# Impacts of Migration on the Livelihoods of Urban Settlers: A Case in Point of Port Moresby

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## Abstract

This paper examined the effects of rural-urban migration on the suburban communities of Port Moresby (Gerehu) of Papua New Guinea. Data were obtained using quantitative method comprising questionnaire surveys.

Seven Stages of Gerehu were selected based on population size and spatial equity from a population of almost 40 to 50 thousand people. From each of the Stages, fifty six migrant (who has migrated from the rural villages) households were sampled for the study. Multinomial logit model and cluster analyses were used to estimate and categorize the effects of rural-urban migration. The conceptual framework employed was a modified version of the sustainable livelihoods framework. Measures of household capital were derived using principle component analysis, or directly from survey responses. Six mutually exclusive livelihood strategies were identified using cluster analysis. The regression analysis shows that rural-urban migration has impacted on the livelihoods of migrants. There were no significant impacts of migration on the choice of livelihood (using multinomial logit model), other than the choice of "urban mixed" livelihood was 5.7 times more likely than "agriculture" livelihood for those migrating into the urban centers ($p = 0.050$).

Based on the findings, recommendations such as initiation and strengthening of the informal sector whereby people migrating can easily be engaged in and strengthening of the social safety net (Wantok system). Development projects based on the identified needs of each of the urban communities must be implemented to cater for the increase in the migrants.

**Keywords**: Migration, cluster analysis, multinomial logit regression, livelihoods

## 1.0. Introduction

Papua New Guinea (PNG) is made up of over 800 different languages with more than 1000 different cultural groups. In fact, PNG is a small developing country by world standard however diversity in its people has made PNG a huge country that has over 800 small different countries with a million more societies in it and uniting them into one nation remains a big challenge (Kora, 2010). With rugged mountains, fast flowing rivers and uniting them will always be a big challenge. He further commented on the Bulolo Ethnic Clash in 2010 said, "our big cities like Port Moresby and Lae are made up of thousand tribes within a country". This country's rural people are clustered in most remote places in the country and most of those people are living below poverty line. A study conducted by Rogers (2001)[1] in Obura-Wonenara in Eastern Highlands province confirmed that our remote people are by far the poorest people. In the remote PNG where 85 percent of our people lives, the basic infrastructure such as health, education and descent roads are very minimal or non- existences. For example, Yangis in Kompiam – Ambum District of Enga Province, there is hardly tangible development since independence in 1975; there is no health care, no education for kids, mothers and children are dying of curable diseases. In such places, most people have not seen the face of the money for months and years. In comparison, the urban centers are developing at a faster rate however our urban centers are experiencing over crowdedness as a resulting of people moving into the main centers. There is a huge wave of migration from rural to urban areas in recent times due to limited opportunities. These basic services are limited due to over crowded with increasing population. The goods and services provided are not enough. As a result of impact projects like PNGLNG and other mining operations with huge increase in the construction sector especially in the main centers, remains as a pull factor.

The urban dwellers seem to enjoy better services such as health, education and transport infrastructures. The people in the rural villages migrate to the bigger towns and cities in the hope of securing a better future and a better life. Rural-urban migration results from the search for perceived or real opportunities as a consequence of rural-urban inequality in wealth. This inequality and/or urban bias in development according to research findings over the years results from the overwhelming concentration of wealth, assets, purchasing capacity, economic activities,

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[1] From Australian National University.

and variety of services in the urban centres as well as the continued neglect and degradation of rural environments.

 Migration has caused a huge problem and it will continue to cause problems for policy makers in PNG today. Population movements, whether haphazard or ordered, are regarded as a threat to stability and a challenge to established lifestyles (McDowell & De Haan, 1997). It is predicted that, in the near future, there will be over crowdedness. Currently, there is signs and symptoms of what is about to happen. Population movement, however, is not an exclusively modern phenomenon to PNG because historically our people have moved from place to place however the current movement is because of poverty in the rural villages and the opportunities available in the main urban centers.

