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Migration and Farmer Household Livelihood Strategies: Factors Influencing the Decision to Migrate

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ABSTRACT

West Java is one of the provinces in Indonesia with a high percentage of poor farmer's households. Furthermore, migration is often associated with economic conditions and is carried out by farmer's households as a livelihood strategy to cope with poverty and vulnerability. This research aims to describe the migration carried out by farmer's households and to analyze the factors influencing the decision of members to migrate. This study relies on longitudinal data from the Indonesian Family Life Survey in 2007 and 2014 to evaluate the migration phenomenon that occurred from 2007 to 2014. The respondents are members of farmer's households in West Java Province, a total of 615 individuals, including 89 migrants and 526 non-migrants. Descriptive analysis and logistic regression were used to answer the research objectives. The results showed that respondents' age, perceived current living conditions, and ability to meet children's needs significantly and negatively affect the decision to migrate; meanwhile, crop failure significantly and positively affects the decision to migrate. In the face of limited financial resources and vulnerabilities, farmer households allocate productive human resources to migrate and earn a living outside their village. Further research can be directed to provide a broader picture of migration carried out by farmer households by analyzing macro conditions that affect their livelihood. The government can play a role in formulating an economic and social reintegration strategy. Hence, the remittances obtained by migrants can ensure sustainable livelihoods and contribute to agricultural development.

Keywords: Farmer, household, livelihood, migration

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INTRODUCTION

Migration is the movement of people across an area's administrative and geographical boundaries, intending to settle either permanently or temporarily (International Organization for Migration, 2020). Population mobility reflects a response in the face of various limitations to fulfill the needs; this can be seen in various forms of migration, both voluntary and non-voluntary (Bakewell, 2021; Tirtosudarmo, 2009).

Indonesia is a country that has a long tradition of migration. According to the Central Statistics Agency, from 1970 to date, approximately 11% of the country's population lived outside the area where they were born (Muliansyah & Chotib, 2019). Many early theories of migration explained that macro conditions, such as the balance of the labor market, and differences in wage levels in the area of origin and destination, are the main driving force for migration levels, as described by Lewis in 1954 and Rennis and Fei in 1961 (Massey, 2015; Massey et al., 1993). However, in its development, analyzing the driving factors for migration places more emphasis on the micro level. The migration of a member of the household going in search of a job, either within or outside the village, towards international migration is a strategy to maximize income (Rajan & Pillai, 2020; Stark & Bloom, 1985) and also as an attempt to reduce the risk of decreasing income (Davis & Lopez-Carr, 2014; Massey, 1990).

Poverty is widely analyzed as one of the driving factors for migration in developing countries (Al-Maruf et al., 2022; Bellampalli & Yadava, 2022; Sunam & Mccarthy, 2016). In Indonesia, the characteristics of multidimensional poverty are attributed to farmer's households. Statistics Indonesia (2021a) noted that 51.33% of poor households in Indonesia are farmers. This sector also has low productivity, and the average income in this sector is the lowest compared to others (Statistics Indonesia, 2021d). Meanwhile, the agricultural sector comprised 28.33% of the Indonesian workforce, making it the highest absorber of labor (Statistics Indonesia, 2021d). However, this sector has not been able to prosper the farmers as the main actors (Juliatin et al., 2020; Moeis et al., 2020; Novira et al., 2022).

Farmer households conduct various strategies to meet their needs which the agriculture sector cannot provide. Furthermore, livelihood diversification from the non-agricultural sector is an important alternative for poor farmer households in rural areas (Marta et al., 2020; Sihaloho, 2016; Sophianingrum et al., 2022; Sugiharto et al., 2016; Tridakusumah et al., 2015; Yulmardi et al., 2020). Generally, these sources of livelihood are outside the village, causing migration among members. This phenomenon does not only occur in Indonesia but also becomes a general description of the life of lower-class farmers in various countries (Bellampalli & Yadava, 2022; Fassil & Mohammed, 2017; Fayomi & Ehiagwina, 2019; Iqbal et al., 2021; Khosla & Jena, 2020; Meher, 2019; Nguyen et al., 2013; Rajan & Pillai, 2020; Voss, 2022).

West Java is one of the provinces in Indonesia that relies on the agricultural sector as its economic base, as stated in the Regional Regulation No. 9 of 2008 on the West Java Provincial Long-Term Development Plan (RPJPD) for 2005-2025. In general, the description of farmer households in West Java Province is also identical to a not prosperous condition. Out of the 14 agriculture basis regencies in West Java Province, 11 have a higher proportion of poor individuals than the average number of West Java Province (Statistics Indonesia, 2021c). West Java is a province directly adjacent to the capital city of Indonesia and is the center of government and economy in Indonesia. Therefore, it can promote the mobility of the population around the area.

