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IMPACTS OF LOAN SUPPORT POLICY ON FARM INCOME IN VIETNAM

THIEN LY DAO [a], THAI-HA LE [b] AND BINH TRAN-NAM [c]

[a] *Good Neighbors International, Vietnam*; *Fulbright University Vietnam, Vietnam*
[b] *VinFuture Foundation, Vietnam; IPAG Business School, France*
[c] *University of New South Wales, Australia*

Assessing the impact of agricultural policies is challenging due to resource limitations and problem identification. This study evaluates the impact of a loan support program on the income of agricultural farms in Vietnam's crop cultivation and aquaculture sectors. Using the regression discontinuity method and data from Vietnam's Rural, Agriculture, and Fishery report, encompassing 15,749 farms across 23 provinces in the Central Highlands, Southeast, and Mekong River Delta, we analyze the program's effects based on farmland holding size. Results indicate a positive impact on annual crops value but a negative impact on income from rice cultivation. Income from perennial crops, such as coffee, showed little increase, while income from pepper cultivation decreased. However, income from aquaculture demonstrated an increase. Overall, the program positively influenced total income with an annual increase of approximately 14.5%. It is evident that the loan support policy is suitable for farm development but may not always yield positive outcomes for specific activities.

Keywords: Loan, Farm, Fuzzy regression discontinuity, Income, Vietnam
JEL Classification: Q12, Q14

1. INTRODUCTION

World economic development over the past decade indicates that agriculture is a tool not merely to eradicate hunger and malnutrition but also to reduce poverty and achieve food security. The contribution of the agricultural sector to the economy occurs mainly

through the farm economy, due to its scale and the application of science and technology in the production process. In Vietnam, as at 2017, although the total number of farms nationwide accounted for only 0.29% of the total number of economic units in the agricultural sector, they created 3.21% of the total production value of the whole sector.[1]

Since 2000, on the basis of promoting the establishment and development of the farm economy, the government of Vietnam has issued some long-term policies directed to this economic sector, particularly policies on land, taxation, labour, investment, science, technology, environment, market, property protection, and credit policy,[2] seeking to exploit the most diverse potential forms of development of each area and region. The estimated total annual budget for supporting the agricultural sector of Vietnam was up to USD 3.3 billion, accounting for 2.2% of GDP in the period of 2011–2013, and about USD 1.5 billion, accounting for 0.7% of GDP in 2017 (OECD, 2015). It is worth mentioning that credit policy or loan support for rural areas is still quite concentrated. Most financial services are provided by a few organizations, such as the Bank for Agriculture and Rural Development and the Bank for Social Policy, which assume key roles, while other units such as the People's Credit Fund, private financial organizations, and non-governmental organizations (NGOs) play negligible roles. This fact, combined with the lack of collateral assets, has reduced farm owners' ability to access loans. As a result, informal credit remains an important source of credit in rural areas.

There is an extensive literature on the impact of credit policy on the living standards of households, especially poor households in rural areas, for both Vietnam in particular and worldwide in general (see, for example, Ho, 2016; Hossain et al., 2019; Nakano and Magezi, 2020). However, few studies have evaluated the impact of loan support policies on the income from the farm economy sector. Khandker and Koolwal (2016) measured the impact of credit policy on household income in Bangladesh and found that that program had a positive impact on households that owned land, increasing the income from livestock that did not require much land; however, the program had no impact on the income from crops. Aung et al. (2019) found little evidence that rice yield increased, and the program involved had some positive effects on total farm income in Myanmar. Nakano and Magezi (2020) showed that the credit program in Tanzania had no impact on rice yield or household income in that country.

For the case of Vietnam, some studies that have assessed the impact of the micro-credit program on household income, such as Thanh et al. (2019), demonstrates that microcredit is an effective development strategy at both micro and macro levels, particularly in enhancing output value and net income of rural households. By contrast, Nghiem et al. (2012) found no significant effects of participation in NGO microfinance

[1] Ministry of Agriculture and Rural Development (MARD): Report results of section 1.5.1b, "Analyze the current status, evaluate the main changes, shortcomings, limitations, impact factors, policy issues and institutional models for the development of farm economy in agricultural production in the past 10 years".

