

Land Loss with Compensation: What Are the Determinants of Income Among Households in Central Vietnam?

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Abstract

The purpose of this study is to investigate the determinants of household income following the loss of land owing to urban expansion in central Vietnam. Using data mainly from household surveys in the peri-urban areas of Hue city, the regression model indicates that demographic factors and livelihood strategy choices have important impacts on household income; financial compensation and support packages do not appear to be strong determinants of household income after the loss of land. This implies a failure of the current compensation programmes in the process of compulsory land acquisition, because the government believes that compensation packages make important contributions to livelihood reconstruction. This study suggests that investing in education and skill training for household members affected by land loss as well as assistance in converting compensation money into an adequate livelihood should be taken into consideration.

Keywords

Land acquisition, compensation, determinants, peri-urban areas, Vietnam

Introduction

Economic growth and urbanization, as well as their corresponding requirements in terms of infrastructure and amenities, characterize some of the complex social and economic transformations taking place around the world that require land to be made available. Ways of procuring land for new objectives vary between different contexts, but in many cases, require some form of compulsory acquisition. Compulsory

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acquisition is a power extended by governments to acquire private rights on land for a public or publicly supported purpose, without the willing consent of the original landowner or occupant (FAO, 2008). As a direct result of this action, people lose their homes, their land and, at times, their means of livelihood. Obviously, displaced communities must be compensated. Therefore, central issues in land policy debates deal with the consequences of land loss (Ramachandraiah, 2015), as well as the principles and processes of equitable compensation (FAO, 2008).

Compensation serves to repay affected people for their losses and is expected to be based on principles of equity and equivalence (FAO, 2008). ADB (2007) suggests two models of valuation and compensation for the compulsory acquisition of land. The first model is compensation with reference to *market value* as the basis of 'just compensation'. A common approach is to define market value by the 'willing buyer, willing seller' model, given the situation where choice exists. The second model is that of *replacement cost*. This approach is based on the level of compensation that will be sufficient for affected persons to replace their lost land with land of equal value or comparable productivity. Compensation at replacement cost includes the actual cost of asset replacement plus associated transaction costs and fees. In case replacement land is not readily available, replacement cost may consist of an amount of cash considered to represent a fair compensation for the land based on the anticipated price of the acquired land at some future point in time. Expected future value of land is, of course, also reflected in market prices, but the difference here is that, in the replacement approach, this future value is estimated by the relevant authority, rather than expressed in market prices. The replacement cost approach is, therefore, useful in countries where a clear market value for the land does not exist.

In Vietnam, compulsory land acquisition is used by the government as a policy instrument to convert massive amounts of land for urbanization and industrialization (Phuc et al., 2017; Thi et al., 2020). It has been estimated that nearly 1 million hectares of agricultural land were transformed for non-agricultural activities between 2001 and 2010 (World Bank, 2011); and nearly 630,000 households and 2.5 million people were affected by these processes (Thanh, 2009). Similar to other countries across the globe, compensation payment for losses is calculated according to legal guidelines. The Land Law of 2013 stipulates that people losing land for the public interest are to be compensated for their loss of land use rights and assets on land. The general principle of compensation is payable according to the original use of the acquired land. The government believes that compensation packages make important contributions to livelihood reconstruction by improving household income and standards of living, or at least enables affected persons to attain similar levels of livelihood, as before land dispossession.

Compensation, in whatever form, is considered as the key to livelihood reconstruction and improving household income after land loss. As a critical topic, it has attracted special concern not only from the policy makers and media, but also academics. However, recent studies in Vietnam mainly focus on the impact of land acquisition on the livelihoods of the affected people (DiGregorio, 2011; Thi et al., 2020; Tran et al., 2014;), while little attention is given to the determinants of household income and the impact of compensation in terms of livelihood reconstruction. This gap in current debates around land acquisition is the motivation for the present study on Hue, a rapidly expanding city in Central Vietnam, which is examined in light of the following questions: first, what are the determinants of household income after land loss with compensation? Second, do the compensation packages awarded for losses really appear as important determinants of household income?

This article is organized into six sections. The section immediately following this introduction is a literature review on the determinants of household income. The third section focuses on the background of the case study. The fourth section focuses on the data collection and analysis. The fifth section shows results and discussion from the case study, leading to the conclusions.