Previous research has extensively discussed the impact of migration on leading to a better life (Bellampalli & Yadava, 2022; Cingolani & Vietti, 2019; Huy & Nonneman, 2016; Kaur & Kaur, 2022; Muliansyah & Chotib, 2019; Redehegn et al., 2019; Susilo, 2014). However, research examining migration in the context of farmers' livelihood (particularly in Indonesia) is still very limited.

Livelihoods are a combination of the available resources, abilities, and actions needed to survive or make a living (Scoones, 1998; Trinh et al., 2018; Wang et al., 2021). When household members decide to migrate, they also consider their assets or resources and the context of vulnerability faced (Ding et al., 2018; Fang et al., 2014). Therefore, the sustainable livelihoods framework (SLF) is needed to gain a deeper understanding of poverty and livelihood strategy (Department for International Development [DFID], 2001; Ellis, 2003). Through SLF, the factors influencing household decisions to migrate as a livelihood strategy will be known (Mistri, 2019; Tegegne & Penker, 2016; Van Praag & Timmerman, 2019).

This research aims to describe the migration of members of the farmer's household and identify the factors influencing the member's decision to migrate. In the context of agricultural development, an understanding of the migration that has been carried out and of the factors influencing the migration decisions of members of farmer households is necessary so that policymakers can maximize the potential of migrants. The remittances generated by migrants can ideally be invested in economic activities in the area of origin and agriculture to promote agricultural and rural development. The right reintegration strategy for returning migrants is expected to build sustainable livelihoods, ultimately improving the standard of living and the well-being of farmer's households.

Literature Review

Livelihood Strategy. The livelihood strategy is defined as a way of surviving or improving the state of an individual's life and is interpreted as growing beyond "earning a living activity." It can be approached through various individual and collective measures (Dharmawan, 2007). Furthermore, Ellis (2000) and Natarajan et al. (2022) defined this process as the strategies households use to build various

portfolios of activities and social support to survive and improve their standard of living.

The term livelihood not only describes how an individual builds a life but also analyzes the available resources, risk factors, and the context of institutions and policies, as well as that support improving well-being (Ellis, 2003). Livelihood strategy is a heterogeneous social and economic process that exists according to the pressures and opportunities available in the rural economy (de Haan & Zoomers, 2005). These causes and effects align with the location context, such as demographics, vulnerability, income level, and education (Ellis, 2003). The strategies of households in rural areas to achieve sustainable livelihoods can be in the form of agricultural intensification, diversification, and migration (Abera et al., 2021; Ellis, 1999; Fierros-González & Mora-Rivera, 2022; Mao et al., 2020; Su & Yin, 2020). Furthermore, it is sustainable, assuming the livelihood strategy implemented can overcome stresses and shocks and maintain and increase assets without damaging the natural resource base (DFID, 2001; Scoones, 1998). In general, the term livelihood strategy is a multi-concept that refers to how individuals or communities make a living with their assets and achievements in a particular context.

Migration in a Sustainable Livelihoods Framework (SLF) Approach. The study of livelihoods has become one of the dominant approaches to understanding how those living in rural areas survive (DFID, 2001; Ellis, 2000; Scoones, 2009). The SL framework helps in understanding the relationship between migration and livelihoods. It describes the various contexts in which migration decisions are made to implement livelihood strategies. This framework approach is considered appropriate for analyzing migration behavior since the decision to migrate is not just an individual decision that is separated from their social environment and not only on macroeconomic conditions as a determining factor for migration. In the context of the SL framework, the analysis is carried out through appropriate institutional approaches to analyze migration decisions (McDowell & de Haan, 1997).

Furthermore, Ellis (2003) stated that the SL framework could help understand how migration is carried out as a livelihood strategy to alleviate poverty and vulnerability. The term SL not only explains how to survive but also analyzes the available resources that can be used to build a livelihood, the risk factors that must be considered in managing resources, and the institutional and policy contexts that can encourage or hinder a better life. The SL framework previously developed by DFID (2001) and Scoones (1998) was used by Tanle (2015) to develop a conceptual framework to explain the relationship between migration and livelihoods, emphasizing migration as a livelihood strategy. The framework analyzes six main components, namely: (1) background characteristics, which are conditions that cause migration; (2) livelihood resources; (3) vulnerability context; (4) institutional structure; (5) livelihood strategies; and (6) livelihood outcomes (Figure 1).