According to the basic two sector model of rural urban labour migration by Harris and Todaro (1970), it was noted that the model was born out of discontent with vague and "amorphous explanations such as the "bright lights" of the city acting as a magnet to lure peasants into urban areas" (p. 126). Such is experienced in PNG where there seem to be a lot of opportunities in the cities and towns compared to the rural areas where people are being attracted. Very few migrating into the towns and cities have realized those dreams however, most hand up in squatter settlements and practice livelihood that are unsustainable that makes them frustrated and distressful. They hand up engaging in unwanted lifestyles such as becoming a criminal to make a living.  According to Levantis (1997) as cited by Kavan (2013) urban migration is a result of increase in crime in PNG. They become burdensome to their relatives who are working and earning less income compared to the living standard in the towns and cities. Most of these migrants hand up in informal sectors.  According to Kavan, (2013) in his study; one of the factors that influence the growth of the urban informal sector is rural-urban migration. Migration affects the people's livelihood. Migration can also play an important role in improving livelihoods however, experiences in PNG has seen the opposite. However, in this paper, it asks the questions of "how has migrations affected the livelihoods in urban settlers and established ways that can be used to minimise these impacts, the likely coping strategies?"  Furthermore, this study will establish impacts of migration on food and income security and their overall wellbeing.  Finally, it will conclude.

## 2. Sustainable Livelihoods and Migration

### 2.1. Sustainable Livelihoods

Sustainable livelihood[2] is a way of thinking about the objectives, scope and priorities for development in order to enhance progress in poverty elimination (Ashley & Carney 1999). Its main objective is for the poor and the marginalized to realize some form of improvement against the indicators of poverty. According to Carney (1998), livelihood is defined as a means of living and the capabilities, assets and activities required for it. A livelihood encompasses income as well as social institutions, gender relations and property rights required to support and sustain a certain standard of living (Ellis, 1998). Livelihood approaches are conceptual frameworks that promote people-centred development. It is primarily a conceptual framework for analysing the causes of poverty, people's access to resources and their diverse livelihoods activities and the relationship between relevant factors at micro, intermediate and macro levels (Hussein, 2002). The livelihoods are affected by rural – urban migration. This is shown in the studies done. In most of these studies, the impacts of rural – urban migration were felt at different levels. In PNG there were number of studies undertaken however not specially about impacts on the household livelihoods as a result of rural – urban migration. The studies conducted in PNG mainly talked about impacts on the informal sector and results of rural urban migration in the main cities and towns.

### 2.2. Rural – Urban Migration and its Impacts on Livelihoods in PNG

Deshingkar and Grimm (2004) noted that "rural-rural migration is typically undertaken by poorer groups with little education and other assets as it requires lower investments in PNG. Most rural people in PNG are categorized as poor as the basic services are not within reach in those areas. Therefore such environment created pushes the rural people into the urban centres. This was also

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[2] The term livelihood attempts to capture not just what people do in order to make a living, but the resources that provide them with the capability to build a satisfactory living, the risk factors that they must consider in managing their resources, and the institutional and policy context that either helps or hinders them in their pursuit of a viable or improving living (Ellis, 2003).

