impact on women-borrowers' DSR (Model 3B) but not on men borrowers (Model 3C). Women borrowers who have lived longer in the city are likely to have lower DSR but not among men borrowers. The effect of a health-related shock such as an ill child, on the other hand, has a large and strongly significant effect (at the 5% level) on women-borrower's DSR (Model 2B) but not on men.

The above regression results suggest that women's attempt to balance both their productive and reproductive roles have an influence in the level of debt servicing and debt burden sharing with urban, low income households. In particular, women's caregiver and maintenance roles in households can translate into higher debt burden when a child is ill. Loans for consumption smoothing needs are likely to be women's responsibilities, especially if they have independent earnings. Any income or consumption shock that requires additional cash expenses are therefore likely to be shouldered by women and this is reflected in their higher debt service burden.

6. Concluding Remarks

This paper examines the effect of the quality of employment on the vulnerability of low-income urban households in Ecuador in the form of high debt service burden or financial stress. The short and longer term consequences of such financial hardships are well-known. They may lead to excessive work burden among household members in order to overcome cash constraints and meet loan obligations. Financial stress can also lead to frequent loan default and even loss of credit access. There are important longer term effects if the resulting financial stress also affect the workers' ability to maintain their health and lead to withdrawal of children from school.

Our study is exploratory in that there is little prior evidence of the interconnectedness between job quality and the incidence of heavy indebtedness or financial stress. The evidence provided here, using cross sectional data on low-income urban households in Ecuador, is consistent with the hypothesis that more precarious jobs are likely to increase the probability of a household or individual borrower to incur high debt service ratio or be financially stressed. A better understanding of the relationship between debt service burden of low income households and income insecurity can help policy makers in their efforts to formulate effective poverty reduction strategies. Our study points to the importance of a comprehensive set of policies and strategies in order to ensure that households are not caught in a cycle of precarious jobs, indebtedness and vulnerability. Indeed, credit programs and innovative financial services for the poor and vulnerable groups are required, but our study findings also point to the need for macroeconomic policies that generate decent forms of employment and for social policies and protection schemes that include workers in informalized settings.

Table 1
Characteristics of Sample Households
(Percentage in parenthesis; standard deviations in brackets)

	All Households (N=194)
City	
Quito	114 (100.0)
Guayaquil	80 (100.0)
Household Type	
Single Father	18 (9.3)
Single Mother	61 (31.4)
Couples	115 (59.3)
	194 (100.0)
Avg. Household Size	4.00 [1.60]
Number of Children	1.58 [1.46]
Ave. Monthly Household Income ($'s)[a]	318.53 [166.03]
Ave Monthly Household Earnings[b]	277.55 [165.53]
Ave. Monthly Remittances ($'s)	26.61 [84.03]
Proportion with Owned Land	11.34%
Proportion below Poverty Threshold[c]	73.20%

[a] Monthly household income is calculated as the sum of all earned income, government transfers, remittances, any rent and gifts, in cash or kind, received by the household in the past month.
[b] Average household earnings is calculated as the average of all earned income and profits in the household
[c] Poverty status is determined using national per capita poverty line for Ecuador in 2000. This figure is adjusted for inflation and then multiplied by the household size. Households with total monthly income below this threshold are deemed to be living in poverty.

Table 2			
Individual Respondent Characteristics			
By household status			
INDIVIDUAL	HEAD (N=194)	SPOUSE (N=115)	ALL (N=309)
Sex			
Male	128	5	133
Female	66	110	176
Mean Age (in years)	41.5	37.6	40.1
Average Years of Schooling	10	9.2	9.7
Employment Status			
1. Formal	60	14	74
2. Informal	126	77	203
3. Not Employed	8	24	32
Ave Monthly Earnings (in $)[a]	291.84	206.39	260.36

Notes:

a Earnings refer to monthly wages and salaries of wage workers, piece rate payment of contracted workers and net earnings of self-employed.