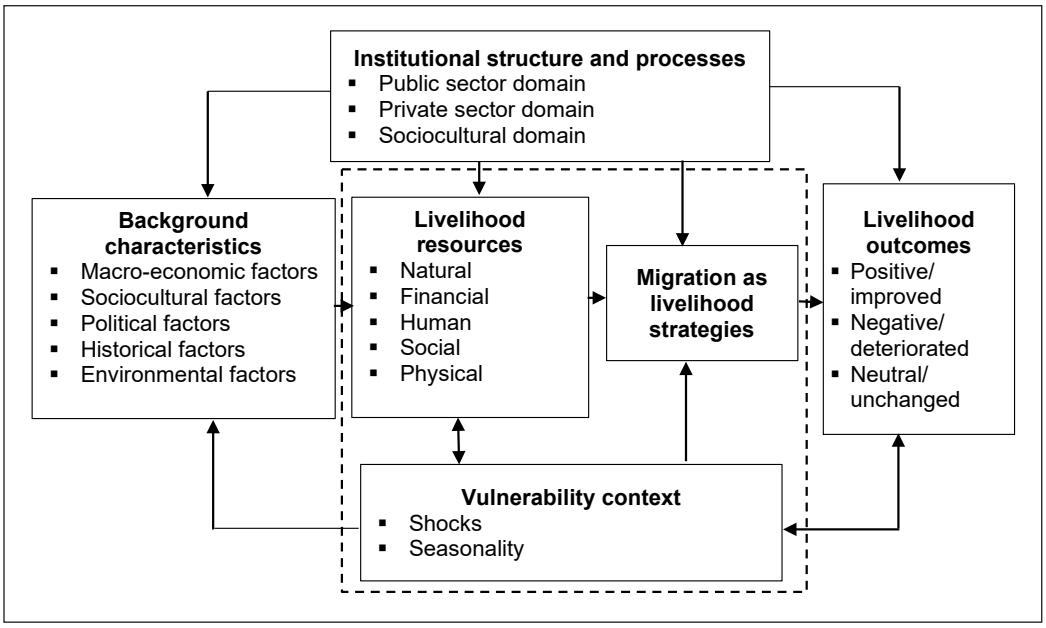

Figure 1. A framework for migration and livelihood studies (Tanle, 2015)
Note. Research focus

This research focuses on micro-level analysis by evaluating the variables related to the internal conditions of the farmer's household, which ultimately influence the decision to migrate. Scoones (2009) reported that strategies for realizing sustainable livelihoods are closely related to how individuals and households combine available resources in response to pressure and change. According to previous studies by Ao et al. (2022), Giri (2022), He and Ahmed (2022), Nath et al. (2020), Su and Yin (2020), Xu et al. (2019), and Wang et al. (2021), it is known that livelihood resources or capital have an impact on the strategies carried out by households. Fang et al. (2014) emphasized that the ability to conduct various livelihood strategies is determined by ownership of material, social, tangible, and intangible assets. Furthermore, Ding et al. (2018) and Mao et al. (2020) reported that the development of livelihood resources could increase the variety of strategies implemented for sustainability. Therefore, this research focuses on discussing two of the six components of the SL framework, namely household livelihood sources and vulnerability contexts.

The analysis of livelihood resources provides an overview of its various types, which can influence the decision to migrate. First, the availability of natural resources can be used for productive activities, specifically in resource-based activities, such as agriculture, fisheries, and forestry (DFID, 2001). Households use financial resources to analyze the financial ability of households (Ellis, 2003). Human resources (HR) emphasize how the condition of family members. The quality of human resources

can influence the decision of migrants to select their migration destinations and the available opportunities (Tanle, 2015). Fourth, physical resources are productive assets owned in farmer households and are related to the condition of natural resources that can be used for productive activities, such as land cultivated. Finally, social capital emphasizes migrant networks, which can provide access to information on economic opportunities and a safety net during difficulties (Tanle, 2015).

In addition to the resources, the vulnerability context is also a determining variable in the decision to migrate. Furthermore, it is not the same as poverty, which economists define in strict terms (e.g., the poverty line), while reference is made to a trend toward "vulnerable" conditions (Ellis, 2003). Tanle (2015) mentioned three elements identified as vulnerability: shocks, seasons, and household dynamics. In the event of a shock, an individual must survive sudden events without prior warnings, such as illness, loss of livelihood, natural disasters, conflicts, and crop failure due to pests and diseases (Adger, 2006; Ellis, 2003; Tanle, 2015). Furthermore, Mengistu (2022) stated that vulnerability is also determined by various manufactured, institutional, and wealth factors. This vulnerability context is identified based on the vulnerability felt by a community and migrants (Ellis, 2003).