[2] Resolution No. 03/2000/NQ-CP.

on household welfare, proxied by income and consumption per adult equivalent, whereas Phan et al. (2019) detected little impact on rice output, household income and expenditure. The empirical evidence demonstrates that the role of credit in agricultural economic development is undeniable, yet controversial and inconsistent. The mixed findings could be attributable to differences in the context of each country, investigation periods and the reliability of the data sources used in the analysis. The scope of most studies is limited to agricultural production households and the crop sector.

This study seeks to: (1) fill the gap in prior studies by expanding research subjects to both cultivation and aquaculture; and (2) contribute to the literature on the impact of loan support policy in Vietnam – about which there has been no research conducted at a regional scale within the country. Further, the use of the Fuzzy regression discontinuity (RD) method and survey data from the Rural, Agriculture, and Fishery 2016 report (RAF 2016) also represents a novel contribution. Unlike the household economy, the farm economy needs greater amounts of capital for large-scale production. As government support for agricultural production poses a massive burden on the annual budget of the country, it is critical to examine whether the current loan support policy of the government of Vietnam really helps to improve the income of the farm economy. This study aims to answer the above research question and set out appropriate policy implications. For this purpose, we used a data set, including 15,749 farms in 23 provinces in the Central Highlands, Southeast, and Mekong River Delta of Vietnam obtained from RAF 2016. The number of observations in the intervention was 14,625 farms (ranging from 0 to 20 ha in area), 1,534 of which were provided with loans.

The remainder of this study is organized as follows. Section 2 provides a theoretical background of the subject matter and a detailed review of the related literature. Section 3 presents an overview of farm economy operations and credit policies to develop the farm economy in Vietnam. Section 4 discusses the methods used for this empirical analysis. The results are presented and analysed in section 5. Section 6 concludes the study with some policy implications.

2. LITERATURE REVIEW

2.1. Theory of Change

The theory of change has been developed since the 1960s and is extensively used in program evaluation and performance measurement to examine the relationships between inputs and outcomes and how programs work (Funnell and Rogers, 2011). According to expert in the field of monitoring and evaluation Rick Davies, a theory of change defined as: "The description of a sequence of events that is expected to lead to a particular desired outcome"[3]. Or it can be simply understood as the method [that] *starts* with *the*

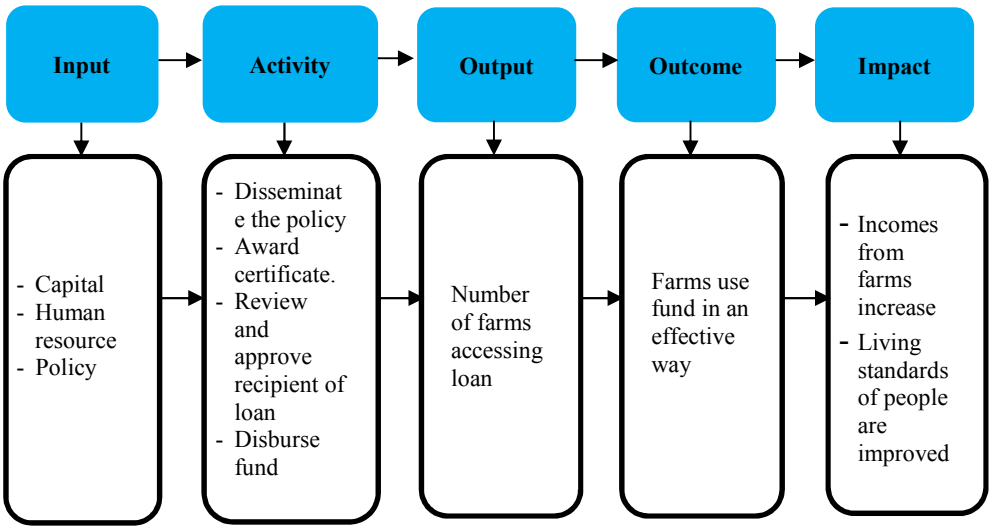
[3] Rick Davies, "Criteria for assessing the evaluability of Theories of Change", Rick On the Road blog (5

changes that you want to see in the future that happens to the beneficiary group.

