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# Food Security, Gender and Occupational Choice among Urban Low- Income Households<sup>1</sup>

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## Abstract

Rising urban poverty and food insecurity are serious concerns in developing countries today. Urban livelihoods and coping strategies remain poorly understood however. This paper examines the response of female and male household members in marginalized urban (predominantly squatter) areas to the risk of food shortage in terms of occupational choice. More specifically, we use probit analyses to investigate whether household vulnerability or the need to provide self-insurance for food security, alongside gender roles, influence a worker's choice of enterprise activity. We focus our investigation on self-employed women and men using a data set drawn from the 1496 individual sample in 14 urban squatter communities in Bolivia, Ecuador, Philippines and Thailand. Our findings show that self-employed women in households facing higher risk of food insecurity are likely to engage in food-related enterprise activities and this is especially true in Philippines and Thailand. This suggests the role of occupational choice in helping urban squatter households in mitigating the risk of food shortage through the selection of an income-generating activity that allows the direct use of unsold inventories for food consumption.

**Keywords:** food security, self-employment, occupational choice, urban informal sector

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<sup>1</sup> The authors gratefully acknowledge the helpful comments and suggestions of Thomas Hungerford and the participants at 2009 IAFFE conference (Boston), the Centre for Microfinance seminar (Luxembourg), the IFMR seminar (Chennai India) and the Department of Economics seminar, Uppsala University.

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*“What we don’t sell, we eat or we share and trade with our neighbours.”*

*Food vendor, Manila, Philippines*

## **1. Introduction**

This study will explore a self-insurance mechanism that can be utilized by workers living in urban poor communities to ensure their households’ access to food namely the selection of self-employment in food-related business. It attempts to answer the following questions: In what manner does concern for food security affect the decision-making of workers in urban poor communities? What role does it play in the choice of business among self-employed women and men? More specifically, why do some self-employed workers choose to engage in food-related enterprises than in other types of businesses? To answer these questions, we explore the relation between the risk of food shortage and occupational choice and conduct probit analyses using cross-sectional survey data of 760 self-employed women and men in urban collected from 13 urban squatter communities in Ecuador, Thailand, Bolivia and Philippines to better understand how these workers organize their activities to gain food access. Moreover, we examine the interrelation of socially-ascribed gender roles and occupational choice selection. In so doing, we hope to gain insights into the factors that affect food security and thus in ways that can inform the discourse over interventions that can reduce food insecurity and poverty.

The issue of food security, viewed through the urban lens, has become a growing serious policy concern for several reasons. First, developing countries are urbanizing at a rapid pace due in part to natural urban population growth but mainly from the continued rural-urban migration. Second, the inability of urban labor markets to absorb a rapidly increasing labor force has led to problems of unemployment, underemployment and precarious forms of employment in many cities. Labor is the most important asset to many urban households especially those living in low-income neighborhoods and slum areas. The low and variable labor-based earnings, along with the lack of or weak functioning safety nets, have made access to food a grave concern. Studies by Amis (1995), Hugon and Kervarec (2001), Maxwell (1999) and FAO (2001) indicate that urban low-income groups, who rely heavily on market purchases for consumption, spend the largest share of their income on procuring food. This suggests that to a large extent, vulnerability and poverty are likely to be manifested in the form of food insecurity.

Third, although the growth of major cities such as Bangkok and Manila has led to increases in average per capita consumption including food, urban aggregate indicators tend

to mask the inequality within urban populations. Growing intra-urban inequality is made evident in the research by Jamal and Weeks (1993), Braun et al. (1993), Hulme and McKay (2005) and Montgomery (2004). In fact, the differences in terms of food access and consumption between income groups are particularly stark (FAO 2001, Maxwell 1999). According to the 2008 UN study, “slum dwellers, who account for 1 billion of the worldwide urban population, (*tend to*) die earlier, experience more hunger and disease, receive less education, and have fewer steady job opportunities” than the rest of the urban population (UN 2008). Fourth, there is growing evidence that urban poverty and the proportion of the population that is vulnerable to falling into poverty is expanding. Rapid urbanization has created additional challenges by altering the distribution of poor and vulnerable groups. Official poverty statistics in several developing countries show that a relatively small proportion of urban dwellers are counted as poor, and yet, more than one third of urban dwellers live in poor quality, overcrowded squatter settlements, lacking provision for water and sanitation (International Poverty Centre 2005, Montgomery 2004, Montgomery and Hewett 2005, Mitra 1994, 2000). Standard poverty measures do not typically account for the living conditions and levels of insecurity experienced by those living in urban squatter communities. More recently, some studies have indicated that the urban sector’s share of the developing world’s poor is rising and that the poor are urbanizing faster than the population as a whole (Hulme and McKay 2005, UN 2008).

Given the above exposition, it is not surprising that increasing shares of urban populations are failing to secure their access to purchased food on which they depend more heavily (Tabatabai 1993, Gebre 1993). For instance, a study by Garrett and Ruel (1999), using the 1996-97 national household survey data, shows that food insecurity is slightly higher in the urban areas of Mozambique than in the countryside. About sixty-seven percent of the urban population is food insecure, compared to 64% of rural residents. The issue of urban food security is therefore becoming a critical concern to local governments and policy makers and there is urgency to develop a comprehensive plan to address it.

The importance of food access raises the need to examine urban households’ coping strategies in the face of food insecurity. While there are a number of ways that households can use to cope with income and consumption shocks such as formal as well as informal insurance mechanisms, urban squatter households in developing countries are severely constrained to use many of these strategies (Dercon 2005). Formal insurance such as pensions and employer-based health insurance, for example, is limited to households with workers in regular, formal sector jobs. Informal insurance mechanisms including community-based support networks

and the use of informal credit and savings associations are more common, but tend to be limited when it comes to covariant shocks and in some cases, often exclude those with low and variable earnings. These often leave many urban, low-income workers and their households to develop self-insurance mechanisms including income-based strategies that can help secure their food needs.

There are crucial gender dimensions in the way households respond to risks such as food insecurity. In the past decade or so, a number of studies on urban poverty have drawn attention to the role of urban women workers in obtaining food security for their households (Amis 1995, Pryer and Crook 1990, Naponen 1991, Levin et al 1999, Deshpande 2001, Mitra 2001). For instance, Levin et al.'s (1999) study highlights women's role as income earners and in securing access to food in urban households in Accra, Ghana. Likewise, Amis (1995) study examines the effect of women's livelihood and employment on household food security. These studies show the predominance of women in food trading and the effect of their earnings' contribution on household nutrition in the urban areas, but they do not explore the interconnectedness between food security, gender roles and choice of occupation.