MATERIAL AND METHODS

This study uses panel data from wave 4 (in 2007) and wave 5 (in 2014) of the Indonesian Family Life Survey (IFLS). Furthermore, IFLS is Indonesia's longest panel research. Data from waves 4 and 5 were selected to describe the current phenomenon related to migration carried out by farmer households. The unit of analysis used in this study is farmer households in West Java Province was selected based on the boundaries or definitions of farmer households according to the Indonesian Central Statistics Agency. To analyze the migration of household members, they are classified into migrants and non-migrants. This research is only limited to the migration between 2007–2014. The data was obtained from the IFLS questionnaire, which specifically asked, "have you ever moved across the village boundary since 2007 and lived at your destination for six months or more?" Migrants are household members that migrated during this period. The respondents who met these criteria were 615 people, including 89 migrants and 526 non-migrants.

The description of migration carried out by household members describes information about migration behavior such as destination, reason, and who migrated. The data was obtained from the answers of the 5th IFLS respondents that migrated between 2007–2014. Data on migration behavior is obtained from Book 3A chapter MG, where the IFLS questionnaire specifically asks, "where is the destination of migration (across village/sub-district/city/regency/country boundaries);" "the main reason for migrating." Meanwhile, the migration data describes the background condition of the migrant household through the variables of the condition of human,

natural, physical, and financial resources. The descriptive statistical analysis explains the general description of migration carried out by farming households.

Figure 2 shows the factors influencing migration decisions, ultimately determining their member's migration process.

The decision to migrate (with YES and NO categories) becomes the dependent variable to achieve the research aims mentioned above. The data were obtained from the answers of farmer household respondents in IFLS wave 5, migrants and non-migrants, of about 615 people. Meanwhile, the independent variables describe the sources of livelihood and the vulnerability context that drives migration, as shown in Table 1. Data were obtained based on the answers of the same respondents in IFLS wave 4.

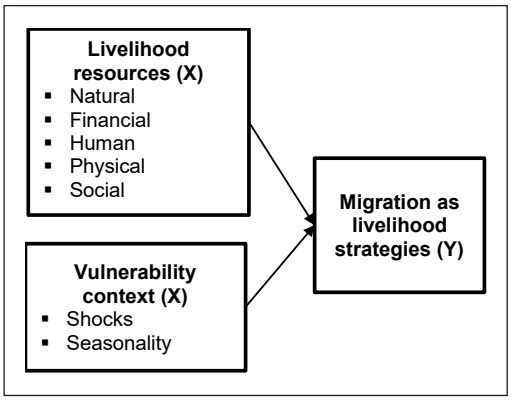

Figure 2. Conceptual framework

Table 1
List of independent variables

No	Variable	Description	Category	Data Source
	A. Human Capital			
1	Age	Respondents' age	Productive: 15–64 years old Nonproductive: > 64 years old	Answers to the questionnaire in book 3A section KR (Household Characteristics)
2	Gender	Respondents' gender	Male/Female	
3	Marital status	Respondents' marital status	Married/unmarried/ widower or widow	
4	Level of education	Last education level	No school/did not finish elementary school—up to college graduation	
	B. Natural and Physical Resources			
5	Land ownership	Do you own farming land?	Yes/No	Answers to the questionnaire in book 2 section UT (farming)
6	Cultivated land area	The area of land used for farming	Area: >1Ha Medium: 0.5–1 Ha Narrow: <0.5 Ha	
	C. Financial Resources			
7	Current living condition	Perception of the ability to meet needs	Ordinal scale: less than enough – more than enough	Answer the questionnaire in book 3A section SW (welfare)
8	Perceived economic status	Household economic status based on respondents' perception	Ordinal scale: very poor to very prosperous	
9	Ability to maintain life in the next five years	Respondent's perception of the ability to conduct their lives in the next five years	Ordinal scale: very difficult to very easy	

Table 1 *(continue)*

No	Variable	Description	Category	Data Source
10	Ability to meet food needs	Ability to meet food needs	Ordinal scale: less able to more than capable	
11	Ability to meet the healthcare	Ability to meet health care needs	Ordinal scale: less able to more than capable	
12	Ability to meet children's needs	Ability to meet children's care needs	Ordinal scale: less able to more than capable	
	D. Vulnerability Context			
13	Crop failure (dummy)	Crop failure incident	Yes/No	Answers to the questionnaire in book 2 section UT (farming)
14	Satisfaction with the current state	Perceived vulnerability based on satisfaction with current conditions	Ordinal scale: very satisfied to very dissatisfied	Answer the questionnaire in book 3A section SW (welfare)

The IFLS data could not measure the social capital variable owned by the household. Therefore, it is not included in the regression equation. Instead, social capital analysis was carried out descriptively based on the results of the literature research.