Determinants of Household Income: A Literature Review

The forced transformation of livelihoods experienced by farm households, who are affected by the loss of land due to urban expansion, is the most pronounced expression of a much broader pattern of rural livelihood diversifications (Nguyen, 2009; Oduro, 2010; Tran et al., 2014). Farming no longer dominates rural areas in terms of production or employment. Land-based activities have lost some of their role in shaping rural livelihoods and have been partly replaced by non-farm activities that require education, skills and social networks, rather than farmland endowment. This pattern of *deagrarianization* is gradually becoming more common in developing countries, as observed by authors like Bryceson (Bryceson et al., 2000; Ellis, 2000).

To unravel the factors that determine household income, the livelihood approach (DFID, 2002; Ellis, 2000) has been widely applied by researchers and development practitioners. A livelihood consists of the assets (natural, physical, human, financial and social capital), the activities and the access to these that together determine how an individual or household is able to sustain themselves (Ellis, 2000). These livelihood resources, as well as the access to the forces that shape them, differ between households and individuals. To cope with transformation process, households have to choose livelihood strategies compatible with their own livelihood resources. In other words, the success or failure of livelihood strategies depends on the availability of livelihood resources on the one hand, and on the other, the agency of people in selecting options and combining activities to achieve their livelihood objectives. These objectives might include gaining an income, well-being and reduction of vulnerability. The livelihood approach emphasizes the link between livelihood assets, initiatives and outcomes within a contextual framework.

In rural areas, several studies in African and Asian countries found a strong positive relationship between human capital and income among farm households (Barrett et al., 2001; Cao & Akita, 2008; Talukder, 2014). Other than human capital, access to social relations plays a significant role in rural poverty eradication. Narayan and Pritchett (1997), with an econometric model for Tanzania, demonstrated that social networks actually had a higher influence on income than either human or physical capital (Narayan & Pritchett, 1997). A similar pattern can be seen in the case of Indonesia, where Grootaert (1999) found that the influence of social capital on welfare and poverty was rather strong. In respect to financial capital, Khatun and Roy (2012) stated that a lack of access to institutional credit was a deterrent factor in livelihood diversification in West Bengal. The authors argued that in the absence of credit support, the resource-poor households were not able to start non-farm business activities (Khatun & Roy, 2012).

In peri-urban areas, recent studies have attempted to define the factors affecting income among farm households in the context of rapid urban expansion. In Accra, Ghana, Oduro (2010) identified peri-urban residents who have been able to take full advantage of employment opportunities and, thus, improve their living conditions. The majority of subsistence farmers, however, were worse off because they lack the capacities to utilize opportunities derived from urban growth. Oduro concluded that human capital appeared as a key determinant of livelihood adaptation in the context of urbanization in Accra (Oduro, 2010). Other case studies in Kenya and Tanzania have shown that improved infrastructure coupled with emerging business enterprises in peri-urban zones constitutes the main factors enhancing the opportunities for household engagement in more remunerative activities (Lanjouw et al., 2001; Mandere et al., 2010).

In Vietnam, only a limited number of studies pay attention to the factors determining income among households, under the impact of urbanization. Nguyen (2009) and DiGregorio (2011) stated that while state policies such as vocational training and job creation show limited impact, many farmers in the peri-urban villages of Ha Noi rely on selling garden land or building houses to let on residential land, as a way to shift to new sources of livelihood (Nguyen, 2009). In Ho Chi Minh City, Wit (2011) indicated that

number of workers, age and education of workers have positive effects on the choice of livelihood activities and household income. Other than natural and human capital, social capital plays an important role in the livelihood outcomes of households affected by land acquisition in a peri-urban district of Ha Noi. Tran et al. (2013) have stated that the number of group memberships is closely associated with income and expenditure increases. Social networks among group members can benefit households directly or indirectly, by means of opening better access to credit, input and information for economic activity. Social relations can also contribute to a better network of customers and suppliers, thus increasing value added and sales (Tran et al., 2014).