supported by Kavan (2013) from his study in Urban Port Moresby and Lae that one of the factors that increase the informal sector activities in PNG was rural-urban migration. Chand and Levantis (2000) highlighted that "in PNG, the real appreciation from the mineral boom induces labour migration from rural to urban regions due to a fall in the price of agricultural exports – the main source of cash incomes in the rural areas. And in Kimbe, West New Britain's capital, over one-third of the populations have migrated to the area from elsewhere in the province and mainland PNG (Koczberski, et. al., 2006).  The resource owners in Kimbe Bay are facing several challenges such as changing village socio-political systems, high population growth rates, poaching of marine resources, increasing use of destructive fishing methods, rising cash needs, and, in some areas, the loss of traditional income sources like cocoa and copra.  However, study by Umezaki and Ohtsuka (2003) was different and yielded opposite results.  It examined adaptive strategies of Huli-speaking migrants from the Tari Basin in the Hela Province to Port Moresby. The study revealed that the subject households relied for their livelihood on a variety of activities in the informal sector and jobs in the formal sector. Unexpectedly, the average income of households that exclusively depended on informal sector jobs was equivalent to, or higher than, that of households which included an employee in the formal sector. Wang and Kyoko (2012) who supported these results discovered that about 60 percent of the urban respondents[3] claimed that they rely solely on informal sector as source of income and livelihoods.  Most of this people engage in informal sectors are migrants from the rural part of PNG. Umezaki and Ohtsuka (2003) further highlighted that food and nutrient intakes by the Huli people in Port Moresby did not vary widely from the rural communities because leveling mechanisms among households, which are social norms in their homeland, still function in the urban settlements.

### 2.3. Migration in other Developing Countries

Gibson, & Gurmu, (2012) based their study on five Ethiopia villages. They used data from longitudinal study.  It investigated the impact of a recent rural development initiative on rural to urban migration of young adults (15 – 30 years) and discovered rural migration appears to be a response to increasing rural resource scarcity, principally competition for agricultural land.

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[3] Urban Respondents were from Lae, Madang, Port Moresby, Mt. Hagen and Kokopo/Rabaul

Ajaero and Onokala (2013) examined the effects of rural-urban migration on the rural communities of Southeastern Nigeria by using mixed methods approach comprising questionnaire surveys and key informant interviews. The results showed that rural-urban migration contributes significantly towards the development of their rural communities through monetary remittances and the involvement of the rural-urban migrants in community development projects. Gugler (1991) studied urban-rural ties in what then Eastern Nigeria were remarkably strong in 1961-1962, suggesting that urban dwellers lived in a dual system: fully committed to urban life and, at the same time, belonging to the rural community from which they had come ( similar to the case of Huli people in PNG). The 1987 replication of a survey carried out in 1961 in Enugu, the largest city in southeastern Nigeria, indicated the need to distinguish patterns of rural-urban migration and to assess their consequences for the rapidly growing cities of the Third World and their hinterland.

Qin (2010), in his paper empirically evaluated a conceptual framework incorporating rural household livelihoods as an integrative mediating factor between rural migration and the rural environment in the context of rural-to-urban labor migration in Chongqing Municipality, Southwest China. Results confirm the hypothesis that labor-migrant and non-labor-migrant households differ significantly in livelihood activities including agricultural production, agricultural technology use, income and consumption, and resource use and management. Manda (2011) undertook his research in Kasama District of the Northern Province of Zambia. Data were collected from 130 households and thirteen village industry entrepreneurs from four villages in the district. The results indicated that; it reduces unemployment in the countryside, migration provides the village with working capital for farming and non-farm enterprises such as village industries, and perhaps more importantly, some migrants acquire skills and ideas and receptivity to new ideas and innovation which have been instrumental in the development of the few village industries that exist. Hence rural poverty persists and urban-bound migration continues in search of economic betterment. Awumbila, (2012) study was based in Ghana. It discovered that rapid urban population growth and increasing urbanisation are evident in Ghana. By 2010 the proportion of the population living in urban areas was 50.9 per cent up from 43.8 percent in 2000 and projected to increase to 63 percent by 2025. The contribution of

migration to the urbanisation process in Ghana is estimated to be significant. Rural- urban migration has been an integral part of people's livelihood strategy in Ghana.