Furthermore, to explain the factors influencing the decision of household members to migrate, the data were analyzed using logistic regression analysis with the following equation:

$$P(x) = \frac{e^{\alpha + \beta 1x1 + \beta 2x2 + \beta 3x3 + \beta 4x4 + \ldots\ldots\ldots\ldots + \beta 14x14 + \varepsilon}}{1 + e^{\alpha + \beta 1x1 + \beta 2x2 + \beta 3x3 + \beta 4x4 + \ldots\ldots\ldots + \beta 14x14 + \varepsilon}}$$

Description:

P (x): Ever migrated (yes or no)

α: Constant

β: Regression coefficient

e: Exponent

ε: Error

X_1: Age

X_2: Gender (dummy)

X_3: Marital status (dummy)

X_4: Level of education

X_5: Land ownership (dummy)

X_6: Cultivated land area

X_7: Current living conditions

X_8: Perceived economic status

X_9: Ability to maintain life in the next five years

X_{10}: Ability to meet food needs

X_{11}: Ability to meet the health care

X_{12}: Ability to meet children's needs

X_{13}: Crop failure (dummy)

X_{14}: Satisfaction with current living conditions

RESULTS AND DISCUSSIONS

Overview of Migration Performed by Members of Farmer Households in West Java Province

This discussion describes the characteristics of migrants and the migration that members of agricultural households carried out in West Java between 2007 and 2014 of about 89 people consisting of 58.4% men and 41.6% women. Compared to non-migrants, the percentage of those that migrate is relatively low, at 14.5%. However, it shows that certain factors can prevent household members from staying in the area of origin. Concerning the framework for the livelihood security strategy described by Ellis (1999), it is assumed that most agricultural households prefer to implement other livelihood security strategies, such as employment diversification and agricultural intensification, then migration. However, households also use other strategies to ensure their livelihoods (McDowell & de Haan, 1997).

The following describes livelihood resource conditions and the migration patterns used to explain this process. The human resource variable describes the demographic characteristics of the migrants. For farmer households, both men and women have a role in maintaining household livelihoods (Table 2). Tables 2 and 3 also show that most migrants are people of productive age, only having completed formal education up to basic education, and are married. Several previous research has shown that young people are more likely to migrate. Productive age family members are livelihood assets because this group has physical abilities, is more ready to take advantage of new opportunities, are and able to adapt compared to the older age group (Iqbal et al., 2021; Manel et al., 2017; Salam & Bauer, 2022).

Table 2
Migrant demographic characteristics

Variable	n (person)	%
1. Human capital		
Gender		
Male	52	58.4
Female	37	41.6
Age (years)		
15–64	84	94.4
> 65	5	5.6
Marital status		
Married	75	84.3
Not married yet	14	15.7
Widow/widower	-	-
Education Level		
Not in school/not graduated from elementary school	6	6.7
Elementary school graduate	45	50.6
Junior high school graduate	18	20.2
Senior High school graduate	15	16.9
College	5	5.6
Position in the household		
Head of household	32	35.9
Husband and wife	23	25.8
Child	27	30.3
Other Neighborhood members	7	7.9
2. Natural & physical resources		
Own land		
Yes	33	37.1
No	56	62.9
Land tenure status		
Landowner	7	7.9
Landowner & land tenant	25	28.2
Land tenant	56	62.9

Table 2 *(continue)*

Variable	n (person)	%
Cultivated Land Area		
< 0.5 Ha	77	86.6
0.5–1 Ha	9	10.1
>1 Ha	3	3.4
3. Financial resources		
Current living conditions		
Not enough	61	68.5
Sufficient	25	28.1
More than enough	3	3.4
Perceived economic status		
Very poor	4	4.5
Poor	42	47.2
Enough	36	40.4
Prosperous	6	6.7
Very prosperous	1	1.1
Ability to maintain life in the next five years		
Very incapable	0	0
Not capable	23	25.8
Capable enough	62	69.7
Capable	4	4.5
Very capable	0	0
Ability to meet food needs		
Inability to meet needs	17	19.1
Capable of meeting the needs	68	76.4
More than able to meet the needs	4	4.5
Ability to meet health care needs		
Inability to meet needs	28	31.5
Capable of meeting the needs	56	62.9
More than able to meet the needs	5	5.6
Ability to meet children's needs		
Inability to meet needs	60	67.5
Capable of meeting the needs	27	30.3
More than able to meet the needs	2	2.2

In connection with the level of education of migrants, their share at each level of education shows the tendency towards migration for the reason of work (Table 3). It means that educated and less educated migrants try to find new jobs in the destination area. It raises concerns that the number of uneducated migrants leads to a lack of economic security in the destination area. The low level of education of most migrants will limit access to job opportunities and opportunities to earn better wages (Bhattamishra, 2020; Marta et al., 2020).