In this paper, we examine the determinants of occupational selection made by self-employed workers living in marginalized urban communities. We argue that food-related businesses perform a dual role of providing livelihood and a self-insurance mechanism that can be utilized by workers to ensure their households' access to food. The latter role takes the form of a non-pecuniary benefit provided by the unsold inventories, which can be directly used to meet food needs. The countercyclicality of unsold (food) inventories and earnings helps a worker's household smoothen food consumption when sales and earnings are low. The insurance premium offered by this type of occupation to those households at greater risk of having food shortage, can more than compensate the forgone additional earnings that may be gained by choosing another occupation.

Our paper is organized as follows. Section 2 reviews the literature on occupational choice among self-employed. It also discusses a central concern of workers living in urban poor communities that may affect their labor market behaviour namely, the risk of food shortage. In section 3, we provide a conceptual framework that builds on the characteristics of the urban food sector to examine the crucial linkages between food security gender roles and occupational choice. Section 4 describes the sample data, and the characteristics of self-employed workers and their households in the sample. We also estimate several probit regressions to test whether the household's likelihood of being at risk of experiencing food shortage and being a female adult household member influence the choice of engaging in

food-related enterprise. We conduct the tests separately for self-employed women and men to test whether or not a household's vulnerability to food shortage affects household members differently. To disentangle the unobserved household and individual characteristics from country fixed effects, we also estimated the probit base model for each country. Our results suggest that those engaged in food sector are likely to be female household members (mainly wives) and living in households that are vulnerable to food shortages, especially in Philippines and Thailand. The summary and policy implications conclude the paper.

## **2. Self-Employment and Occupational Choice: Monetary and Non-Monetary Considerations**

There are several strands of thought in the literature on occupational choice by self-employed workers. One strand of thought focuses on the determinants of choice between self-employment and wage employment such as those by Blau (1985) and Banerjee and Newman (1993).<sup>3</sup> Another strand of thought is on the occupational selection that workers make between employment in the formal and informal sectors.<sup>4</sup> A number of studies on the gender dimensions of occupational choice among self-employed has emerged in recent years that explores the interconnectedness between household production and labor market decisions. These studies demonstrate the blurring of boundaries between the notions of 'choice' and 'constraint', which is contrary to the approach made in standard choice theoretic occupational choice models such as those by Marcoullier et al (1997) and Maloney (1999) emphasize. The study by Connelly (1992), for example, makes use of US panel data to demonstrate that women with young children are more likely to choose to be self-employed or to be a child care provider than women without children.<sup>5</sup> Given the nature of constraint that young children place on women's employment, "the simple choice between being employed and not being employed may mask important aspects of the decision regarding participation." (Connelly 1992 p. 17). Hundley (2000)'s study of self-employed married men and women also demonstrates the prevalence of self-employed women in childcare service sector and points out the complementarities between this type of occupation and child-rearing especially

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<sup>3</sup> Blau (1985) examined the role of "managerial ability" in the selection of individuals into self-employment using Malaysian household data. Banerjee and Newman (1999) provides a theoretical model to argue that wealth distribution and capital market imperfections influence occupational choice.

<sup>4</sup> See for example Mazumdar 1983, Amis and Rakodi 1994, Telles 1993, Kucera and Roncolato 2008).

<sup>5</sup> She argues that in addition to the monetary cost of child care, families using nonfamily child care face non-monetary costs such as the risk of having childcare arrangements breakdown on short notice or of having poor quality care of their children.

for women with childminding responsibilities of their own. His findings suggest that women choose self-employment to enable them to reconcile their primary responsibilities in the household with market work. Men on the other hand, view self-employment as a vehicle for entrepreneurship and enables them to capture the rewards for innovation and extra work effort. In fact, the gender wage gap is highest for individuals from families where there is a strong demand for household production. Mitra (2005) examines the occupational choice function of women in the urban informal sector in India and provides further support to the hypothesis that most women tend to compromise and accept lower earnings to accommodate household and care responsibilities. Thus, as Kucera and Roncolato (2008) points out, the options that women face are dire and the notion of ‘voluntary’ selection or “added premium” used in standard choice theoretic models, e.g. flexibility in working hours, are misrepresented.<sup>6</sup>

While there is a growing number of studies on urban food security , their approach usually make the worker’s decision to engage in a particular occupation as independent from the household risk of having food shortage and the need for adopting self-insurance mechanism. This study differs from the existing studies on occupational choice and on food security in that we explore the interdependence between a self-employed worker’s decision to engage in a particular occupation and the household risk of food shortage. Since urban, squatter households rely heavily on labor earnings for meeting their basic needs, food insecurity is strongly connected with the risk faced by households in having income shortfalls and with their ability to cope with such shortfalls. Households in urban squatter communities generally have few instruments to deal with these risks. They tend to have insufficient assets and have little or no access to market or public sector-based insurance. The burden of survival therefore requires workers in these households to develop self-insurance mechanisms and make related decisions in order to mitigate risks.

We explore in the next section the interplay of food security concerns and socially ascribed gender roles provide insights on the occupational choice of self-employed workers in urban squatter neighborhoods. We adopt the FAO definition of food security as referring to the access by people at all time to sufficient food for an active healthy life, It takes into account the physiological needs of individuals (nutritional requirements and energy

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<sup>6</sup> Studies by Yamada (1995) Maloney (1999) Marcoullier et al (1997) deftly manage to make time ‘constraint’ an added benefit (in terms of working hours flexibility) in disguise. For workers that have time and mobility constraints, time flexibility is more a requirement for being employed, than an option.

expenditure levels) as well as the uncertainty and risk in people's ability to command food (FAO 2003).

### **3. Food Security, Gender and Occupational Choice**

In this section, we provide a framework for understanding occupational choice among self-employed workers in urban marginalized areas when food security is taken into account. Before proceeding, a few caveats are in order. First, the self-employed workers in this segment of the urban population operate very small businesses, with 3 employees or less. In many cases, the self-employed worker is one who combines the roles of worker, manager and owner in a single individual. Second, the product cycle tends towards discontinuity and variability due, in part, to low level capitalization and use of rudimentary technologies as well as to storage and spoilage issues. The earnings and length of operation of the food business, as a result, may vary from period to period. Third, we take into account the crucial linkages between the enterprise of the worker and the household as unit of consumption, i.e. the business expenditures, assets and labor are linked to those of the household. The jointness of production and consumption for households in food-related businesses occurs in several ways. First, the activity produces an output or involves inventories whose use can be shifted easily from providing sales revenue to providing food directly for consumption. Second, the labor time of the worker can be switched from paid employment to unpaid domestic and household work and vice versa. For home-based enterprises, it is also relatively easy to shift labor (of other household members e.g. older children, etc), funds, equipment, and space from one use to another. Third, the relationship between the responsibilities of a worker for production and consumption often make it difficult to separate out risk and uncertainty in employment and earnings from consumption risk such as food shortage.