Table 3			
Employment Classification of Workers			
by Sex and Type of Occupation			
(Column Percentage in Parenthesis)			
Type of Occupation	Men	Women	Total
I. Informal Sector			
Grocery/Retail Storekeeping	29 (22.31%)	62 (42.18%)	91 (32.85%)
Food Vendor	23 (17.69%)	38 (25.85%)	61 (22.02%)
Dressmaker/Barber	5 (3.85%)	17 (11.56%)	22 (7.94%)
Domestic Service Worker	1 (0.77%)	10 (6.8%)	11 (3.97%)
Construction Worker	10 (7.69%)	1 (0.68%)	11 (3.97%)
Skilled Tradesperson	15 (11.54%)	5 (3.4%)	20 (7.22%)
Transport Driver	6 (4.62%)	0 (0%)	6 (2.17%)
Crafts maker	2 (1.54%)	4 (2.72%)	6 (2.17%)
Shrimp Farmer	2 (1.54%)	0 (0%)	2 (.72%)
II. Formal Sector			
Wage worker	22 (16.92%)	4 (2.72%)	26 (9.39%)
Salaried worker	15 (11.54%)	6 (4.08%)	21 (7.58%)
Total	**130 (100%)**	**147 (100%)**	**277 (100%)**

	Table 4					
	Average Monthly Earnings and Weekly Work Hours					
	of Urban Low Income Workers					
	by Sex and Job Occupational Category					
	(earnings in dollars)					

Job Occupation	**Average Monthly Earnings**			**Average Weekly Hours of Work**		
	Women	**Men**	**All**	**Women**	**Men**	**All**
I. Informal Sector						
Grocery/Retail Storekeeper	117.28	243.58	157.53	69.74	78.17	72.43
Food Vendor	104.76	157.57	124.13	51.16	73.09	59.20
Dressmaker/Barber	151.69	453.60	220.31	42.65	62.40	47.14
Domestic Service	82.02	80.00	81.83	50.00	107.00	55.18
Construction Worker	150.00	205.47	200.42	16.00	48.00	45.09
Skilled Tradeperson[a]	102.64	199.98	175.64	45.60	47.53	47.05
Transport Driver[b]		320.65	320.65		69.00	69.00
Craftsmaker	231.00	364.95	275.65	68.75	51.00	62.83
Shrimp Farmer		294.74	294.74		73.00	73.00
II. Formal Sector						
Wage worker[c]	102.52	195.78	181.43	54.50	56.45	56.15
Salaried worker[d]	190.00	235.19	222.28	37.83	47.53	44.76
Total	121.01	225.43	170.01	57.53	62.90	60.05

Notes:

a. Skilled tradeperson refers to auto mechanic, carpenter, plumber, cobbler, electrician, locksmith and photographer

b. Transport drivers in the informal sector are self-employed and either own or hire the vehicle.

c. Formal sector wage workers include factory workers, chauffeurs, security guards and clerks among others.

d. Formal sector salaried workers includes government employees, accountants and bank employees

Table 5 Estimated Job Quality Index by Sex and Occupational Category			
	Women Workers	Men Workers	All Workers
I. Informal Sector			
Grocery/Retail Storekeeper	0.4738	0.5129	0.4863
Food Vendor	0.5296	0.4716	0.5083
Dressmaker/Barber	0.6471	0.6750	0.6534
Domestic Service Worker	0.4250	0.3750	0.4205
Construction Worker	0.5000	0.4875	0.4886
Skills Tradeperson	0.5500	0.6083	0.5938
Transport Driver		0.4792	0.4792
Craftsmaker	0.4688	0.6250	0.5208
Shrimp Farmer		0.5417	0.5417
II. Formal Sector			
Wage worker	0.6875	0.7216	0.7163
Salaried worker	0.8542	0.8750	0.8690
Average	**0.5289**	**0.5981**	**0.5614**

Notes:

See Appendix A for calculation of job quality index (JQI).

Table 6 Type of Credit Access by Sex of Borrower and Loan Source				
	Women	Men	Joint	All
Total Loans[a]	70 (100%)	40 (100%)	19 (100%)	129 (100%)
Bank[b]	14 (9.79%)	10 (8.40%)	8 (42.11%)	32 (24.81%)
Microcredit[c]	7 (4.90%)	3 (2.52%)	0 (0.00%)	10 (7.75%)
Savings Cooperative[d]	10 (6.99%)	9 (7.56%)	4 (21.05%)	23 (17.83%)
Informal[e]	17 (11.89%)	4 (3.36%)	2 (10.53%)	23 (17.83%)
Kin[f]	22 (15.38%)	14 (11.76%)	5 (26.32%)	41 (31.78%)
No Loans	73	79		153

Notes:

a. Some individuals have more than 1 loan.

b. These are loans from commercial banks and savings and loan associations.

c. Microcredit refers to those loans from microfinance institutions

d. Savings Cooperatives operate outside the regulation of the Central Bank of Ecuador.

e.Informal credit refer to loans, both in kind as well as in cash, that are provided by moneylenders, employers or other informal sources.

f. Kin credit refer to loans provided by family or friends typically at concessionary interest rates.