Most of the respondents were married (Table 2), and they usually moved without being accompanied by family members (Table 4). The position in the household seems to influence the desire to migrate. Some migrants are heads of households (Table 2) because of their financial obligations. Research by Jong and Gordon (1996) in Thailand and Regmi et al. (2020) in Nepal also showed that the head of the household, both male and female, are more likely to migrate than other members due to their responsibilities to the family. It shows that one way to generate income for farming households is by permanently or temporarily migrating a family member. This behavior has been common in rural-urban migration in Java since the 1980s, as described by Mantra (1981) and Tirtosudarmo (1984). It is also a common phenomenon in rural-urban migration in Indonesia and a kinship network for migrants, where the successful ones invite other family members (Mulyoutami et al., 2016; Noviati et al., 2022). The kinship network is one of the social capital that is a pull factor for migration. It is formed between migrants in the area of destination and potential ones in the area of access, security, and social

support during difficulties (Castles et al., 2005; Massey et al., 1993).

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The explanation above shows that productive human resources are an asset for the migration of farming households as a livelihood strategy. Migration provides opportunities for immigrants to earn income outside the agricultural sector. This result also shows the potential for new problems related to the issue of farmer regeneration which is an important agenda in agricultural development in Indonesia (Dayat et al., 2020; Susilowati, 2016). However, these productive age migrants can be a brain gain for rural and agricultural development when empowered adequately to contribute to agriculture and the rural economy. Anwarudin et al. (2018) and Setiawan et al. (2015, 2016) stated that motivation, readiness, and ecosystems need to be built for young actors to become more adaptive and ready to return to the agricultural sector and create livelihoods in their areas of origin.

In agricultural activities, physical resources are closely related to the condition of natural products. The land is the main resource for carrying out their livelihoods of physical and natural resources through cultivation. Table 2 shows that most migrant households do not own land and are tenant farmers or sharecroppers with a cultivation rate < 0.5 Ha. The narrowness of arable land causes income from farming to be unable to meet household needs, affecting financial resources. As a result, most respondents were not economically prosperous and unable to meet household needs related to children (Table 2). It shows that the pressure to meet the family's needs is one of the drivers for members of the farming household to migrate. It is in line with the research by Regmi et al. (2020) and Salam and Bauer (2022) and confirmed through the reasons for migration described in the next paragraph.

The main reason for migration for both males and females is related to work (Table 3). It reflects that migration for most respondents is a livelihood strategy adopted by farmer households due to limited employment opportunities and low incomes in the agricultural sector. The availability of jobs in the agricultural sector is related to the shift in social ties in rural areas. Mardiyaningsih et al. (2010) and Kurnia (1999) explained that major changes that have occurred since the green revolution was launched have resulted in the erosion of patron and client relationships, resulting in a gap in social relations in rural areas. Agricultural engineering introduced during the "Green Revolution" also marginalized wage laborers, including female workers. Some activities, such as weeding and threshing rice, are no longer necessary

Table 3
Distribution of migrants by reason for migration

	Reasons to migrate (n = person)					
	Job-related	Education	Marriage	Transmigration	Disaster	Other
Gender						
- Male	41	5	1	1	1	3
- Female	25	5	4	0	3	0
Total (n)	66	10	5	1	4	3
Level of education						
- Not in school/not graduated from elementary school	1		1	1	2	1
- Elementary school graduate	40		2		2	1
- Junior high school graduate	13	4	1			
- Senior High school graduate	8	5	1			
- College	4	1	1			1
Total (n)	66	10	5	1	4	3

because machines have replaced their positions (Breman & Wiradi, 2002; Djoh, 2018).

The rural-urban migration seems dominant in this case (Table 4). Lee (1966) stated that the push and pull migration factors occur for two reasons, first, because of the narrowing of employment opportunities in villages, and second, because cities promise jobs with better wages. The theory is still relevant and used to explain the phenomenon of rural-urban migration in Indonesia and various countries globally (Alarima, 2018; Sridhar et al., 2013; Ullah, 2004). However, several empirical research also shows that apart from economic reasons, the impetus for rural-urban migration is also due to limited facilities (education, entertainment) in villages and because cities promise opportunities to access better facilities (Alarima, 2018; Fassil & Mohammed, 2017; Manel et al., 2017). It can also be seen in Table 2, where migrants with secondary education migrate to pursue a better education.