For government loan support policy in the agricultural economy, a good theory of change would show how the operation of this intervention program contributes to the final outcome, which is the expected living standards of farmers. Does the provision of loans bring about a change in the income from agricultural farms, or is the expected outcome affected by relevant legal and policy frameworks at the national and local levels?

As illustrated in Figure 1, when farm owners receive preferential loans, they will have more opportunity to expand production scale, adopt science and technology, and upgrade management level. The program is thus expected to increase farm income in the treatment group relative to the control group.

The process of impact evaluation adopting the theory of change requires sufficient time and resources. In this study, we measured the outcomes and impacts of the program based on inputs and activities that were carried out before 2016. This allows us at the outset to ignore the bias in sample selection.



Source: Authors' presentation, based on Khandker et al. (2009).

Figure 1. Theoretical Framework for Analysing Loan Program Impact

2.2. Potential Outcome Theory

Impact assessment is essentially used to determine what would have happened to the

April 2012),: blog post on the criteria for assessing the evaluability of a theory of change, http://mandenews.blogspot.co.uk/2012/04/criteria-for-assessing-evaluablity-of.html (accessed 28 April 2021).

treatment group if the program had not existed. Alternatively, it is necessary to determine the income of the treated farm in the absence of intervention. This is a counterfactor and unobservable situation because, at any given time, a farm cannot be in both the treatment and control groups simultaneously (Khandker et al., 2009).

The counterfactor is the income from the treatment farm in the absence of the intervention.

$Y_i 0 | T = 1$: Income from the farm i if its owner is observed as not participating in the loan program but in fact does and is not observed.

$Y_i 1 | T = 1$: Income from the farm i if its owner participates in the loan support program.

$$TOT = (Y_i 1 | T = 1) - (Y_i 0 | T = 1). \quad (1)$$

TOT measures the impact of the program on the treatment group.

2.3. Literature Review

While research on the impact of credit policy on people's living standards is abundant (for instance, Hossain et al., 2019; Nakano and Magezi, 2020; Ho, 2016; Nghiem et al., 2012; Khandker, 2005), studies that examine the impact of such policy on the farm economy is scarce. Aung et al. (2019) employed Fuzzy RD to assess the policy impact on the borrowers of loans from the Myanmar government and showed that there was little evidence of increased rice yields or quantity, but the program had some positive effects on total household income, and there were positive spillover effects on other households' income activities. However, only the program's impact on rice yield and total household income was evaluated.

Other studies have been carried out in Bangladesh to find a causal effect between rural microfinance and income from agriculture. Khandker and Koolwal (2016) used the ordinary least square (OLS) methodology with fixed effects on panel data and demonstrated that the program had a positive impact on land-owning households through improving agricultural productivity from activities that did not require a large amount of land, e.g., animal husbandry. The program was shown to have had no effect on crop output yield and total household income. The study assessed only the impact of the micro-credit program on the total income of agricultural production households and on the output in the animal husbandry and crop cultivation sector in general. Measuring the impact on agricultural farm income in particular was not conducted at the national level. The results indicate that access to credit had positive but indeterminate estimated effects on adoption of modern varieties (MV) of rice as well as rice yield.

Hossain et al. (2019), employing a randomized controlled trial (RCT) design, found that the program in that study had positive but imprecisely estimated effects on rice yield. The micro-credit program increased the income of farming households but had no significant impact on total income or expenditure. The program also prompted a rise in

farm activities. Javed et al. (2006) applied qualitative and quantitative methods to surveyed data, consisting of 225 to 300 households in Pakistan, to evaluate the impact of credit policy. The results indicate that the program significantly increased the quantity of wheat and sugarcane, thereby increasing the household's income. Nakano and Magezi (2020) showed that credit programs did not increase rice yield, profit from rice cultivation, and household income in Tanzania. It is worth noting that these studies were limited to about 300 observations; furthermore, the cultivation field and the object of study was households, not farms.

