

## Summary of Doctoral Thesis

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Title	<b>Determinants analysis of farm succession in Indonesian agriculture</b>
<p><b>Introduction and purpose</b></p> <p>Indonesia, a large and well-populated archipelago, has an abundance of the agricultural, fishery, and marine resources. Indonesia is a middle-income country with a GDP of USD 4,293 per capita. Agriculture is still a key strategic sector identified by the government. The Indonesian agricultural sector depends on family farms. However, recently the aging of these farmers is advancing. Yet, the number of successors remains low. Young people in the agricultural sector are decreasing by 3.2% per year. The aging phenomenon of farmers not only has implications for food security in the future but also correlated with conservative decision-making towards the sustainability of agriculture.</p> <p>The distribution of farm size also varies across sub-sectors. Small farms are associated mostly with food crops, with an average farm size of 0.3 ha on Java Island and 1.4 ha on other islands. The small size of farmland may generate less income and be less attractive to potential successors. As a result, nowadays people of younger generations are interested in non-agricultural occupations. This trend obstructs the regeneration of farming expertise. Therefore, generally this study is necessary to identify characteristics of farmers with a successor, clarify patterns of farm succession, and examine successful strategies for farm succession through the determinant analysis. This study is expected to yield valuable insights into the development and sustainability of agriculture in Indonesia.</p> <p>The main objective of this study is to explore the current state of family farm succession in Yogyakarta Province, Indonesia. In order to do so, the process of farm household succession will be investigated to describe the farm succession practices (Chapter 2). In addition, sociodemographic, economic, and social influences on the likelihood of farm household succession will be identified (Chapter 3). The factors affecting the farm succession and farmers' motivation to continue farming will be determined to assess the future farm succession (Chapter 4).</p> <p>To address these objectives, the study aims to answer the following research questions:</p>	

1. Research question 1 – How does the process of farm household succession work and what are the major challenges?
2. Research question 2 – What sociodemographic, economic, and social factors influence farm household succession?
3. Research question 3 – What factors affecting farmers' motivation to keep continue farming?

### **Materials and methods**

The data of farm households were collected at Margomulyo and Margokaton village, Seyegan sub-district, Sleman District, Yogyakarta Province. This agriculture area has typical production activity for Central Java. In addition, the Central Java, West Java, and East Java provinces also have a contribution to the total national rice production of around 60%. Agriculture and irrigation have been developed in this region over many centuries. Rice is grown extensively in this zone with yields of more than 5 tons/hectare (Rotgé, 2018). However, the study area is located near Yogyakarta City. The village residents can readily access non-agricultural job opportunities there. Therefore, the village faces a great challenge in farm succession because well-educated young people from farm households tend to pursue non-agricultural occupations. A total of 155 samples of farm households from two villages were interviewed via a semi-structured questionnaire. Quantitative and qualitative analyses were used to analyze the data.

### **Results**

Chapter 2 – The first study was conducted to identify characteristics of farmers with and without a successor, to clarify patterns of farm succession and farmer retirement, and to examine strategies for successful farm succession. Results clarified that 56.2% of farmers have identified a potential successor to continue farming in the future. However, only 1.8% of successors worked full-time in farming while 44.5% of potential successors worked part-time in farming. For the study area, results clarified succession patterns of two types, with potential successors chosen directly and indirectly.

Furthermore, results also revealed that the type of farm households without a potential successor indicates farmers have remained unmarried and because potential successors might be too young. However, farmers believe that they will find and identify such a successor. Some farmers apparently hold out hope that they might identify a successor among their grandsons, relatives, or sons-in-law. The future's plan of these farmers indicates that the land tenancy system of sharecropping will be

increasingly common as a fate of farmland in the future. Sharecropping systems, if well managed, represent a good alternative strategy to improve farm succession. Evidence also suggests that the parental role in the primary socialization process is the key factor affecting farm household succession. Training usually takes place within the family. Therefore, farm succession planning is necessary for farmers. Planning benefits smooth succession immensely.