This shifting boundary between household and market production is important in understanding occupational choice as a means to provide self-insurance against food shortage and hunger. Workers in households that face greater risk of high food insecurity due to variability in earnings and/or precariousness of jobs of other household members, may undertake food businesses because of the non-pecuniary advantage provided by the nature of their inventories or goods for sale. Their inventories can be consumed by the household, which compensate for low earnings and/or shared to others in the community, which assist in the maintenance of social networks and community support mechanisms. A special feature of this non-pecuniary advantage is its counter-cyclicity to the pecuniary or monetary earnings. That is, whenever sales go down and hence enterprise revenues, food inventory goes up. This

point becomes even more important when relative food prices (or the terms of trade between food and non-food items) are high.

Studies on the consumption patterns among the urban low-income households show that a significant portion of their incomes is spent on food which is by far the largest item in the household budget (Levin et al. 1999, Banerjee and Duflo 2006). This in part, is due to the higher prices for food paid by urban low-income households compared to those in middle-income groups since they are limited in their choice of location to purchase food (FAO 2001). They spend more time and energy in buying food, and are compelled, due to low earnings, into making purchases in very small quantities at convenient neighborhood stores.<sup>7</sup>

The urban household dependence on purchased food may be reduced if it has access to other food sources. Private transfers in the form of food gifts from relatives living in the rural areas or access to a small food plot can therefore help mitigate the risk of food insecurity. Rice gifts from relatives living in the rural areas in the Philippines and Thailand, for example, are part of the traditional social obligations and can help in smoothing out food consumption. Access to food plots especially in peri-urban areas (outskirts of the central business district) for urban gardening and poultry raising can affect the extent to which urban households can partly produce their own food, though this is very limited in urban squatter areas. Another way of reducing dependence on food purchases is for a household member to engage in activity that serves both as a source of income and direct source of food, such as the informal food sector. We next examine the characteristics of the informal food sector and the manner in which it can provide insurance to food access.

### *The Urban Informal Food Sector*

The informal food (supply) sector plays an important role in urban food security in two ways: first it serves as the food supply channel for the majority of the urban population, particularly, those living in poor neighbourhoods and slums, and second, it provides a source of livelihood for many workers in these areas (FAO 2001). Existing research on the urban food sector shows the ubiquity of activities relating to food production, catering and transport and retail distribution. They can be distinguished by size (based on assets, value added, and number of employees), by type of product and service, or by their relations with clients and suppliers. Lourenco-Lindell (1995) demonstrates that a clear hierarchy of sellers exist in the

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<sup>7</sup> The restricted incomes of poor city dwellers partially explain the appearance of institutions such as the Filipino *sari-sari* store, which sells dry goods, including foodstuffs, in very small quantities, often on credit. (FAO 2003 p. 11).



food distribution chain involving licensed (formal sector) wholesalers, commercial retailers, as well as informal operators of small dry goods stores and street hawkers at the bottom of the chain. This is also true for food production enterprises in which different scales of operation, locations of their production and marketing sites can be found (FAO 2001).<sup>8</sup> The lower section of the informal food sector business hierarchy, where majority of the workers in the urban slum areas are situated, are often family based and utilize unpaid family labor. It is typically characterized by relatively low capital investment, absence of accounts and tax-payment, and heavy reliance on social networks and personal relationships (FAO 2003).

Another interesting aspect of urban food enterprise activities is the nature of the business stocks that are managed on a tight flow basis with some inevitable interruptions or discontinuities. If the inventories remain unsold, what can be a significant loss as in the case of fresh or prepared food products brought about by food spoilage, is instead transformed as direct consumption goods providing food for their households and also to neighbours and friends, either at no charge or based on credit. This feature is particularly relevant to our study. It suggests that the choice of occupation in the food sector yield benefits to the worker as a source of earnings (monetary returns) and a source of food supply (non-monetary returns).

#### *Gender and Occupational Choice*

The above exposition identifies which households are likely to be vulnerable in terms of food insecurity in an urban environment and the reasons why their members are likely to engage in food-related enterprises as form of self-insurance. If so, are their certain household members likely to engage in food sector enterprise? More specifically, do gender roles influence the likelihood of self-employed women and men to be in the food sector differently?

A number of studies on the urban informal food sector show that women tend to be predominant in this sector. For example, the sector accounts for approximately 63% of urban female employment in Guatemala (Funkhouser 1996). In Ghana, women play a crucial role in the economy, controlling a large share of market activity and commodity trading (Levin et al. 1999). Ghanaian women have a strong presence in the urban economy, especially working as street food vendors and petty traders. Similarly the study by Maxwell (1999) indicates that much of urban women's activity has been in the form of small-scale, informal trading and in

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<sup>8</sup> Research on informal food distribution tends to focus on specific types such as urban street vending or food hawking (FAO 2001, Hugon and Kervarec 2003, Amis 1995). They reveal the experience of food insecurity and the coping strategies among the urban poor

the preparation and sale of food. The study of Naponen 1991 and Mitra 2005 also provide evidence of women workers at the lower-earning occupations, including those in the food sector. Several reasons are given for this. First, women, are constrained in selecting occupations that allow flexibility in location and time schedule as they are required to combine household responsibilities with employment. The food sector is quite ubiquitous and self-employed activities in food production, trading and retailing provide this flexibility requirement. Second, the gender-based concentration in food sector enterprises can be traced to gender-related differences in other dimensions such as access to credit, education, marketing or business networks, etc. Several types of food sector activities have low entry costs and little formal training or schooling requirement. This indicates however that high competition exists and the earnings are subject to shifting market conditions. A number of studies demonstrate that self-employed women workers crowd in lower paying types of food businesses, compared to men. For example, the study in Bissau by Lourenco-Lindell (1995) shows that women tend to dominate “the bottom of the hierarchy and operating at the lowest levels of profit and with the worst working conditions.” (p. 205). A third reason is cited by Malapit (2009) in her study of ‘sari-sari’ stores in the Philippines, which refers to the presence of older children to help in the business. For women with time constraints in performing household chores and operating a business, the availability of unpaid family workers provides additional necessary support.

The positioning of self-employed women in the food sector also has to do with their socially-ascribed roles as primary caregivers and household managers. In some household arrangements, the gender roles may extend to the undertaking of strategic measures to mitigate the risk of food shortage. Second, as with the formal sector, the occupations in the informal sector tends to follow gendered lines and are segmented along traditional ‘female’ and ‘male’ types of work, though this occupational segmentation may vary across countries. In most societies, women are perceived to ‘naturally’ possess cooking and other food-related skills, and thus assumed to be in a good position to undertake business activities related to food processing and food sales (FAO 2001, Levin et al. 1999, Mitra 2005).