	Bank	Micro Credit	Credit Cooperative	Informal Lender	Kin	Total
Table 7 Individual Loan Characteristics by Type of Lender						
Number and Proportion of Total	32 (24.81%)	10 (7.75%)	23 (17.83)	23 (17.83)	41 (31.78%)	129 (100%)
Mean Loan Size (in $'s)	983.33	306.90	1000.00	926.30	285.32	665.24
Annualized Interest Rate (in percent) [b]	25.89	17.11	24.83	68.57	5.34	26.1
Ave Installment per Loan (in $'s) [c]	103.30	32.01	76.99	39.42	7.31	49.64
No.and Proportion of Loans with Cosigner [d]	13 (40.63%)	4 (40%)	16 (69.56%)	6 (26.09%)	7 (17.07%)	46 (35.66%)

[b] Nominal interest rates were annualized as follows: Interest rate = [(Amount Repaid-Amount Borrowed) /(Number of Monthly Payments]*12. The inflation rate in 2002 was 12.5 percent, using consumer price index. No adjustment on the interest rate was made for inflation since loans were borrowed for different length of time at different parts of the year.
[c] Installment amount refer to the average payment per installment made by the borrower to cover loan interest and principle required to repay the loan.
[d] Cosigners include spouse, parents, siblings and neighbors.

	Bank	Micro Credit	Credit Cooperative	Informal Lender	Kin	Total
Table 8 Household Loan Characteristics By Type of Lender						
Number and Proportion of Loans [a]	28 (26.42%)	10 (9.43%)	23 (21.70%)	21 (19.81%)	24 (22.64%)	106 (100%)
Mean Amount Borrowed (in $'s)	1100.00	306.90	1000.00	952.39	308.15	782.08
Annualized Interest Rate (in percent) [b]	26.17	17.11	25.10	63.22	6.92	21.69
Ave Installment Amount [c]	116.21	32.01	80.34	45.34	13.75	98.25

Notes:
[a] 14 households obtained loans from more than 1 source.
[b] The inflation rate in 2002 was 12.5 percent, using consumer price index. No adjustment on the interest rate was made for inflation since loans were borrowed for different length of time at different parts of the year.
[c] Installment amount refer to the average payment per installment made by the borrower to cover loan interest and principle required to repay the loan.

Table 9 Debt Service Ratio of Households and Individuals with Credit (percentages in parentheses; standard deviation in brackets)			
	Women Respondents	Men Respondents	All Households
Mean Debt Service Ratio (DSR)[a]	0.357 [1.03]	0.112 [.247]	0.184 [0.394]
Total Number and Proportion of Individuals and Households with DSR> 0.4	36 (49.32%)	12 (23.53%)	33 (30.28%)

[a] DSR is calculated as the dollar value of total monthly debt payments divided by total monthly income from all sources (includes earned income, remittances, gifts, transfers and the cash value of home produced goods). Some individuals report lump sum debt repayment instead of monthly installments. In this case a monthly payment was computed as the total amount repaid divided by the number of months the loan is outstanding. We excluded in the above calculation, a few individuals in the sample who reported a severe income shock in the form of earnings loss during the reference month yet have outstanding debt obligations.

	Table 10 Coefficient Estimates from Tobit Estimations Household Debt Service Ratio (All Households and by Household Type) [standard errors in parenthesis; marginal impacts in brackets]		
	Model 1A **All households**	**Model A2** **Couples Households**	**Model A3** **Single Parent** **Households**
JQI Head	4.91 (3.60) [1.36]		18.06* (10.21) [5.13]
JQI Spouse interactive	-6.66* (3.74) [-1.85]		
Two workers	-3.99 (2.82) [-1.10]		
Male JQI		-0.25* (0.15) [-0.08]	
Female JQI		-0.27** (0.12) [-0.09]	
Female	3.26 (2.24) [0.95]	-0.34** (0.16) [-0.09]	0.63 (3.45) [0.18]
Age	0.09 (0.44) [0.03]	0.04 (0.04) [0.01]	-1.16 (0.96) [-0.33]
Years of schooling	0.70* (0.37) [0.19]	0.03** (0.01) [0.01]	1.66* (0.89) [0.47]
Quito dummy	1.88 (1.76) [0.52]	0.44*** (0.10) [0.15]	1.83 (4.75) [0.51]
Years in city	-0.02 (0.05) [-0.01]	0.01 (0.10) [0.01]	0.17 (0.15) [0.05]
Presence of young children in household	-3.14* (1.78) [-0.85]	-0.03 (0.09) [-0.01]	1.47 (4.69) [0.43]
Health shock : Ill Adult	0.17 (1.72) [0.05]	0.03 (0.09) [0.01]	4.54 (4.43) [1.27]
Health shock: Ill Child	5.36* (2.88) [1.42]	0.05 (0.09) [0.02]	13.29** (6.41) [3.65]
Constant	-14.67 (8.83)	-1.63 (0.71)	1.48 (16.34)
Pseudo-R2	0.0399	0.2497	0.0669
Observations	185	113	72