Chapter 3 – The second study was conducted to elucidate factors influencing farm household succession in agricultural occupations. Binary logistic regression analysis revealed that four variables significantly influence farm household succession in agricultural occupations: farmer age, farmer children with non-agricultural jobs, farmland area, and the number of family laborers in farm households. Older farmers show a stronger tendency to have a successor. Non-agricultural jobs of a farmer's children decrease the probability of the farmer having a successor. Furthermore, farmers with small landholdings have a higher probability of having a successor. The inheritance system might affect farm succession processes in the study area. Results also suggest that greater numbers of family laborers in farm households are associated with higher chances of having a successor.

Chapter 4 – The third study was conducted to elucidate the motivations of farmers to continue rice farming including factors related to motivation. Based on local customs, most farmland is bestowed by parents to children equally. It makes the future farmland size smaller. Farmers are also unable to support themselves if they must do solely based on agricultural income. However, results clarified that, overall, the rice farmers' motivation to continue farming is categorized as moderate. In detail, the relatedness needs have the highest score of farmers' motivations, although this item is categorized as a moderate level. It indicates that farmers want to share good relationships and work with other farmers. In addition, the factors that have a significant and positive relationship with the farmers' motivation to continue farming are farmers' education, number of children, side jobs, and encouragement by parents to be a farmer. Inheritance land status is negatively influenced the farmers' motivation to continue farming.

### **Conclusion and consideration**

Indonesian farmers often ask how Indonesian agricultural sector will survive if younger people leave the sector. This study cannot directly answer this question, but it can at least explain which type of farm household is more likely to have a succession plan, and which is less likely. From this study, it can be concluded that although recently farm succession has become an issue in Indonesian

farm households, farmers could have a potential successor. Farmers mentioned having one or more than one successor. However, the main reason for farm successors to continue farming is the lack of other job opportunities, possibly perceived by the overall low education level. Aspirations of educated and productive farmers for their children pursuing non-agricultural jobs may indicate a pending turning point leading to higher education levels and potentially lower succession rates among the next generations. Yet, farmers with higher education can think more forward and solve farming problems.

Results also revealed that the type of farm households without a potential successor indicates farmers have remained unmarried and because potential successors might be too young. However, farmers believe that they will find and identify such a successor. Some farmers apparently hold out hope that they might identify a successor among their grandsons, relatives, or sons-in-law. The future's plan of these farmers indicates that the farmland will be returned to the landlord or to the government. Alternatively, it will be bestowed equally to children and non-family members. It also might be used for residence. The land tenancy system of sharecropping will be increasingly common as a fate of farmland in the future.

Moreover, the investigation of the farm succession process in the study area showed strong traditional components of farm management in rural areas. Due to the overall tradition that farmland must be bestowed equally between all children during inheritance, average farm sizes all over Java Island are declining dramatically. Although this decline is not perceived as a problem by most local farmers, it has several negative consequences – farming practices need to be constantly adapted and optimized, fragmentation of plots complicates efficient cultivation, and livelihoods are endangered by insufficient incomes.

Attracting younger people and inspiring high motivation for farming is better for successful farm succession. Farmers must also be supported to avoid fragmenting the farmland or organize a community farming to consolidate the farmland. Supporting farmers to encourage them not to fragment their landholdings during the succession process might help to secure the future successor. Alternatives to the current inheritance tradition could be created and with governmental support introduced to areas highly affected by shrinking land sizes. Further research must be conducted to ascertain inheritance system effects by bestowing the farmland equally during farm succession.

This study is conducted in only one region, therefore, the generalizability of the results of the

present analysis is constrained. Furthermore, the questionnaire used for this study is based mainly on socioeconomic statements. The farm household survey only reflects the perspective of current farm managers (farmers). Further research must be conducted in other regions or other provinces for a comparative case study of farm succession. It is expected that the variables of other types (e.g., successor characteristics, labor market, government support, family support, the motivation of young generation, the participation of young generation in agriculture, local custom, religion) might affect farm household succession. Therefore, it is necessary to conduct further research for clarifying the actual successor of Indonesian agriculture that seems to be suitable in the future. It might also be necessary to conclude more detailed policy suggestions for farm succession issues in Indonesia.