Table 4
Distribution of migrants by flow and migration destination area

Variable	n (person)	%
Migration Flow		
rural-rural	24	27.1
rural-urban	48	53.8
urban-rural	3	3.4
urban-urban	14	15.7
Migration Destination Area		
Domestic		
within the province	55	61.8
outside the province	24	26.8
Overseas	10	11.4
Moving with family members		
Yes	31	34.8
No	58	65.2

Migration dynamics are in line with the context of place and time. One of the 'big' occurrences that changed migration dynamics was the conditions during the Covid-19 pandemic, which hit almost all

countries worldwide, including Indonesia. The Covid-19 pandemic brought Indonesia and many countries into an economic crisis (Statistics Indonesia, 2021b). The crisis has more impact on people in urban areas than rural areas.

Statistics Indonesia (2021b) stated that the number of poor people in urban and rural areas rose by 1.32% and 0.60% (September 2019, 2020). The loss of jobs, as well as the decline in real incomes and the standard of living, have caused the welfare of the people to decrease. Many migrants can no longer be involved in the urban economy and are forced to return to their village. It shifts the pattern of rural-urban migration, where the city is no longer the livelihood of migrants. According to Breman and Wiradi (2002), this condition is similar to the economic crisis that hit Indonesia in 1998 when residents were forced to return to their villages. Arifin (2021) stated that based on data from the 2020 National Manpower Survey (Sakernas), there was an increase in the share of the agricultural workforce during the pandemic (2019, 2020). It became an additional burden in the agricultural sector as the main source of livelihood with low productivity.

Factors Affecting the Decision of Farmer Household Members to Migrate

To obtain a more precise description of the factors that influence the migration decision of agricultural households, a multinomial regression model with two category-dependent variables (migration or non-migration) was estimated. The analysis was carried out on 615 members of the farmer's household. Age, current living conditions, the ability to provide for children's needs, and crop failure significantly affect the decision to migrate (Table 5). Furthermore, it shows that several dimensions of human and financial resources and the context of vulnerability are the determinants used by farmers to make migration decisions.

Age has the opposite effect on migration decisions (β = -0.075). Respondents of productive age have a total of 1.078 times the number of chances to migrate (OR = 1.078) and vice versa. This result is in line with the research by Regmi et al. (2020), stating that age is nonlinearly related to migration. It strengthens the description of the characteristics of migrants discussed previously, where most are productive age population. The age variable relates to physical, overcoming risks, and adapting abilities. From a human resources perspective, the productive age population is a livelihood asset that supports farmer households. Meanwhile, the respondents' education level does not affect the decision to migrate. Table 2 shows that most migrants have a low level of education and are willing to enter any employment sector. Uneducated migrants often rely on social networks to obtain information about job opportunities in their destination (Marta et al., 2020; Morten, 2016). This result is different from the studies conducted by He and Ahmed (2022) and Synthesa (2021), where the higher the level of education, knowledge, and skills, the greater the opportunity for household members to switch from the

agricultural sector and seek opportunities within and outside the village. It reinforces that household members migrate solely to carry out livelihood strategies and rely more on physical abilities to find work outside the agricultural sector. Likewise, gender does not influence the decision to migrate. Farmer households mobilize their members, both men and women, to earn a living outside the village. The results of this study are similar to those of Susilowati (2017) and Tridakusumah et al. (2015), which show that men and women in farming households in Indonesia have the same role in carrying out income diversification strategies.

Meanwhile, financial resources explained through the variables of current living conditions and the ability to meet children's needs influence the decision to migrate, as shown in Table 5. The lower the perceived current living conditions (β = -1.860), increases the migration opportunity by 0.704 times. Furthermore, the greater the inability of respondents to meet children's needs (β = -1.433) also increases the tendency to migrate by 0.994 times (OR = 0.994). It confirms the previous study that migration is an opportunity for farmers to overcome limited financial resources (Bellampalli & Yadava, 2022; Nguyen et al., 2013; Rajan & Pillai, 2020; Tanle, 2015; Tridakusumah et al., 2015).