*** significant at 1% level, **significant at 5% level; *significant at 10% level

Table 11
Coefficient Estimates from Tobit Estimations
Individual Debt Service Ratio
(All Respondents and by Sex)
[standard errors in parenthesis; marginal impacts in brackets]

	Model 2A All Respondents	Model 2B Women	Model 2C Men
JQI	-7.70* (4.53) [-1.91]	-10.76* (6.49) [-2.90]	-0.42*** (0.21) [-0.11]
Female dummy	5.75** (2.82) [1.42]		
Age	0.54 (0.83) [0.13]	0.95 (1.28) [0.26]	-0.01 (0.04) [0.00]
Age squared	-0.01 (0.01) [0.00]	-0.01 (0.01) [0.00]	0.00 (0.00) [0.00]
Years of schooling	1.38** (0.55) [0.34]	1.39* (0.79) [0.37]	0.05** (0.02) [0.01]
Quito location	12.17** (5.62) [3.00]	17.96** (8.70) [4.73]	0.44*** (0.15) [0.12]
Years in city	-0.17 (0.12) [-0.04]	-0.07 (0.18) [-0.02]	-0.01 (0.01) [0.00]
Presence of Young children in household	-4.34 (2.92) [-1.06]	-3.48 (5.32) [-0.93]	-0.18 (0.12) [-0.05]
Health shock: Adult	0.84 (2.74) [0.21]	1.46 (4.70) [0.39]	0.06 (0.11) [0.02]
Health shock: Child	6.57** (3.32) [1.57]	12.64** (5.65) [3.23]	-0.09 (0.11) [-0.02]
Constant	-48.97 (25.08)	-66.22 (36.52)	-0.77 (0.74)
Pseudo-R2	0.0412	0.0355	0.1866
Observations	276	146	130

*** significant at 1% level, **significant at 5% level; *significant at 10% level

	Model 3a All Borrowers	Model 3b Women Borrowers	Model 3c Men Borrowers
	Table 12 **Coefficient Estimates from OLS Estimations** **Debt Service Ratio among Borrowers with** **Outstanding Debt** **(by sex of borrowers)** **[standard errors in parenthesis]**		
JQI	6.988 (4.342)	14.538* (7.983)	-0.003 (0.145)
Female dummy	7.809** (3.154)		
Age	-0.365 (0.936)	-0.154 (1.327)	-0.060 (0.040)
Age squared	0.007 (0.012)	0.012 (0.016)	0.001 (0.001)
Years of schooling	0.370 (0.298)	1.107* (0.598)	0.009 (0.009)
Quito location	4.537 (3.619)	6.258 (5.495)	0.206*** (0.073)
Years in city	-0.231* (0.129)	-0.650* (0.337)	0.001 (0.003)
Presence of Young children in household	1.267 (3.516)	5.677 (7.983)	-0.034 (0.070)
Health shock: Ill Adult	0.564 (2.442)	-2.728 (3.720)	0.159* (0.089)
Health shock: Ill Child	5.713** (2.619)	8.503** (3.865)	-0.131 (0.083)
Interest rate	-0.011 (0.010)	-0.016 (0.021)	0.000 (0.000)
Constant	1.797 (20.284)	1.871 (29.438)	1.179 (0.730)
R2	0.121	0.1863	0.2756
Observations	124	73	51

*** significant at 1% level, **significant at 5% level; *significant at 10% level

Appendix A
Construction of Job Quality Index.

The JQI index is constructed to capture those dimensions of quality of work (or lack/shortfall thereof) that are relevant to informal sector activities as well as to formal sector employment. It is a composite measure of the different aspects of employment and includes earnings adequacy, working hours adequacy, the presence of non-wage benefits, the job location and the number of jobs held simultaneously. The table below provides a description of the dimensions of job quality used in the calculation of JQI.