Deshingkar (2012) in his study following economic theories of labour migration as a risk management strategy for the rural poor, it was hypothesized that cash transfers would reduce the need to migrate. The results show that migration among the young continues regardless of the amount and frequency of cash transfers and mainly to urban destinations within the country. While cash transfers appeared to have little influence on the decision to migrate, there are many non-economic reasons for the young to migrate, including a desire to experience a better life or to escape abuse and neglect. Melde (2012) supported Deshingkar (2012) in his study which indicated that that rural-to-urban migration is believed to significantly affect various dimensions of migrants' well-being. Finally, Jones (2012) argued that freedoms, such as the opportunity to live long and healthy lives, access to education and choice of employment are components of human development. Movements from rural villages to large cities are often undertaken with the aspiration of improved opportunities for socio-economic advancement. However in reality, rural – to – urban migration does not always entail improvement of living standards and poverty reduction.

## 3. Methods

A research on the impacts of migration was carried in 2013 in Port Moresby. About 56 respondents were interviewed. Those respondents were migrants especially from the highlands region of PNG. The highlanders were chosen because a study by Kavan (2013), it interestingly noted that, highlanders are mostly migrating to urban areas, especially, Port Moresby and Lae. The study was to identify how these migrants are sustaining their livelihood whilst settling in an urban area. The study further wanted to identify the reasons of them migrating.

The conceptual framework that will be employed by this research will be a modified version of the sustainable livelihoods framework (SLF). The null hypothesis is that there would be no net impact of migration on the livelihoods of the urban settlers. The framework is based on the SLF (Scoones, 1998). This research will employ the Sustainable Livelihoods Approach (SLA) in

order to understand the impact of migration on the household assets and the various responses adopted by different households. SLA must take into consideration the impacts of migration on the settlers' livelihoods and generate a deeper understanding of the wide range of livelihood strategies. Impacts of the migration are a threat to sustainable livelihood through its systemic impact. The impacts of migration on the urban settlers do not merely affect certain SLF components leaving others unaffected. If one component of the system is affected, it is likely that others will also be affected either directly or indirectly. The impact of migration on the urban settlers' livelihoods is not only cross-sectoral, but more importantly systemic. In realizing that, studying impacts of migration on the SLF can help in identifying ways to help the marginalized. SLA places the disadvantaged, the marginalized and the poor at the center of development. SLF is useful for analysis in research and applied development organizations because it has a number of basic elements that are important.

### 3.1. Data Collection Method

Current and retrospective survey, data were collected in Port Moresby in National Capital District, PNG from personal interviews. All areas in Gerehu were included and using random sampling, a sample of 56 households were collected and interviewed and that formed part of the survey. The survey for data collection will be framed mainly using quantitative approach. The study used modified version of the SLA. Livelihood assets were inscribed on the questionnaires to investigate household's access to human, natural, physical, financial and social capital. Livelihood choices and outcomes were also classified as migration had impacted on it. The following variables were used: Poverty, food security, income security and welfare indicator.

### 3.2. Data Transformation

Measures of household capital were derived using principle component analysis (PCA), or directly from survey responses. The PCA is a standard multivariate statistical technique (Holmes, 2010). It is a technique that is used to compute linear combinations of variables to identify latent dimensions in the data. It is used as a data reduction technique to identify a small set of variables that account for a large portion of the total variance in the original variables (Slottje, 1991).

### 3.3. Econometrics Specification

The augmented different-in-difference approach was used to evaluate the net impacts of migration on the urban settler's livelihoods. It measured household capital, livelihood choice, measures of food and income security and two subjective measures of overall well – being.