The above discussion highlights the unique aspect of the urban food-related occupations namely, the jointness of consumption and production activity particularly the interlinkage of gender roles, food security and employment. While food businesses are highly heterogeneous in scale, size and level of earnings, the low and often variable returns found at the bottom of the business hierarchy may be offset by the use of the unsold inventories for consumption or for providing assistance to neighbours and friends, thus strengthening

personal relationships and social networks. The counter-cyclical type of self-insurance afforded by the nature of the products in food-related businesses is likely to be crucial to women in households that are vulnerable to food shortage. In the following section, we test our hypothesis that women in urban households vulnerable to food shortage, are likely to engage in food-related enterprises using a cross-country data of self-employed men and women in marginalized (predominantly squatter) areas.

#### **4. Data and Econometric model**

The analysis in this paper is based on the urban poor household survey data<sup>9</sup> collected during the period of June to September, 2002, in 13 randomly selected squatter communities of the major cities in Bolivia, Ecuador, Philippines and Thailand. These communities were selected to reflect the diversity of urban poor communities in terms of size, proximity to commercial areas, length of existence, and strength of social networks / community organizations. An additional consideration was the presence of local contacts such as community leaders and researchers in the areas. The four-country survey collected information related to informal employment, and home-based productive activities from heads and spouses (when present) separately using multi-visit interviews. It carries six core modules on household characteristics, informal employment, savings and assets, credit and participation in household decision making respectively and community characteristics. To check the reliability of the responses the questions on income, employment and assets were posed in different part of the survey module.

The original data has information on 1335 individuals.<sup>10</sup> It is common for the urban poor in developing countries to engage in multiple jobs. In our data, 141 individuals (10.6 per cent of the survey respondents) had at least two jobs.<sup>11</sup> We count the second work as a separate observation in the data, therefore ending with 1476 observations where the unit of analysis is 'work'. Of these 1476 observations, 208 (14 per cent) are non workers, 760 (52 per cent) are own-account or self-employed, 191 (13 per cent) are salaried workers with permanent or regular employment and 317 (21 per cent) are temporary or casual workers.

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<sup>9</sup> This data is collected by researchers from American University and Cornell University, together with those from local research institutions and community organizations in the four countries.

<sup>10</sup> The household sampling method made use the most recent census data available. Interviews were conducted in every seventh household of the community roster or mapping, as long as at least one household member (household head or spouse) was engaged in home-based work or other self-employed work activity within the informal sector.

<sup>11</sup> We find that about 50 percent of the individuals that have a second work, tend to be self employed in their second work (75 percent of these are also self-employed, 6 percent work as salaried workers and 20 percent are temporary workers in their first work respectively) .

Among the self-employed workers, 42.5 percent (323) are employed in the food related occupations or enterprise activities including street food vending, soft drinks retailing, home-based eateries, food processing and production, retailing, etc, whereas 57.5 per cent (437) are in the non-food sector such as carpentry, mechanics repair shop, artisan crafts, etc.

Before proceeding further, some data caveats and limitations are briefly noted. First, our study focuses on the squatter settlements where the majority of the urban poor reside (UN-Habitat 2003, Montgomery 2004). A large proportion of self employed workers in these areas operating very small businesses, a few of which hire 1-3 employees. Hence the sample is in the left tail (bottom quintile) of the urban population and urban enterprises. Second, only a small proportion of the self-employed workers in these communities have regular or stable earnings, based on recall questions regarding their earnings pattern in the past year. The use of cross-section data unfortunately does not allow us to examine the fluctuation in earnings and the movement of self-employed workers in and out of occupations. Third, the data uses an indirect measure of food insecure households, due to absence of information regarding food consumption expenditures nor the nutrition and health of children and household members. We use a proxy namely index of the quality of employment of the household workers called *jqi* that is developed by Floro and Messier (2008), which reflects the ability of the jobs undertaken by household members to provide economic security while not undermining workers' well-being. This is based on the premise that the more informal and irregular the type of employment of household members, the higher the risk of food shortage faced by the household. The *jqi* combines pertinent, identifiable characteristics that demonstrate work security or insecurity, whether these jobs take place in the formal and informal sectors. It takes into account the adequacy of earnings, access to non-wage benefits especially health insurance and social security, as well as the precariousness and riskiness of the job (to theft, police harassment and eviction). Admittedly, the last point is difficult to measure and so, we rely on indicators that are suggestive of this characteristic such as the number of jobs a person undertakes, the use of non-registered or mobile street space that increases the risk of police harassment, and the very long or very short paid work hours. Jobs that are relatively stable and regular, provide adequate or at least living wages and benefits such as bank clerk, policeman, etc are considered of better quality compared to precarious, short-term and casual types of jobs including street vending, bottle collecting, on-street car washing, washing clothes, etc.

The food-related occupations and enterprise activities in our data can predominantly be classified as the informal food sector<sup>12</sup>. Like the informal sector, finding an unequivocal definition of the concept of “informal food sector” is difficult. We use the FAO (2003, p.1) definition which identifies the activities of the informal food sector as: food production (urban and peri-urban); catering and transport; and the retail sale of fresh or prepared products (e.g. the stationary or itinerant sale of street food). As mentioned earlier, the food sector enterprises has a diversified nature ranging from the smallest types of retailers such as street hawkers and food vendors, to mobile cart eateries and small convenient stores (referred as ‘sari-sari’ stores in the Philippines that are typically located at a section of the ground floor of their house), to established eateries and grocery stores in rented commercial spaces and wholesale food trading.

Table 1 reflects the country-wise participation rates among self-employed workers in the informal food sector. Nearly half or more of the urban self-employed workers in Thailand and Philippines are engaged in informal food sector, but in Ecuador, it is the dominant sector, employing more than 71 percent of the self employed workers.

< Table 1 about here >

Table 2 shows that women’s participation as self-employed workers tends to be higher as compared to men. As discussed earlier in Section 3, there are several possible reasons for this. These commonly include women’s limited access to formal, regular jobs; their constrained mobility especially for those with household care work; and the need for irregular work hours to accommodate these time demands are some of the common reasons. Table 2 indicates that the informal food sector is the more preferred sector by women in our sample of self employed workers. Women’s participation in food-related occupations or businesses by far outstrips the men’s participation in all countries. Table 2, column 2 shows that two-thirds of the self-employed in the food related occupations or enterprise activities are women. In Bolivia, women participation in the food sector is as high as 89 percent. A similar trend is not observable for the self employed in the non-food where the percentage of women workers is relatively lower (Table 2, column 3).

< Table 2 about here >

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<sup>12</sup> Only 10 (3 per cent) of the food related occupations or enterprises are self employed in the semi-formal or formal sector.