Constructing the JQI

Dimension of Job Quality	Definition	Threshold [a]	Value used in JQI Calculation
Adequate Earnings	Adequate earnings are defined as earnings sufficient to support the worker and one other individual above the poverty threshold	$\leq \$226.78$ $> \$226.78$	0 1
Adequate hours of work	Number of hours worked per week in the job.	≤ 48 $48 < Hours \leq 80$ >80	1 0 -1
Number of jobs	Current number of jobs worked for pay	Num Jobs=1 Num Jobs=2 Num Jobs>2	1 0 -1
Job Location	Physical location where majority of work is preformed	Office building, workshop or other permanent location detached from the house. The household No fixed location.	1 0 -1
Non-wage Benefits	Does the job provide non wage benefits such as social security or health benefits	Offers non wage benefits No benefits	1 0

    a.   The earnings threshold is based on twice the national poverty line adjusted for inflation. The work hours threshold is based on ILO convention.

The calculation of JQI uses the following formula:

$$\text{Normalized value } JQI_i = \frac{\sum_{j}[\text{Actual value}_{ij} - \text{Minimum value}_j]}{\sum_{j}[\text{Maximum value}_j - \text{Minimum value}_j]} \qquad (15)$$

The JQI for the ith individual is based on a summation over the j dimensions of job quality.

The JQI is normalized [0,1] with the interpretation of values closer to 1 being associated with higher quality jobs. High quality jobs in our definition, generate adequate earnings, do not require workers to have more than one job, have adequate but not excessively long hours of work, in stable and safe location, and provide non-wage benefits.

Appendix B

Variable Definitions

Variable	Definition
Age	Age of worker in years
Years in City	Number of years the worker has lived in the city of work.
Female	A dummy variable. A value of 1 is give if the respondent is female, 0 if otherwise.
Debt Service Ratio (DSR)	This is calculated as the sum of all monthly debt payments on outstanding loans for all household members divided by total household income (both earned and unearned)
Young children in household	The value 1 is given if the household has children under the age of 6 present, 0 if otherwise.
Health shock: Ill Adult	A dummy variable. The value 1 is given if the household has reported having an ill adult in the past month, 0 otherwise.
Health shock: Ill Child	A dummy variable. A value of 1 is given if the household has reported having an ill child in the past month, 0 if otherwise.
Individual Debt Service Ratio	This is calculated as the sum of the monthly debt payments on all outstanding loans for the individual borrower divided by the total individual income (both earned and unearned income)
Job Quality Index (JQI)	This combines the values recorded in the adequate earnings, adequate hours, number of jobs, job location and non wage benefits variables. The JQI is then normalized [0,1] similar to the procedure usedin the calculation of the Human Development Index: Normalized value JQI=[Actual value-Minimum value]/ [Maximum value-Minimum value] where the actual value is the score attained by a particular job. The minimum value is the lowest value any job could attain and the maximum value is the maximum any job could attain. The value of the normalized index is calculated and the result is normalized to give values of the job quality index ranging from 0 (lowest or worst) to 1 (highest or best).[31]
Female JQI	This reports the JQI for women in couples households only
Male JQI	This reports the JQI for men in couples households only
JQI Spouse interactive	This is the JQI of the other household adult crossed with the two worker dummy variable. It is equal to 0 in households with only one worker and the log of the JQI of the other worker in two worker households.
Quito dummy	a value of 1 if the respondent lives in Quito, 0 if in Guayaquil.
Years of Schooling	Years of education the respondent reported.
Twowork	A dummy variable to reflect if two workers are present in the household. It is 1 if the household has 2 workers, 0 if otherwise.

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[2] By quality of employment, we refer to the adequacy of income, assurance or security of employment, access to job-related benefits particularly health and retirement insurance and reasonable hours of work.

[3] The survey is part of a four-country research project that attempts to understand the roles of financial and labor resources in the coping strategies of urban poor households as their countries undergo economic restructuring. It was conducted in May-July 2002 as part of a comparative study of labor market informalization and homebased work in Bolivia, Ecuador, Thailand and Philippines. It involved multi-visit interviews and use of a multi-topic questionnaire. The survey instrument involves questions on household and community characteristics as well as informal employment, savings, assets, credit, and participation in household decision making.

[4] Theft is often a constant threat to the assets of the poor, whose neighbourhoods have usually no police protection (Dercon 2004).