### 3.3.1. Multinomial Logit Model

Multinomial Logit (MNL) model can now be used to measure and quantify the individual household livelihood choices that were established in this study. MNL is often widely used in discrete choice modelling specification and widely used functional form for discrete probabilities (Hausman and McFadden, 1984). Multivariate integration is not required because choice probabilities models deliver a suitable closed form. This model assumes that the decision makers make their choice on the basis of maximizing their utility. It is called the random utility model. The decisions makers can be individuals and others who are in the business of making informed decisions in maximizing their utility. MNL Models are used in such situations based on choices that involve different estimates for all paired groupings of the dependent variable. Such, different effects of particular variables within each group can be identified (Petrucci, 2009). In here, we represent cluster labels, using a "1-of-m" encoding vector $y = [y^{(1)}, y^{(2)}, ..., y^{(m)}]^T$ such that $y^{(i)} = 1$ if $x$ corresponds to an example belong to cluster $i$ and $y^{(i)} = 0$ otherwise. The $n$ household samples can thus be characterized as a set of household data, $D = \{(x_1, y_1), ..., (x_{1n}, y_n)\}$. Under a MNL regression model (Krishnapuram et al., 2005, p. 958), the probability that $x$ belongs to cluster $i$ is written as

$$(1): \ P\left(y^{(i)} = 1 \mid x, w\right) = \frac{\exp\left(w^{(i)T}x\right)}{\sum_{j=1}^{m} \exp\left(w^{(i)T}x\right)},$$

for $\in \{1, ..., m\}$, where $w^{(i)}$ is the weight vector corresponding to cluster $i$ and the superscript $^T$ denotes vector/matrix transpose. Multinomial logit model was used to evaluate the impact of migration on livelihood strategies and food security.

3.3.2. The Ordered Probit Model

Ordered Probit Model (OPM) is a simple extension of the probit model. The OPM allows for many alternatives, however, these alternatives must be ordered (Kopp, 2003). It has a normal linear regression model, and its dependent variable is latent. The OPM uses the following form (Duncan et al., 1998, p.64);

$$(2): \ y^* = \beta'x + \epsilon$$

where $y^*$ is the dependent variable; $\beta$ is the vector of estimated parameters and x is the vector of explanatory variables; $\epsilon$ is the error term, which is assumed to be normally distributed. Given that a variable of interest falls in category $n$ if $\mu_{n-1} < y^* < \mu_n$ . The household dependent variable data, y, are related to the underlying latent variable $y^*$, through thresholds $\mu_n$, where $n = 1 \dots 4$. We have the following probabilities (Duncan et al., 1998, p.65):

$$(3): \ Pro(y = n) = \Phi(\mu_n - \beta'x) - \Phi(\mu_{n-1} - \beta'x), \quad n = 1 \dots 4$$

where $\mu_0 = 0$ and $\mu_4 = +\infty$ $and$ $\mu_1 \ \mu_2 \ \mu_3$ are defined as three threshoods between which categorical responses are estimated. The thresholds $\mu$ indicates the normal distribution associated with the values specified on the regressors. $\beta$ represent the effect of changes in explanatory variables. Ordered probit model was used to evaluate the impact of migration on income security and overall welfare of the households.

## 4.0. Results

### 4.1. Impact on Households

We ran the MNL regression to test if migration impacted on livelihood choices. Table 4.1 reports the estimations results. It is shown that overtime migration could worsen the physical capital and financial holdings of the settlers. Nearly all the coefficients are statistically significant. Then we

introduce migration variable and the coefficient is negative which is consistent with the hypothesis of the time impact. The social capital's positive coefficients and significance indicates that the households with high social capital have higher physical and financial capital.

*Table 4.1: Results on Impacts on Household*

| Regressor[+] | Physical/Financial Capital | Social Capital | Human Capital |
|---|---|---|---|
| Time (T) | 0.023 (0.153) | -0.022 (0.142) | 0.202*** (0.080) |
| Migrant (M) | -0.02 (0.157) | -0.322** (0.142) | 0.152* (0.081) |
| T*M | -0.574*** (0.217) | -0.283 (0.204) | -0.403*** (0.113) |

+ Control variables are not shown, * = significant at 10% level, ** = significant at 5% level, *** = significant at 1% level.