A review of literature indicates that household income is determined by the complex interplay between livelihood assets, agency and the contextual factors of a specific geographical setting. These factors are closely intertwined, and a change in one may lead to changes in the whole system. Among the five categories of livelihood assets, financial capital is the most versatile because it can be converted into other types of capital, or can be directly used for the achievement of livelihood objectives. For this reason, the compensation policy for land loss in Vietnam, as in many other countries, takes the form of financial contributions that households may use to invest in suitable livelihood assets, to make up for the loss of land-related income, or to pay to meet immediate needs. This policy rests on the assumption that the additional financial capital can, and will, be successfully turned into compensating assets and income sources; the government of Vietnam believes that it can thus achieve successful livelihood reconstruction for the affected households. This raises the question of whether the compensation packages awarded for losses really appear as important determinants of household income or otherwise.

Background of the Case Study

This study was conducted in Hue, a medium-sized city, in Central Vietnam. Hue is organized into 27 urban wards with a total area of 71.68 km². The administrative area of Hue is expected to increase from 71.68 km² in 2012 to 348 km² in 2030 (Decision 649/QĐ-TTg 2014). In 2019, the rate of urbanization reached 52.7% and could reach 60–65% in 2020 (Thi et al., 2020). Due to the limitations of the heritage conservation policy in the north of the city (the Citadel area), the core of Hue has mainly expanded into the south of city. The south has become the centre of administrative bodies of the province and city, tourism and residential areas. This process has created pressure regarding land use, especially in the peri-urban areas.

According to Simon et al (2006), the peri-urban area is a zone of direct impact, which experiences the immediate impacts of land demands from urban growth, pollution and the like, and a wider market-related zone of influence—recognizable in the handling of agricultural and natural resource products (Simon et al., 2006). Based on the definition provided by Simon et al. and from 12 possible localities recognized as Hue's peri-urban areas, Thuy Duong, Thuy Van, Phu Thuong and Huong So have been selected for this article. These are localities where most of the agricultural land has been acquired between 2006 and 2018 to build new urban areas such as An Cuu City, Vicoland, Royal Park and Eco Garden Hue.

Land acquisition in Hue's peri-urban areas is mainly characterized by the acquisition of agricultural land, after which a vast majority of affected households have remained in their original homes and received compensation money, while a limited number of households who lost their housing plots have resettled elsewhere within the same village or surrounding villages. It is estimated that nearly 450 hectares of land (of which, over 80% was agricultural land) forming Hue's peri-urban areas was acquired between 2000 and 2018 (HSO, 2018). More than 3,000 households have been seriously impacted by land

Table 1. Financial Compensation and Additional Support Packages per Land Loss Group

Sources	Huong So	Phu Thuong	Thuy Van	Thuy Duong	Total
Financial compensation	25,986	43,035	44,121	90,987	26,800
Additional support	34,615	35,142	47,333	39,157	3,981
Total (VND 1,000)	60,601	78,177	91,454	130,144	30,781

Source: From Phuc et al. (2017).

acquisition processes. This process is predicted to expand in the coming years, when the urban development becomes more intensive.

According to the 2013 Land Law, households that have lost part or all of their land to urban expansion were compensated and supported for livelihood reconstruction. In principle, compensation and support for the losses consist of three main components: (a) compensation for land use rights, (b) compensation for assets on current land and (c) monetary support for life stabilization and job change training (Land Law, 2013). However, the amount of money paid depends on compensation rates, set yearly by the provincial governments, and depending on the locality in which the land is situated, the size of loss and when the acquisition took place.

The household survey indicates that people received, on an average, 26.8 million VND (1 USD = 21,828 VND) per household in compensation (Table 1). Furthermore, depending on the size of loss, households were supported for vocational training, as well as for funding to assist with occupational change. However, this type of compensation package was only awarded to households that lost between 30% and 70% (180 kg of rice per person for 6 months) and households lost over 70% of their agricultural land (180 kg of rice per person for 12 months). In practice, all support was paid in a single cash payment without rice. Farm workers who lost their land use rights, on an average, were supported with between 1.8 and 3 million VND to assist with occupational change.

Data Collection and Analysis

Data Collection

Various data collection techniques were used to gather information, including documentary research and analysis, key informant interviews and household surveys.

Documentary Research and Analysis

Before beginning fieldwork, many Vietnamese newspapers were reviewed to understand the nature and evolution of land acquisition for urbanization and industrialization in Vietnam. Various aspects of the issue, such as areas of land lost, compensation frameworks, impacts on livelihoods, were briefly examined to understand how these have changed over time. Previous studies on land acquisition for urbanization were also reviewed in order to understand the impacts of land acquisition on local development.