The country-wise pertinent characteristics of the self-employed men and women workers are presented in Table 3. The self-employed in Bolivia tend to be slightly younger as compared to other countries. Self-employed women are on average, younger than their male counterpart (except in the Philippines), and have lower levels of education in all countries (except in Ecuador). Household size on average is about 4.5 members, indicating that they are mainly nuclear families. Bolivia and Philippines have higher percentage of children under the age of five, as well as those in the age groups of 6-12 years and 13-16 years. The average number of workers per household is two.

In urban squatter communities like the ones we investigate, ownership of land is rare. Most of the households reported being illegal occupants of the land they dwell in; a small number are in the process of obtaining legal titles of the land they are occupying at the time of the survey. Those that own land refer to their landholdings in the rural areas, where they originate. Other assets held by these households consist mostly of jewellery, transport vehicles such as bicycle, food cart, or small truck, and business tools e.g. sewing machine, stove, etc.. In almost all countries women have substantially lower monthly earnings as compared to men. However, in terms of hourly earnings, self-employed women in Bolivia and Thailand have higher earnings compared to men. Private monetary transfers in the form of kin assistance or remittances are more common among the self-employed workers and their households in Philippines, Thailand and Ecuador.

Private food transfer from friends and kin in the rural areas is relatively more common in the Asian countries. The percentage of households that shop in neighbourhood stores can be used as an indicator of food prices since neighborhood stores are likely to charge higher prices. About 58-77% of self-employed workers' households in Ecuador and Thailand shop in small neighbourhood stores compared to 24-49% in Philippines and Bolivia. About 15% of the self-employed women and their households in the Philippines and Thailand sample received food gifts and assistance, compared to 3% of the female households in Bolivia and Ecuador respectively.

< Table 3 about here >

Thus within the self-employed sector, we see stark differences between those engaged in the food and non-food sectors, and between self-employed women and men in the food sector.

Table 4 provides some pertinent characteristics of the self employed in the food related and non-food sectors. In general, women tend to be younger than men in both sectors. The percentage of single-headed household is much higher in the food related activities, and this is especially true for female-headed households. Childcare is likely to be a concern for about 40% of the self-employed, both in the food and non-food sectors. Self-employed women have lower educational attainment, compared to self-employed men. Those engaged in the food sector tend to have the same level of education as those in the non-food sector. However, men engaged in the food business lived relatively less number of years in the city compared to those in the non-food business.

< Table 4 about here >

In general, self-employed workers in the food sector live in more vulnerable households compared to other self-employed. They tend to have lower assets, earn lower hourly and monthly income as compared to those in the non-food sector. A lower percentage of women workers in the food sector receive money transfers from outside but a slightly larger proportion of them benefit from the food assistance and transfers from the relatives in the rural areas. Women in food-related enterprise activities tend to have lower earnings (per month), and lower returns to labor (earnings per hour). But we observe the opposite in the case of the non-food sector. Women in these businesses earn slightly more earnings (per month) and higher returns to labor (earnings per hour). One explanation for this is the fact that a smaller proportion of men work as self-employed compared to women in the household sample. Majority of men in these households especially in Thailand and Ecuador hold wage and salaried jobs in the formal sector as policemen, bank clerks, drivers, etc. Those that work as self-employed are engaged in diverse types of enterprises, ranging from capital-using enterprises such as metalcraft, auto repair shops, jeepney and public transport operation to own-account activities e.g carpentry, bottle collecting, on-street carwashing, etc. The majority of women in the sample, on the other hand are self-employed. Those engaged in the non-food sector include dressmakers, beauty and leather craft shop owners, etc, which yield, on average, higher earnings compared to that of men in the sector.

We next conduct probit analyses in order to examine the probability of participation in the food related occupations by self-employed men and women in urban, low-income households. More specifically, we examine the relationship between the explanatory variables of interest namely, gender and household vulnerability to food insecurity, and the dependent

variable (probability of participation in the food sector). Since the respondents in the samples are heads and spouses, we use the gender (female) dummy to indicate the level of household responsibilities of the self-employed worker. Further, we use the stylized fact that households whose members are engaged in precarious or low-quality jobs to indicate the extent of vulnerability to food insecurity. We test the hypotheses that women are more likely to engage in food sector than men given their gender roles and that vulnerable household are likely to insure themselves by choosing an occupation that provides them with non-pecuniary benefits in the form of food security.

We use the job quality index (*jqi*) measure developed by Messier and Floro (2007, 2008) to capture the quality of employment of each working household member, which is then averaged to get the household-level *jqi*. This normalized, composite index involves pertinent characteristics of jobs in both formal and informal sectors with a value ranging from 0 (low quality) to 1 (high quality). Specifically, households with low quality jobs ( low *jqi*) are associated with higher risk of food shortage. Their livelihoods have higher degree of job informality, are prone to excessive competition, more volatile earnings and greater susceptibility to theft, police harassment, accidents, especially those with no fixed location. Appendix A provides a description of the construction of the individual-level index. Households with workers in regular, formal sector jobs with benefits as well as self-employed workers engaged in skills and/or capital-using productive activities with established commercial spaces, relatively high earnings and reasonable working hours such as mechanic shop repair owners, food retail store owners, and tailoring and dressmaking shop owners have relatively high *jqi*. Households whose members are engaged as casual piece-rate workers, subcontracted homeworkers, daily domestic service workers, or are self-employed in excessively competitive activities e.g. as mobile food vendors, street hawkers, water sellers, bottle scavenger-sellers have lower household-level *jqi*.

We also take into account some pertinent household and individual characteristics to control for their effects. These include age, age squared, length of time living in the city, education, single-adult headship, household composition specifically no of children in various age groups, food price proxy (whether or not households shop for food in neighborhood stores), food transfers dummy, remittance dummy and country fixed effects (country dummy variables). Age and age squared are proxy for the lifecycle stage of the household. The no of years in city serves as proxy for extent of social networking. Personal relationships and social ties are often important in searching for jobs in urban centers. It also can affect the success of business endeavors in the urban informal sector, especially in dealing



with suppliers, creditors, and clientele. Thus, the longer a person has lived in the city, the more developed are her/his social networks. This may affect an individual's occupational choice in two ways. It can enhance access to raw materials and inputs including investment capital/credit and thereby lead to choose more productive activities that have potential for business expansion. Social networks can also help stabilize the business with a loyal clientele and thus increase earnings and reduce the risk of food insecurity.

Educational attainment (schooling years) is yet another factor that may influence an individual's choice of a particular sector to enhance his/her level of earnings. Those with more education have more skills that help broaden their business options. Single parent headship indicates the need to combine household and income earning responsibilities and increases the risk of food shortage since there are fewer adult workers. Years of schooling are also proxy for higher productivity that may affect a person's capacity to earn more, thereby lessening the need to smoothen consumption needs. The number of young children (ages 5 and below) imposes a time constraint allocated to market work because they must be cared for at all times. On the other hand, the presence of older children is likely to alleviate this pressure since they can care for younger children.<sup>13</sup> They also can provide unpaid work in family enterprises. Households that buy food from local neighborhood stores are likely to face higher food prices and therefore more likely to be at risk of food insecurity. Access to remittances may help alleviate the need to adopt insurance mechanism in the form of self-employment in food sector. Appendix B provides the definition of some of the other variables.