**Source: Calculation from Author, 2013**

Furthermore, if the household has more educated people who are qualified, they are more likely to maintain a positive physical capital. Social capital represents the individual's household social capital. Migration affects the social structure of local communities; it erodes existing networks and traditional support mechanism. This is evident in the relationship where social capital decreases by 0.322 units if the household is affected. Human Capital represents the individual's household's active adult household members. Unlike for physical and social capital, the impact of migration on human capital could be more pronounced because it affects the labour force and its impact can be immediate. This is evident is this relationship where if the household is migrating currently, it decreases the human capital by 0.403 units and is very significant.

## 4.2. Livelihood Strategies

Livelihood strategies were separated into "urban mixed", "private sector", "public sector", "entrepreneurs", "agriculture", and "rural mixed". There were no significant impacts of migration on the choice of livelihood (using multinomial logit model), other than the choice of "urban mixed" livelihood which was 5.7 times more likely than "agriculture" livelihood for those impacted by migration (p = 0.050).

**4.3: Food and Income Security**

Table 4.3 shows the results of food and income security. Most of the clusters are positively related to the odds of urban mixed sector. The results indicate that all households in each cluster are more likely to be food secure. However, the odd rations are close to zero in most of the variables. One plausible explanation is that food is secure within that month and it is likely that, migrants can become food insecure when they are not wanted anymore by their friends who take care of them.

In this model, a value greater than one indicates that higher value for the variable increases the likelihood that the income security will be high, however most of the variables are not high.

This indicates that income is not secure. It shows that a higher value of the variable decreases income security. The one plausible explanation could be that they have land to support and raise their income. There is no evidence of migration affecting income security in these households; however most of the coefficients are close to zero.

*Table 4.3: Food and Income Security*

| Regressor[+] | Food Security | Income Security |
|---|---|---|
| Time (T) | 1.438 | 1.005 |
| | (0.500) | (0.987) |
| Migrant (M) | 0.828 | 0.744 |
| | (0.302) | (0.328) |
| T*M | 0.679 | 0.679 |
| | (0.339) | (0.371) |

Ordered logit adds ratios are shown, + Control variables are not shown, * = significant at 10% level, ** = significant at 5% level, *** = significant at 1% level.
***Source: Calculation from Author, 2013***

**4.4: Overall – Wellbeing**

We estimated the 9-step ladder model, the welfare indicator by the ordered probit model. In this model, a positive sign indicates that a higher value for the variable increases the likelihood that there are more households who are not poor. The relative risk ration of social capital is 1.925 and is very significant at $P<0.01$. This indicates the fact that, the social safety net "the Wantok System" in PNG is very strong. Most of the households are well above the step that indicates having less wealth. Most people live in groups that support each other when in need. The

satisfaction model (are things considered, how satisfied you are…) supports this evidence that most households in PNG are satisfied with what they have and what they are doing. Migration shows no sign of impact.

*Table 4.4: Overall Wellbeing*

| Regressor[+] | 9 – step ladder | Life satisfaction |
|---|---|---|
| Time (T) | 1.391 (0.241) | 1.198 (0.564) |
| Migrant (M) | 0.952 (0.871) | 0.721 (0.298) |
| T*M | 0.708 (0.410) | 0.535 (0.153) |

Ordered logit odds are shown, + Control variables are not shown, * = significant at 10% level, ** = significant at 5% level, *** = significant at 1% level.
**Source: Calculation from Author, 2013**


## Conclusion


Migrants who have been involved in informal sector and receiving support from friends and families whilst in Port Moresby show no impacts of on food and income security or overall wellbeing, despite negative impacts on household capital remaining apparent. Most of the respondents said "because there are no better opportunities back in the villages they have to migrate in hope of a better livelihood". They were quite happy whilst in Port Moresby however, they still fear that their aspirations and dreams once thought of when migrating will never be realized. Family support, engaging in informal sector appears to be successfully mitigating the impacts of migration. These types of family support and government's proactive involvement in regulating informal sector to support migrants would be encouraged. The government should provide basic services to the remote communities of PNG so that; there is equal opportunity in both rural and urban centers and to discourage migration into towns and cities.

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