Key Informant Interviews

Key informant interviews were conducted with selected persons having specialized knowledge on the identified issues, as well as those who were responsible for the land acquisition processes. The five interviews were conducted with local government officials, including the leaders of the studied localities and the members of the Board of Compensation, Support and Resettlement. The interviews were mainly

centred on issues surrounding the legal frameworks for land acquisition, decision-making processes as well as information identifying stakeholders and benefit-sharing.

Household Surveys

To investigate the determinants of household income after the loss of land, household surveys (conducted through face-to-face interviews and guided by a questionnaire) were employed. The survey, conducted using the recall method, collected the responses of 170 households who lost their farmland for urban expansion without being displaced in four Hue's peri-urban communities: Thuy Duong, Thuy Van, Huong So and Phu Thuong. Households were randomly selected based on the land acquisition decision lists provided by local authorities. These interviews were mostly conducted with one or two household members (usually the husband and/or wife). However, other members of the household also could contribute. Since the questions involved information about additional household members, this proved to be very useful.

Regression Analysis

Based on the data from the household surveys in the studied villages, a multiple regression model was used to investigate the effects of different factors on household income levels after land loss. The equation for the multiple regression model is defined as follows:

$$Y = \beta_0 + \beta_i X_i + \varepsilon, \quad (1)$$

where Y is the dependent variable representing household income after land loss (gross income), explained by β_i , which represents a vector of parameters; X_i is a vector of exogenous explanatory variables; ε is error term.

It was hypothesized that the household income after land loss is determined by a range of socio-economic and demographic factors that include the following variables: (a) demography (age of the head of household, education of head of household, household size and dependency ratio), (b) livelihood assets (savings, credit access, social networks and aggregate value of assets), (c) land loss characteristics (size of land lost, financial compensation and financial support, (d) context (communal dummies) and (e) agency (livelihood strategy choices in response to urban growth and land loss). An overview of the variables included in the analysis is presented in Table 2.

Demographic Variables

Age of the head of household: The head of the farm household is often plays an important role in making decisions on livelihood strategies as well as indirectly contributing to household income. Age matters, especially with respect to the latter. In practice, up to their middle age, people with good health can access alternative employment opportunities associated with urban growth. The hypothesis that heads of households, up to 50 years of age, are positively linked with total income can therefore be made. Older heads of households are less likely to find other employment opportunities and are, therefore, less likely to have a good income level.

Education of the head of household: To identify the effect of education on household income, the years of schooling undertaken by the head of household were considered. The household heads with higher education are more likely to engage in better occupations or more profitable non-farm self-employment

Table 2. Definition and Measurement of the Explanatory Variables Used in the Regression Analysis

Variables	Definition	Measurement
	Dependent Variable	
Household income	Post-land loss income	VND 1,000
	Independent Variables	
<i>Demography</i>		
Age of head of household	Whether or not the head of household up to age 50 years	Dummy variable (= 1 if yes)
Education of head of household	Years of schooling	Years
Household size	Total number of member in a farm household	Number
Dependency ratio	Number of people below 18 and above 60, disability, or illness	Number
<i>Livelihood assets</i>		
Savings	Whether households save their money in the banks for monthly interest or not	Dummy variable (= 1 if yes)
Credit access	Whether households access credit/loans from individuals or credit agencies after land loss	Dummy variable (= 1 if yes)
Social network	Whether household members receive support from relatives and friends for job seeking after land loss	Dummy variable (= 1 if yes)
Assets value	Estimated value of physical assets (except land) owned by a household	VND 1,000
<i>Land loss characteristics</i>		
Size of land lost	Total area of farmland lost by urban expansion	m ²
Financial compensation	The amount of compensation money received due to land loss	VND 1,000
Further financial support	The amount of support money for life stabilization and occupational change	VND 1,000
<i>Context</i>		
Communal dummies	Whether households are located in Thuy Duong or Huong So	Dummy variable (= 1 if yes)
<i>Agency</i>		
Livelihood strategy 1	Whether households pursue the strategy of casual work and farming	Dummy variable (= 1 if yes)
Livelihood strategy 2	Whether households pursue the strategy of self-employment and farming	Dummy variable (= 1 if yes)
Livelihood strategy 3	Whether households pursue the strategy of wage work and farming	Dummy variable (= 1 if yes)
Livelihood strategy 4	Whether households pursue the strategy of an exit from farming	Dummy variable (= 1 if yes)

Source: The authors.

activities and, therefore, receive a higher income level. As a result, the relationship between the years of schooling for the head of household and household income is hypothesized to be positive.