The probability that an individual  $i$  chooses to work in food related occupations or enterprise activities,  $P_{ij}$ , is influenced by the gender  $X_{ij}$  and household employment characteristic,  $Y_j$  as well as other individual  $i$ -level, household  $j$  and country  $k$  -level characteristics  $Z_{ijk}$ . This is expressed in the following reduced form equation:

$$P_{ij}^* = X_{ij}\beta_1 + Y_{ij}\beta_2 + Z_{ij}\gamma + \varepsilon_{ij} \quad (1)$$

where  $X_{ij}$ ,  $Y_j$ , and  $Z_{ijk}$  are vectors of observable characteristics at the individual and household levels respectively, which influence the dependent variable. Both  $\beta_i$  and  $\gamma$  are unknown parameters to be estimated. The random error term,  $\varepsilon_{ijk}$ , capture the unobserved country

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<sup>13</sup> Most households are nuclear families with low probability of having support of other adult members.

fixed effects, household-specific effects, and the random individual effects. We estimate this for all self-employed workers and then separately for self-employed women and men using probit analysis and the results (with robust standard errors) are presented in Table 5.

< Table 5 about here >

With respect to the probability of participation in the food related occupations or enterprise activities (Table 5, column 1), the gender dummy variable has the predicted, positive and significant (at 5% level) effect.<sup>14</sup> The marginal effect of the gender dummy, with value ‘1’ for women and ‘0’ for men, implies that women have a 11 percentage points higher probability of participating in the food sector compared to men. The results also show that a marginal decline in the household level job quality index increases the participation in the food sector by 25 percentage points and this is significant at 10 percent level. Similarly, a marginal decrease in the years spent in the city is associated with a 1 percentage point increase in participation. Single headed households have a 16 percent higher probability of food sector participation and country dummies are also statistically significant

We next decompose the self employed workers by gender and conduct separate probit tests for self-employed women (Table 5, column 2) and self-employed men (Table 5, column 3). In particular we investigate the factors leading to greater participation in the food sector. For self-employed women, being female-headed, having more children under the age of five and low quality of employment are the most significant factors in influencing the probability of choosing to work in the food sector. This tends to support the argument made earlier in the paper that the food sector enables women to combine household production and care work with their livelihood pursuits, particularly in terms of taking care of young children. Participation in the food sector also allows for greater possibility of food security and insurance for vulnerable households, which are proxied by single headed households and household-level job quality index. In fact, a marginal decrease in the household job quality index increases women’s participation in the food sector by 30 percent and this is statistically significant at 5 percent level. Country dummies for Philippines and Bolivia are also significant, which suggests that self-employed women in Philippines and Bolivia are

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<sup>14</sup> We also estimated a Multinomial Logit model for all work categories (no work, salaried, self-employed in food and temporary) with self-employed in the non-food as the reference category. The results show that self-employed in non-food as the reference category, sex is statistically significant (with a negative sign) for the food sector, indicating higher probability for female participation. Workers with salaried and temporary work have a higher male probability of participation.

respectively 34 and 43 percent less likely to work in the food sector compared to Ecuador. We do not observe any such pattern for the self-employed men, apart from the fact that the newer migrants (lower number of years in the city) are more likely to participate, engage in the food-related enterprises.

The probability of food sector participation is further investigated in Table 6 from a country-wise perspective. The gender dummy is a significant covariate across all countries. Women have a significant and higher probability of participation in food-related occupations and activities. This probability is highest for Bolivia (43 percentage points) and lowest for Ecuador (17 percentage points). In both Philippines and Thailand, households whose members are employed in low quality jobs are very likely to participate in the food sector, hence the insurance provided by the food business may play a significant role. There are other country-wise differences in the choice of sector within the self-employed. For the Thai self-employed, the number of years in the city and the increased competition has a decreasing effect on the probability of food sector participation. The effect of household vulnerability is found not statistically significant however in the case of Bolivia and Ecuador, which indicates that there may be observed as well as unobserved household and individual characteristics affecting the participation in food sector. In the case of Bolivian households, being single parent lowers the probability of being in food-related business by 14 percentage points, Food transfers from rural areas also seem to have a statistically significant and positive effect. A possible explanation for this result is that access to raw materials and inputs from rural areas creates incentive for an urban, self-employed worker to engage in food retailing or processing business. Self-employed workers in Ecuador who are newer migrants or have lived less time in the city are likely to engage in the food sector business. Similarly the presence of children between 6-12 years of age lowers the probability of food sector participation by 10 percentage points. This suggests that there may be other types of home-based enterprises that are conducive for those workers with these age group dependents such as tradecrafts, etc. Contrary to those in Bolivia, Ecuadoran urban squatter households that receive food transfers are less likely to engage in the food sector.

< Table 6 about here >

## **5. Concluding Remarks**

Food insecurity, along with poverty, remain to be major challenges that the world faces today despite widespread commitment to eradicate them. Progress towards attainment of

food security has been slow partly because this concern is experienced in varied ways by different segments of the population. The accelerated urban expansion and rising urban poverty has made the food security of urban households a growing concern and priority of governments. We examine in this paper the likely effect of food security concern on the occupational choice among self-employed urban workers. Our investigation focuses on self-employed women and men using a multi-country sample in marginalized urban (predominantly urban squatter) communities in Bolivia, Ecuador, Philippines and Thailand. Using probit tests, we investigate whether household vulnerability or the need to provide self-insurance towards food security influences occupational choice and whether there are gender dimensions in the likelihood response of women and men household members to the risk of food shortage.

Our findings show that self-employed women in households facing higher risk of food insecurity are likely to engage in food-related enterprise activities and this is especially true in Philippines and Thailand. The results indicate the importance of occupational choice as a mechanism to mitigate the risk of food shortage through the selection of an income-generating activity that allows the direct use of unsold inventories for food consumption. With urban poverty on the rise and nearly half of the world's population living in the urban areas, there is an urgent need to focus on this marginalised group. This study raises the need to better understand the problem of urban food insecurity, which has gender dimensions, and is directly linked with the urban poverty and vulnerability.