To date, most studies in Vietnam have only focused on assessing the impact on household income and expenditure based on survey data sets such as the Vietnam Access to Resources Household Survey (VARSH) and the Vietnam Household Living Standard Survey (VHLSS). Phan et al. (2014) utilized cross-sectional data and the propensity score matching (PSM) method to evaluate the impact of the micro-credit program of the Social Policy Bank in the Mekong River Delta. The results suggested that the program had no impact on income of households. Dung and Thanh (2017) determined the causal effect between credit and income on agricultural production using quantitative methods with VHLSS and VARSH data. The program was found to have an impact on the relative increase in the income in agricultural production of the rural households but no significant effect on the crop activities (rice cultivation) of the farmers.

In general, the empirical findings from local and international studies display mixed and at times contradictory results. Further, the scope of most studies has been limited to agricultural production households and the crop sector.

2.4. Factors That Affect Income

For studies of this kind, it is essential to understand where income comes from and which major factors generate it. Classical economists argue that income is generated from three broad factors: capital, labour and land. Neoclassical economists claim that these basic factors are inadequate for fully explaining the origins of income and the disparities in income between households and individuals. Another notable factor these economists point to is human capital, including educational attainment, unobserved natural or personal qualities, and anthropological attributes such as gender, age of household, and farm's head. In summary, the factors affecting the income of agricultural farms are taken in this study to be as follows:

[1] *Land*: Land is a scarce and irreplaceable factor (Hoque, 1988). For agricultural production, land has special importance in determining the production capacity of the farm. Many studies have shown that land area is closely related to household and farm income (Khan, 1993; Rios and Shively, 2005).

[2] *Capital*: Capital is a prerequisite to help the farm expand its production scale and maximize resources such as labour and land. A good use of external loans will help the farm enhance production and improve productivity, thereby increasing income (Khandker, 2005; Ho, 2016).

[3] *Human resources*: The number of labourers and related factors such as knowledge, skills, attitudes, and behaviours are important factors in determining economic growth. The qualifications of the labour force help maximize the efficiency of machines, equipment, and production technologies (Khan, 1993; Mincer, 1974).

[4] *Characteristics of the farm owner*: Demographic characteristics such as age, gender, and educational attainment of the owner can also affect farm income. The older the farm owner, the more experienced their production management and operation will be. Higher level of educational attainment helps farm owners understand and take opportunities, be sensitive to the market, and diversify products. The gender of the owner can affect the farm's performance because the degree of willingness to borrow money and invest in production is different as between men and women (Démurger, Fournier and Yang, 2010; Yang, 2004).

[5] *Characteristics of farm products*: Different production fields have different types of agricultural products. For the farming sector, depending on the type of annual crops (rice) or perennial crops (coffee, pepper), the capital investment and loan period will be different, thereby affecting farm revenue (Rios and Shively, 2005; Aung et al., 2019; Nakano and Magezi, 2020). In the aquaculture sector (shrimp, fish), due to the strict requirements of customers regarding the quality and safety of the products, the farm must have sufficient capital to invest in equipment and appropriate production technology. Therefore, farm income depends on the production sector and the characteristics of the respective product.

For the baseline model, we adapt the approach of Mincer (1974) to the farm economy to express farm income as a function of land, labour, capital, and other demographics relating to the farm owner. Thus, income can be viewed as a multivariate function that depends on various factors, i.e., $Y = f(X_i)$ with $i = 1, 2, \cdots, n$. This can be expressed in regression form as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_2 + D + u_i, \quad (2)$$

where Y is the farm income and X_1, X_2,⋯, X_2 are factors that relate to land, labour, capital and educational attainment of farm owners; D is the policy factor affecting farm income and assumed to be a dummy variable to indicate whether the farm can access government loan support ($D = 1$ if the farm receives loan support; $D = 0$ if not), and u_i is the error in the model.