Household size: The literature review shows that household size is an important factor for livelihood diversification; it affects the ability of a household to mobilize labour for livelihood activities. Therefore,

households with better human capital, as measured by the number of members, are expected to have a higher income level.

Dependency ratio: As aforementioned, the number of working household members influences the level of livelihood diversification as well as household income. As the dependency ratio in a household increases, the ability to contribute to household income is likely to decrease. As a result, the relationship between dependency ratio and household income is hypothesized to be negative.

Livelihood Assets

Savings: The surveyed households indicate that approximately 18% of compensation money was kept in a bank account. The main motivation for this, as explained by an elderly respondent, was that 'bank savings are either used monthly or in times of financial hardship'. Rather than focusing on the amount of savings per household in the regression model, the hypothesis is that there is a positive relationship between the level of household income and whether or (not) households keep their money in the bank and collect monthly interest.

Credit access: The literature review states that lack of access to institutional credit is an obstacle to livelihood diversification (Khatun & Roy, 2012). In other words, availability of credit may make the capital constraints less tight and allow farm households to diversify their livelihood activities. Therefore, this study hypothesizes that there is a positive relationship between household income and credit access.

Social networks: As shown earlier, several studies have noted that social relations and inclusion in social networks can help household members to access opportunities derived from economic growth. Accordingly, social networks appear to be one of the determinants of livelihood outcomes. We hypothesize a positive relationship between strong social networks and household income.

Assets value: The physical assets of a household may help livelihood choices, both directly and indirectly. These assets represent a store of wealth, as well as providing opportunities for household members to invest in livelihood activities. This study hypothesizes that there is a positive relationship between the aggregate value of non-land assets and level of household income.

Land Loss Characteristics

Size of land lost: Agricultural land still plays an important role in the livelihoods of peri-urban households, particularly households which are not very involved in non-farm activities (DiGregorio, 2011; Nguyen, 2009; Tran et al., 2013). The loss (part or all) of agricultural land can obviously affect the income of households. This study, therefore, hypothesizes that there is a negative relationship between the size of land lost and post-land loss income.

Financial compensation: The affected households have been compensated for the loss of land use rights and assets on land. This compensation is expected to improve the household's livelihood options and standard of living, or at least restore them. In this study, we hypothesize the relationship between the amount of financial compensation and post-land loss income to be positive.

Further financial support: This refers to additional financial support for assisting affected households in livelihood reconstruction. The common principle, as shown, is that households who have lost a larger share of their agricultural land than others need to receive more support. However, only farm labourers

who lost their traditional employment due to land acquisition were supported for vocational training and occupational change. Similar to the compensation for loss of land rights, it is believed that this financial support could contribute significantly to livelihood reconstruction of households. Therefore, the relationship between the amount of financial support and household income is hypothesized to be positive.

Context

Previous studies show that livelihood strategy choices and outcomes may be affected by the socio-economic contexts in which households live (Tran et al., 2014). This may include the quality of infrastructure, opportunities for non-farm employment and the policy environment. However, such contextual factors are not elaborated upon here, with the exception of one indicator for access to alternative employment. Localities with similar conditions in terms of this factor are grouped together to test its influence. The first group consists of two localities: Thuy Duong and Huong So. These are close to textile factories and the industrial cluster of a craft village with vastly improved road and transport systems. Households living in these localities are hypothesized to have advantageous conditions in terms of access to employment and, therefore, may have a higher income level than others. The remaining localities of Thuy Van and Phu Thuong are used as a reference group, as the opportunities for factory employment may be not be readily available due to distance. The locality dummies are included as independent variables in the regression model.