*Table 1: Types of Occupation among Self-Employed Workers in Marginalized Urban Low-Communities, by Type of Occupation and Country.*

	All Self-employed		Food Related Businesses <sup>a</sup>		Non-Food related Businesses <sup>b</sup>	
	No.	% of total Self-Empld	No.	% in Food	No.	% in Non-Food
Bolivia	265	35	70	26	195	74
Ecuador	215	28	153	71	62	29
Thailand	179	24	88	49	91	51
Philippines	101	13	54	53	47	47
Sample Size	760	100	365	48	395	52

Notes:

<sup>a</sup>Types of occupations in food and related businesses include food production (urban and peri-urban); catering and transport; and the retail sale of fresh or prepared products (e.g. the stationary or itinerant sale of street food)

<sup>b</sup>Types of occupations in non-food related businesses include tailoring, dressmaking, carpentry, mechanics repair shop, crafts-making, non-food retailing, stone-setting, garbage collecting, taxi or jeepney driving etc.

*Table 2: Women's Participation in Self-employment, by Type of Occupation (in percent of total).*

	All Self-employed	Self Employed in food	Self-Employed in Non-Food
	(1)	(2)	(3)
Bolivia	52	89	39
Ecuador	61	67	45
Thailand	61	72	51
Philippines	65	74	55

*Table3: Characteristics of Self-Employed Workers and their Households, by country and Gender (standard deviations in parentheses)*

Variable Name	BOLIVIA		ECUADOR		THAILAND		PHILIPPINES	
	(1) Women	(2) Men	(3) Women	(4) Men	(5) Women	(6) Men	(7) Women	(8) Men
Mean age (years)	37.1 (8.7)	40.1 (9.5)	40.6 (11)	41 (10)	41 (10.5)	44 (12)	41.4 (12.5)	39 (10)
% of single headed households	10	13	39	18	18	1	17	0
Average household size	5.4 (2)	5.2 (2.2)	4 (1.7)	4 (1.4)	3.8 (1.3)	4.2 (1.6)	5.3 (2.3)	5.5 (2.4)
% of households with kids< 5 yrs	52	45	34	37	35	34	56	66
% of households with children between 6-12 yrs	64	65	50	52	40	43	55	51
% of households with children between 13-16 yrs	46	47	28	29	22	19	32	23
Mean years living in city	26 (12)	26 (14)	28 (14.1)	25 (13)	23 (14.1)	24 (12)	25 (18)	19.5 (11)
Average years of schooling	6.2 (4)	9.5 (3.5)	9.4 (3.2)	8.5 (3.8)	6 (3)	7 (3)	6 (4)	7.5 (3)
Percent of households with rural land holdings	35	38	14	17	10	16	5	0
% of hhs that receive transfers	3	2	12	11	12	16	15	26
Average no. of workers in households	2 (0.6)	2 (0.7)	1.9 (0.8)	1.7 (0.7)	2.3 (0.9)	2.4 (0.9)	2.1 (0.9)	2 (1.1)
Average monthly household income <sup>a</sup>	318 (261)	329 (284)	312 (180)	333 (170)	434 (283)	436 (270)	272 (236)	215 (115)
% of households that shop in neighborhood stores.	24	27	58	60	77	74	39	49

*Table 3 contd: Characteristics of Self-Employed Workers and their Households, by country and sex (standard deviations in parentheses)*

<i>Variable Name</i>	BOLIVIA		ECUADOR		THAILAND		PHILIPPINES	
	(1) Women	(2) Men	(3) Women	(4) Men	(5) Women	(6) Men	(7) Women	(8) Men
% of households that receive food (transfers) from rural relatives	2	4	2	0	14	20	17	0
Sample size	138	127	131	84	109	70	66	35

Notes: <sup>a</sup> The earnings and income figures are in USD.

*Table 4: Characteristics of Self-Employed Workers and their Households, by Type of Occupation and by Gender (standard deviations in parentheses)*

<i>Variable Name</i>	<i>All Self-Employed</i>		<i>Food-Related Occupation</i>		<i>Non-Food Related Occupation</i>	
	(1) Women	(2) Men	(3) Women	(4) Men	(5) Women	(6) Men
Mean age (years)	40 (10)	41 (10)	40.1 (11)	41(11.2)	39 (9.6)	41 (10)
Percentage of single headed households	21.6	10.1	24	10	18	10
Average household size	4.6 (2)	4.7 (2)	4.5 (2)	4.4 (1.9)	4.7 (1.9)	4.9 (2)
Percentage of households with children under the age of 5 yrs	43	43	43	39	43	44
% of households with children between 6-12 yrs	52	55	51	53	55	56
% of households with children between 13-16 yrs	33	33	32	26	34	36
No. of years in city	25 (14.1)	24.4 (13.1)	25.2 (15)	20.6 (13.2)	25.7(12.6)	26.1 (12.8)
No. of years in school	7 (3.7)	8.4 (3.7)	7(3.8)	8 (3.5)	7 (3.5)	8.5 (3.7)
Percent of households with rural landholdings	18	23	14.9	14.4	23	27
% of households that receive transfers	10	10	8.7 (42.2)	11.8 (48.2)	10.6 (71.6)	6.8 (54.5)
Average no. of workers in households	2.1 (0.8)	2 (0.8)	2 (0.8)	2 (0.8)	2 (0.9)	2 (0.8)
Average monthly household income	338 (248)	341 (247)	315 (207)	346 (232)	343 (297)	339 (254)



*Table 4 Contd: Characteristics of Self-Employed Workers and their Households, by Type of Occupation and by Sex (standard deviations in parentheses)*

<i>Variable Name</i>	All Self-Employed		Food-Related Occupation		Non-Food Related Occupation	
	(1) Women	(2) Men	(3) Women	(4) Men	(5) Women	(6) Men
% of households that shop in stores	49.3	48.4	50	59	49	44
% of households that receive food (transfers) from rural relatives	7.2	6	7	5	7	6
Sample size	444	316	268	97	176	219

*Table 5: Probit for Participation in Food sector by Gender, with marginal effects, (robust standard errors) and [semi-elasticities]*