3. OVERVIEW OF FARM ECONOMY OPERATIONS AND CREDIT POLICIES TO DEVELOP THE FARM ECONOMY IN VIETNAM

3.1. Overview of Farm Economy Operations

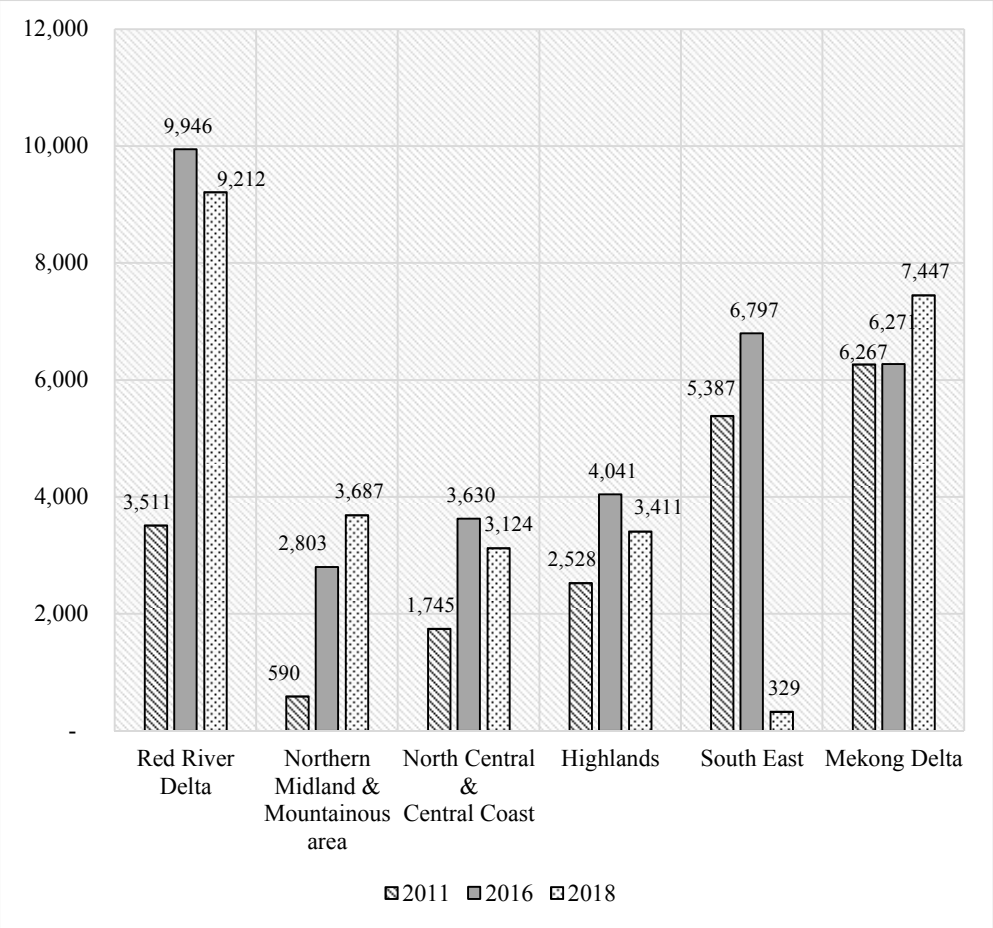
Globally, the farm economy model was formed early and thrived with the advent of