Agency

In addition to livelihood assets and contextual factors, income levels are likely to be significantly influenced by agency: people's own initiatives, choices, efforts and ingenuity exerted when confronted with the shock of land loss. This is something that will inevitably differ among households and individuals. Such agency factors are not elaborated upon here, with the exception of the single variable of livelihood strategy choices after land loss as a possible explanatory variable in the regression model. Livelihoods in Hue's peri-urban zones are quite dynamic as a result of relatively advantageous labour market conditions in an expanding and diverse urban economy. We observed five main livelihood strategies in the survey population: (a) farming only, (b) casual work and farming, (c) self-employment and farming, (d) wage work and farming and (e) exit from farming. Four dummy variables are constructed to reflect the four main livelihood strategies observed among the survey population, with the farming only based livelihood as a reference group. It should be noted that these livelihood 'strategies' do not necessarily result from free choice but may be partially imposed by constraints. As such they have limitations in expressing agency.

Results and Discussion

Land Loss and Change in Household Income

Looking at the ways in which households have coped with urban expansion and the main income source after land loss, we observed five main livelihood strategies. Table 3 presents some key characteristics of households, subdivided according to the five livelihood strategies observed. Some of these characteristics are in line with expectations—for instance, households exiting farming altogether are seen to have very little land left. Meanwhile, households continuing a livelihood focused on farming alone have actually lost slightly more land than other groups.

Table 3. Household Livelihood Strategies Before and After Land Loss

Livelihood Strategy	Before		After		
	Number of Households	Remaining Land Area (m ²)	Average Number of Members per hh.	Average Number of Labourers per hh.	Average Amount of Compensation per hh. (VND million)
Farming only	22	1,680	3.3	1.5	27.2
Casual work and farming	40	1,348	5.1	3.3	31.3
Self-employment and farming	59	1,672	5.2	3.3	28.1
Wage work and farming	49	1,908	5.4	3.8	26.7
Exit from farming	0	301	4.5	2.7	13.1
Total	170	1,500	5.1	3.3	26.8

Source: From Phuc et al. (2017).

Table 4. Situation of Household Income Before and After Land Loss (Unit: Million VND)

Livelihood Strategy	Before Land Loss				After Land Loss			
	Gross Income per Hectare	Total Expenditure per Hectare	Net Income per Hectare	Net Income per Capita	Gross Income per Hectare	Total Expenditure per Hectare	Net Income per Hectare	Net Income per Capita
Farming only	16.1	13.6	2.4	0.8	10.6	8.7	1.9	0.6
Casual work and farming	63.1	53.3	9.7	1.9	69.8	57.2	12.6	2.8
Self-employment and farming	55.9	47.6	8.3	1.7	67.5	55.2	12.4	2.5
Wage-work and farming	82.6	68.6	14.0	2.5	100.0	81.4	18.6	3.5
Exit from farming	65.8	55.3	10.5	2.4	73.1	58.6	14.5	3.3
Whole sample	64.4 ^a	54.1 ^a	10.3 ^a	2.0 ^a	75.1 ^a	60.9 ^a	14.2 ^a	2.8 ^a

Source: From Phuc et al. (2017).

Note: Significance tests refer to a two-sample *t*-test of the difference in means; ^a*p* < .01.

Table 3 indicates that urban growth and land acquisition may not threaten the livelihood of affected households. Of the 170 households interviewed, 84.1% increased their income after land loss. Specifically, more than 90% of households who combined self-employment and farming achieved a higher income level after land acquisition. Table 4 shows that the gross household income per household has increased significantly for the vast majority of households affected by land loss, from 64.4 (US\$3,066) to 75.1 million VND (US\$3,576). Although changes in the expenditure pattern of the survey population were noticed (e.g., the total household expenditure after land loss on average increases nearly 12.6% as compared with that before land loss), the net income per household increased considerably (37.8%), from 10.3 million VND to 14.2 million VND.

Determinants of Household Income After Land Loss

The results of our regression estimates are presented in Table 5. The F -value = 12.720 is statistically significant at the 1% level. This shows that the regression model has a strong explanatory power. The adjusted R^2 value = 0.543 indicates that 54.3% of the change in household income after land loss (dependent variable) might be explained by a change in independent variables: demography, livelihood assets, land loss characteristics, context and agency. Moreover, the statistical tests show that there are no multi-collinearity or endogeneity problems in the fitted model. Finally, the regression results also state that many explanatory variables are statistically significant at the 1%, 5% or 10% levels, with the expected signs.