	All Food (1)	Food Women (2)	Food Men (3)
Gender (female)	0.11 (0.50)** [-0.05]	-	-
Household level job quality indicator	-0.25 (0.14)* [-0.20]	-0.3 (0.17)* [-0.01]	-0.17 (0.20) [-0.12]
Age	-0.13 (0.01) [-0.53]	-0.014 (0.014) [-0.56]	-0.014 (0.02) [-0.60]
Age-square	0.0002 (0.0001) [0.37]	0.0002 (.0002) [0.40]	0.0002 (.0002) [0.34]
No. of years in city	-0.01 (0.001)*** [-0.13]	-0.003 (0.002) [-0.07]	-0.01(0.002)*** [-0.20]
No. of years in school	0.004 (0.01) [0.33]	0.003 (0.01) [0.02]	0.01 (0.01) [0.06]
Single-headed household dummy	0.16 (0.06)*** [0.03]	0.18 (0.07)** [0.04]	-0.1 (0.1) [-0.01]
No. of children with $\leq 5$ yrs	0.03 (0.03) [0.02]	0.06 (0.03)* [0.04]	-0.05 (0.04) [-0.03]
No. of children between 6-12 yrs	0.003 (0.02) [0.003]	0.01 (0.03) [0.01]	-0.003 (0.03) [-0.003]
Food shopping in neighborhood dummy	0.02 (0.04) [0.03]	0.003 (0.05) [0.01]	0.12 (0.06) [0.02]
Received food transfers dummy	0.01 (0.08) [0.001]	0.05 (0.1) [0.003]	-0.06 (0.10) [-0.004]
Received remittances dummy	-0.0003 (0.0004) [-0.003]	-0.001 (0.001) [-0.21]	0.001 (0.001) [0.004]
Philippines	-0.2 (0.7)*** [-0.01]	-0.34 (0.14)** [-0.01]	-0.15 (0.06)*** [-0.02]
Bolivia	-0.5 (0.04)*** [-0.12]	-0.43 (0.1)*** [-0.02]	-0.46 (0.05)*** [-0.22]
Thailand	-0.2 (0.07)** [-0.02]	-0.1 (0.2) [-0.004]	-0.17 (0.06)*** [-0.04]

*Notes:* \*\*\* Significant at the 1 % level. \*\* Significant at the 5 % level. \* Significant at the 10 % level. The t-ratio in parenthesis. Monetary variables in USD.

Control variables such as wealth dummy and no of children between ages 13-16 years are also included but are found not significant and are not reported in the table.

*Table 6: Country-wise Probit for Participation in Food sector, with marginal effects, (robust standard errors) and [semi-elasticities]*

*Notes: \*\*\* Significant at the 1 % level. \*\* Significant at the 5 % level. \* Significant at the 10 % level. The t-ratio in parenthesis. Monetary variables in USD.*

	Bolivia (1)	Ecuador (2)	Philippines (3)	Thailand (4)
Gender (female)	0.43 (0.1)*** [-0.22]	0.17 (0.1)* [-0.10]	0.30 (0.14)** [-0.11]	-0.28 (0.13)** [-0.12]
Household level job quality indicator	-0.05 (0.19) [-0.03]	0.02 (0.25) [0.02]	-1.15 (0.5)** [-0.80]	-0.54 (0.30)* [-0.40]
Age	0.01 (0.02) [0.24]	-0.1(0.03)** [-2.82]	0.02 (0.03) [0.80]	-0.02 (0.03) [-0.74]
Age-square	-0.00009 (0.0003) [-0.01]	0.001 (0.0004)** [1.60]	-0.0002 (.0004) [-0.40]	0.0002 (0.0004) [0.39]
No. of years in city	-0.003 (0.002) [-0.1]	-0.01 (0.003)*** [-0.21]	0.01 (0.01) [0.15]	-0.01 (0.004)* [-0.16]
No. of years in school	0.01 (0.01) [0.01]	0.01 (0.01) [0.05]	-0.02 (0.02) [-0.15]	0.01 (0.02) [0.08]
Single headed households	-0.14 (0.06)** [-0.02]	0.1 (0.1) [0.02]	-0.1 (0.3) [-0.01]	0.07 (0.2) [0.01]
No. of children with < 5 yrs	0.02 (0.03) [0.02]	0.03 (0.1) [0.02]	0.03 (0.06) [0.03]	-0.1 (0.1) [-0.04]
No. of children between 6-12 yrs	0.03 (0.03) [0.04]	-0.1 (0.03)** [-0.1]	0.1 (0.06) [0.08]	0.04 (0.07) [0.02]
Food shopping in neighborhood dummy	0.07 (0.06) [0.12]	-0.06 (0.08) [-0.1]	0.2 (0.13) [0.25]	0.34 (0.10)*** [0.42]
Received food transfers dummy	0.50 (0.27)* [0.01]	-0.54 (0.25)** [-0.01]	0.11 (0.22) [0.01]	0.05 (0.12) [0.01]
Received remittances dummy	-0.001 (0.003) [-0.01]	0.0002 (0.001) [0.002]	0.0001 (0.001) [0.002]	0.14 (0.01)** [0.04]
El Alto	0.12 (0.14) [0.02]	-	-	-
La Paz	0.1 (0.13) [0.02]	-	-	-
Bastion Popular	-	-0.01 (0.11) [-0.002]	-	-
Ex Combatista <sup>41</sup>	-	-0.18 (0.17) [-0.014]	-	-
Barrio Neuvo	-	-0.20 (0.30) [-0.004]	-	-
Lucha de los Pobres	-	-0.28 (0.18) [-0.02]	-	-
Solanda	-	-0.16 (0.16) [-0.02]	-	-
Del Pan	-	-	-0.1 (0.17) [-0.03]	-
Nawamin	-	-	-	-0.20 (0.169) [-0.04]
Nomklao	-	-	-	0.05 (0.16) [0.01]

Santa Cruz, Itchimbia, Inarawan and Udomsuk are the reference neighborhoods for Bolivia, Ecuador, Philippines and Thailand, respectively.



## APPENDICES

### *Appendix A: Constructing the Job Quality Index for Each Worker in the Household \**

Component	Definition	Threshold	Value in jqi
Adequate Earnings	Adequate earnings are defined as earnings sufficient to support the worker and one other individual above the poverty threshold	Below poverty line (2 dollars a day) per month	0
		Equal to or above poverty line per month	1
Adequate hours of work	Number of hours worked per week in the job.	$\leq 48$	1
		$48 < Hours \leq 80$	0
		$>80$	-1
Number of jobs	Current number of jobs worked for pay	Num Jobs=1	1
		Num Jobs=2	0
		Num Jobs>2	-1
Job Location	Physical location where majority of work is preformed	Commercial space	1
		No fixed location (non-registered street stall or mobile)	0
Non-wage Benefits	Job provision of non wage benefits such as social security, health benefits, etc.	Offers non wage benefits	1
		No benefits	0

Notes: \* See Floro and Messier (2009) for discussion of the construction of job quality index for examining the quality of employment among informal as well as formal sector workers.

$$\text{Household-level job quality index: } \left[ \sum_{i=1}^n \text{jqi} \right] \div n \text{ where } n = \text{no of workers in the household}$$

*Appendix B: Description of Dummy Variables used in Probit Estimations*

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Single-headed household dummy	1= if household is single-adult headed;  0= otherwise.
Food shopping in neighborhood store dummy	1= if household typically buy food in neighborhood; 0= otherwise.
Received food transfers dummy	1= if household received food (rice, meat, etc) from r  rural; 0= otherwise
Received remittances dummy	1= if household received any remittances in the past 6 months; 0= otherwise

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