[5] The seminal article by Hart (1973) on the urban informal sector in Ghana has brought attention to the heterogeneity of informal sector activities as with the studies by Tinker (1997), Das (2003), Ranis and Stewart (1999) among others.

[6] An increasing number of studies have come to recognize this uncompetitive dimension in conditions of entry within segments of the informal sector (ILO 1985, Schaeffer 2000).

[7] For example, in the qualitative studies in Bolivia related to the World Development Report 2000/01, lack of access to public services (e.g. water, sewage) was ranked among the urban poor as their greatest problem.

[8] Using SEWA data from India, a study on risks faced by the poor in an urban setting shows that illnesses are the most common shocks (Chen and Snodgrass, 2002).

[99] For further discussion on this point, see Morduch 1995, Dercon (2002), Dercon and Hoddinott 2004.

[10] The goods vector, C_m, is obtained from the market at exogenous prices, denoted by the vector P_m which is normalized to 1.

[11] In standard production models, there is some degree of substitution between capital and labor. Our story focuses on low-income households who want to maximize their earnings and who have already maximized the amount of time spent in the labor market.

[12] We assume a normalized price vector =1.

[13] For example, health related shocks tend to increase household expenditures.

[14] Ecuador began the process of dollarization in 1999 which replaces its national currency, the *sucre*, with the US dollar. A dual currency economy ensued when bank loans were made in dollars but backed by business earnings in sucres. Due to the large external debt accumulated over the past decade, Ecuador needed to run a trade surplus to maintain debt service. This need coupled with high inflation resulted in exchange rate depreciation. This depreciation resulted in many non-performing loans, eroding confidence in the banking sector (Solimano 2002). Confidence in the banking sector fell and dollar flight ensued. To boost confidence in the financial sector, the Central Bank guaranteed bank deposits and expanded the money supply to provide liquidity. This resulted in even higher inflation (reaching 96% in 2000) and the exchange rate further depreciated. This instability coupled with fluctuations in oil prices and El Nino crop damage resulted in further recession and contraction of output and employment. The GDP per capita, by the end of the decade, was lower than in the early nineties.

[15] A household is classified to be extremely poor if its total consumption expenditure is below that of the food poverty line.

[16] Using a different source, the open unemployment during the period 1989-99 for women and men are 14.4 percent and 19.6 percent respectively (UNDP 2003, ILO 2002).

[17] Pretests of the survey instrument revealed that couples were reluctant to respond when both were present. On some responses the husband answered for the wife. Therefore, the heads and spouses were separated during interviews. This often involved repeated household visits.

[18] Studies on household debt in developed countries also use debt-household worth ratio as measure of debt servicing. This is not useful in the case of urban poor households in whose main assets are their labor.

[19] International labor migration has dramatically increased during the period 1998-2000. An estimated 200,000 Ecuadorians has left the country during that period in search of better job opportunities. (Herrera 2004).

[20] Unfortunately, we are unable to identify whether they did not borrow by choice, by lack of access to affordable credit, or by termination of their credit line.

[21] Informal credit is generally accessible. Most communities in the survey have a local "Uncle" or "Auntie" who resides in the area and can easily be approached or is willing to lend during times of need. Through personalistic ties and/or community-based social networks, the informal lender obtains local information regarding the borrower and with this information, determines the credit terms. Informal loans in general, have higher interest rates but longer repayment periods.

[22] Some households reported debt that did not involve monthly payments but a single lump sum payment. In this case, monthly debt service is imputed as the lump sum payment divided by the number of months the loan is outstanding.

[23] See, for example, Jickling (2005), Orla, Merxe and Young (2004), and La Cava and Simon (2005). In the US, the Congressional Research Service 2005 study shows that financial stress tends to be more prevalent in lower-income households (Jickling 2005, p. 1).

[24] The estimation excluded a few households with DSR larger than 10.0. These households reported near zero income for the month.

[25] The calculation of individual DSR excludes loans that are jointly borrowed and are paid using the earnings of both head and spouse.

[26] This may also be due to possible bias in the survey interview process.

[27] Note that the sample in Model 2A includes both borrowers and non-borrowers. Therefore, the analysis involves workers that have precarious jobs (low JQI) and have no credit due to lack of credit access as well as workers with high JQI and have no credit since they are self-financing.

[28] Probit analysis (available on request) indicates that the coefficient of JQI on the probability of borrowing is negative and significant at the 5% level.

[29] The longer a worker has lived in the city, the more he or she has established a social network and thus greater access to low or no interest credit among kin and friends.

[30] Available upon request.