Demographic Factors

As expected, household size was found to be one of the most important determinants of household income. It has a significant and positive influence on post-land loss income. This may be explained by the fact that most of the households have two or three generations living together. Some members can engage in traditional farming in combination with housework and handicrafts, while others can opt for non-farm activities. As a result, the larger the household size, the better the opportunity is for livelihood diversification, resulting in an increase in household income. In contrast, the dependency ratio was found to be negatively related to household income; dependents are considered to be the household members below 18 years or above 60 years old, as well as those who are differently abled or less likely to engage in livelihood activities. A high dependency ratio creates a shortage of working hands to earn enough to meet the household's daily expenditure. Finally, in line with the expectations, the relationship between the head of household's years of schooling and household income was found to be positive. The age of household heads was also found to be negatively related to the level of income after land loss. However, the coefficients of these explanatory variables are not statistically significant.

Livelihood Assets

As mentioned previously, savings here are only concerned with whether or (not) households save their money in the bank as a factor that significantly influences household income. The regression results show, as expected, that the relationship between household income and financial savings appears positive, but the coefficient is not statistically significant. This result may be explained by the amount of savings per household being too small, or that the monthly deposit rate is too low to lead to a significant economic return. With respect to credit access, it was found that 37 households gained access to credit or loans from individuals or credit agencies after land loss. Two-thirds of this group of households invested their money in economic activities such as agricultural production and small-scale businesses. Table 5 indicates that access to credit/loans is positively related to household income. This is in line with

Table 5. Determinants of H Income After Land Loss

Variables	Coefficients	P-value
<i>Demography</i>		
Age of head of household	-0.057	0.322
Education of head of household	0.002	0.978
Household size	0.431 ^a	0.000
Dependency ratio	-0.142 ^b	0.033
<i>Livelihood assets</i>		
Savings	0.006	0.913
Credit access	0.002	0.972
Social networks	0.155 ^a	0.005
Assets value	0.250 ^a	0.000
<i>Land loss characteristics</i>		
Size of land lost	-0.149 ^b	0.034
Financial compensation	0.118 ^c	0.096
Further financial support	0.129 ^c	0.071
<i>Context</i>		
Communal dummies	-0.074	0.280
<i>Agency</i>		
Livelihood strategy 1	0.189 ^a	0.006
Livelihood strategy 2	0.147 ^b	0.028
Livelihood strategy 3	0.275 ^a	0.000
Livelihood strategy 4	0.229 ^a	0.001
Adjusted R ²	0.543	
F-value	12.720	
Durbin Watson	1.667	
Number of observations	170	

Source: The authors.

Note: ^a, ^b, ^c are statistically significant at 1%, 5% and 10% probability levels, respectively.

the findings in West Bengal by Khatun and Roy (2012), who found that in the absence of institutionalized credit support, resource-poor households were not able to start their own non-farm businesses. However, the coefficient, as found in this study, is not statistically significant.

Social networks have a clearer positive relationship with household income than either savings or credit access, which is remarkable. The coefficient is statistically significant at the 1% level. This is consistent with the findings of Narayan and Pritchett (1997), Grootaert (1999), Oduro (2010) and Tran et al. (2013), who all found that social networks are an important influence on household income. This study indicates that it is more advantageous to people, in terms of employment opportunities, if they have friends or relatives in the city centre or industrial factories. The support often includes information and experience sharing, finance and recommendations. In addition, social networks have also brought household members non-economic benefits such as: knowledge, skills, social status and new social relationships.

As expected, the value of physical assets owned by a household (except land) is found to have a significant and positive effect on the level of household income. The coefficient of the aggregate assets value variable is quite high and statistically significant at 1%. While the link between physical assets and

income is clear, the causality of this variable is ambiguous; having assets may result in better opportunities to reconstruct livelihood after land loss; however, this may also be the result of the success or failure of the livelihood strategies households have engaged in.

Land Loss Characteristics

In line with the hypothesis, the size of land lost was found to be negatively related to household income. This indicates that high amounts of land lost per household are linked to low income levels. Holding all other explanatory variables constant, a unit increase in the size of land lost may result in a 0.14 times decrease in the household income. The income from farming activities still plays an important role in household income, and land is a necessary factor for this. Farming income after land loss contributes 15.3% to household income, as compared to 26.8% before land loss.