The vulnerability context is one of the sections treated as a livelihood security strategy when assessing migration. For farmer households, events related to natural

Table 5
Panel data logistics regression results

Variable	Coefficient(β)	Sig.	Odds Ratio (OR)
Human resources			
Age	**-0.075**	**0.001****	**1.078**
Gender (male; female)	-0.85	0.824	0.918
Marital status (married; not/unmarried)	1.518	0.172	4.562
Level of education	0.21	0.221	0.979
Natural and physical resources			
Land ownership (yes; no)	-0.182	0.112	0.833
Cultivated land area	1.146	0.426	3.174
Financial resources			
Current living conditions	**-1.860**	**0.034****	**0.704**
Perceived economic status	0.008	0.986	0.992
Ability to maintain life in the next five years	0.593	0.697	4.699
Ability to meet food needs	0.179	0.215	3.259
Ability to meet health care needs	2.225	1.864	4.927
Ability to meet children's needs	**-1.433**	**0.057***	**0.994**
Vulnerability context			
Crop failure (yes; no)	**1.294**	**0.025****	**0.274**
Satisfaction with current living conditions	-0.232	0.176	3.572

conditions such as floods, droughts, pests, and disease attacks can result in a decrease or loss of income. Furthermore, it is one of the vulnerable factors for households that can ultimately influence the decision to migrate (Ellis, 2003; Tanle, 2015). For example, the analysis of West Java agricultural households showed that poor harvests influenced the decision to migrate. Furthermore, if an individual experiences this, the probability of migrating is 0.274 times higher than if they do not (Table 5). It reflects that livelihoods in the agricultural sector are very vulnerable to fluctuations in income and that households are faced with the choice of using other forms of livelihood to maintain or improve their well-being. Some previous literature shows that migration by members of farmer households to another farm (rural migration) or work in the non-agricultural sector (rural-urban migration) is a common response to overcoming seasonal problems (Bogale & Erena, 2022; Ellis, 2003; Lottering et al., 2021; Pritchard et al., 2019; Rijanta, 2016).

Meanwhile, other variables related to farming activities, namely land ownership and cultivated land area, do not significantly influence the decision to migrate. It is slightly different from the results of previous research conducted by Jong and Gordon (1996) in Thailand, Kosec et al. (2018) in Ethiopia, and Pritchard et al. (2019) in Myanmar, where land is an intermediate variable in determining the food security of the household and a driving factor for migration. Many members of homeless farmer households choose to migrate to areas with better job opportunities. The data from this survey shows that most of the farmer households, both migrant and non-migrant in West Java Province, have an almost similar picture, where some do not own land or as sharecroppers, and most cultivate land under 0.5 Ha. Ultimately, the decision to migrate is more determined by the perceived vulnerability and the availability of other sources of livelihood within or outside the current place of residence.

CONCLUSION

This study analyzes migration decisions using a framework approach for sustainable livelihoods. Data from the IFLS panel were used to examine household changes over time and explain the migration decision context. The results, in general, illustrated that the livelihood of farmers' households is influenced by the availability of resources and access to sources within or outside the residential area. Meanwhile, their main motive for migrating is the economic drive. The risk of poor harvests and the ability to meet their needs make households feel vulnerable to the sustainability of their livelihood in the region of origin and become a driver of migration. Although there are other reasons for migrating, for example, marriage or education, the main impetus is to improve household life.

In addition to limited financial resources, the availability of human resources, specifically the age variable, also influences the decision of household members to migrate. The members of

the productive age are assets that can be used to improve livelihood outcomes. Furthermore, migration to work or pursue a better education is expected to bring changes to the well-being of farmer households. Based on the concept of 'brain gain,' it is viewed as an investment in human resources (Bongers et al., 2022; Mayr & Peri, 2008; Stark et al., 1997). Returning migrants are expected to be experienced, educated, be experts and contribute to the development of their region of origin through the transfer of technology and knowledge (Kuépié, 2018).

Agricultural development is needed to ensure the livelihoods of the households involved. In contrast, migration carried out by members of farmer households will positively impact agricultural development through the 'brain gain' of returning migrants. Therefore, it is important to develop a strategy of reintegration, both economically and socially, so returnees can contribute to agricultural development. Furthermore, if returnees can secure their livelihoods, the potential for re-migration decreases. In this case, efforts to re-integrate can be considered an important factor in the development.

Research Limitations

This research only includes migration from 2007–2014, and it is assumed that all individuals that migrated before 2007 are non-migrants, although many households are very likely to migrate before 2007. Furthermore, the available data are less likely to capture circular migration behavior or seasonal migration that is commonly carried out by members of farmers' households in West Java Province. Future research is expected to use longer data panels to describe the migration behavior of households that are not accommodated in this research. Research with direct interviews with farmer households is strongly recommended to complement these results.

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