More surprising is the finding that the amount of *financial compensation* paid does not have a very significant influence on household income after land loss. This is despite the fact that there is statistical evidence for a significant positive relationship between the amount of financial compensation and household income. A similar correlation is also found in the case of further financial support for life stabilization, training and occupational change. While both explanatory variables are positively associated with household income, the coefficients are actually quite low and statistically significant only at the 10% level. This shows that the influence of compensation and support policy on livelihood reconstruction is relatively limited.

Contexts

As mentioned, context here is appraised only in terms of a twofold division between localities close to alternative employment centres and those further afield. Contrary to our hypothesis, the relationship between the communal dummy variables and household income was found to be negative with a statistically insignificant coefficient. This means that the distance to concentrations of employment opportunities such as industrial estates and the city centre does not appear to be a determinant of livelihood outcomes, because the geographical scale of Hue is substantially smaller than large cities such as Ha Noi and Ho Chi Minh City. Employment opportunities derived from economic growth may be relatively accessible to local people, even more so since the improvement of infrastructure, particularly roads in the peri-urban areas, enables daily commuting from villages to city and industrial zones. This finding is also in line with the results found in Kenya and Tanzania by Lanjouw et al. (2001) and Mandere and Anderberg (2010).

Agency

The results show, as expected, that there is a positive relationship between livelihood strategy choice and income. The coefficient is statistically significant at the 1% or 5% level. The ways in which households have coped with land loss and urban growth have a strong and positive linear correlation with income levels of the household. Altogether, the results confirm that both the move into wage work and the pursuit of diversified livelihoods, combined with different livelihood capitals, tend to achieve higher income levels. This regression result is consistent with the findings by Nguyen et al. (2011) and Tran et al. (2013) in the peri-urban areas of Ha Noi and Ho Chi Minh City.

Conclusion and Policy Implications

This article used a multiple regression model to investigate the determinants of household income after land loss in the peri-urban areas of Hue. First, it showed that the demographic factor (household size) is

a fundamental influence on household income. It appeared to be the largest positive determinant of post-land loss income. This shows the importance for household income of human capital—in terms of quantity (the number of able-bodied household members of working age), as well as the quality of human capital (education, skills and experience). Household size is not considered a suitable issue for policy, but these findings highlight the importance of investing in education and (vocational) skill training for household members affected by land loss as well as increasing access to higher education for children of affected households in enabling access to alternative sources of income.

The study also indicated that household income is positively linked to livelihood strategy choices that households have pursued after land loss. In practice, the dynamics of livelihood strategies and their outcomes are firstly dependent on the capacity of households. On the other hand, the choices for livelihood strategies are influenced by institutions and policies, as well as opportunities that arise in their local context, such as job opportunities from economic development. This suggests that, besides investment in human capital, the intervention should envisage institutional improvements to promote the development of business enterprises, particularly small and medium enterprises (SMEs) or self-employment and infrastructure development to make the resulting job opportunities accessible for residents in the urban fringe. In doing so, this process may create livelihood opportunities for the engagement of peri-urban populations in high income and productive activities.

The most interesting finding is that the financial compensation and support packages do not appear to be strong determinants of household income after land loss. This implies a failure of the current compensation programmes in the process of land acquisition, because the government believes that the compensation packages make important contributions to livelihood reconstruction. The main reasons for this are unsurprising; one is because most compensation money is invested in physical assets (such as rebuilding houses and luxury furniture) that have little relevance to livelihood reconstruction. Moreover, the existing policy of compensation is too focused on a financial transaction, without much attention to consultation and training programmes which would enhance the ability of affected people to recognize available opportunities and so invest their compensation money into new income-generating activities. This suggests that affected people should plan to effectively manage their compensation money. Purchasing luxury products or quality houses could reveal their ‘affluence’ for a while, but this is not always the case. The sustainability of livelihoods in the long run may be more important. Moreover, assistance in converting funds into an adequate means of livelihood should be taken into consideration. For this purpose, the responsible consultation from agencies such as local governments and investors is necessary towards helping people recognize investment opportunities in new economic activities, especially self-employment.

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