capitalism. Recently, although the number of farms has decreased due to industrialization, the size of the farm and its turnover are both increasing. In Vietnam, while farming has a very long history, it was only after the national reformation in 1986 that the farm economy was recognized and encouraged. Realizing that farming is an inevitable trend in commodity production, the government of Vietnam has introduced many policies and guidelines to provide advantageous conditions for the development of the farm model. February 2000 marked the introduction of the first resolution of the government on the farm economy, Resolution No. 03/2000/NQ-CP, which provides the legal basis, policies, and mechanism for the development of the farm economy. Since then, an increasing number of agricultural farm models have been formed, operating effectively and bringing about high economic value, thus contributing to job creation, poverty reduction, improvement of land use (especially in the midlands, mountainous, and coastal regions), and improvement of the ecological environment. This has also mobilized a large amount of investment capital to develop agriculture, forestry, and fishery, helping to alleviate the pressure due to lack of jobs in rural areas, increase income, and improve the living standards of numerous farming households. Through applying science and technology in production, commodity products and farm incomes are further enhanced.

According to the RAF 2016 report, most regions in the country have experienced rapid growth in the quantity of farms. As of 1 July 2016, the country had 33,488 farms, an increase of 67.2% (equivalent to 13,460 farms) from the 2011 level. However, according to the criteria defining the farm economy issued in 2011 (in Circular No. 27/2011/TT-BNNPTNT), by 2018, the number had since decreased sharply to 27,210 farms. This provides a good signal that applying the law of No.27/2011 has helped the farm sector develop substantially with better turnover, as shown in Figure 2.

The Red River Delta had the largest increase in the number of farms, at 6,435 farms (in 2016). The number of farms in the Northern Midlands and Mountains Region has also increased significantly over the years. In the North and South-Central Coast regions, the Central Highlands, and the Southeast region, the number tended to increase slowly and decreased after 2016. The number for the Mekong River Delta region remained almost unchanged between 2011 and 2016 levels.

Compared to RAF 2011 survey data, the number of crop farms in 2016 increased by only about 6%, whereas the number of aquaculture farms decreased sharply, by approximately 48%. In 2018, both types of farms decreased by 34% and 13%, respectively. The reason for this is the failure to meet the criteria for production value. However, integrated farms increased remarkably strongly, increasing by 112% in 2016 and by 745% in 2018. This shows that the current trend in economic development is combining crop cultivation with animal husbandry to optimize the efficiency of land, labour use, and farm productivity.



Source: Statistics summarized by the authors from RAF (2016).

Figure 2. Number of Farms by Region (2011, 2016, 2018)

According to the RAF 2016 survey report, rural workers participating in agricultural production have decreased by 25% compared to 2006. Currently, only about 50% of rural workers participate directly in the agricultural production sector. Accordingly, the average number of workers on the farm also decreased from 4.7 in 2011 to 4.0 in 2016. This downward trend could be seen as a positive sign that the farms had focused on specialization and combining mechanized investment with outsourced labour in the production process to promote the development of the farm economy. In this study, the data for the Central Highlands, Mekong River Delta, and Southeast regions will be used to evaluate the impact of the loan support program on farm income in crop cultivation and aquaculture.

3.2. Credit Policy for the Development of the Farm Economy in Vietnam

Agriculture is considered a strategic economic sector by the government of Vietnam. Since reunification in 1975, the national policy framework has emphasized the accentuated the preparation of socio-economic development plans (five-year plans). The Ministry of Agriculture and Rural Development (MARD) is mainly responsible for these plans, although many ministries, departments, and other central government's agencies are also accountable. This creates difficulties in the implementation of agricultural development policies due to a lack of coordination among agencies. Many supportive policies to encourage and expand agricultural production have been enacted, such as free irrigation subsidies, seed and livestock subsidies, and policies on taxes, agricultural services, and credit. Loan provision policies for farms are mainly based on the general regulations for the entire agricultural industry.

Commencing in 1993, when the land law was introduced, instead of being required to deal through cooperatives, households have been able to access loans to serve their production directly with collateral. The Vietnam Bank for Agriculture and Rural Development is the first bank to receive strong government support to enhance people's access to credit.

In the early 2000s, credit and interest rate policies were strictly controlled by the government through the operation of and regulations made for the State Bank of Vietnam. However, by 2002, banks could set interest rates depending on their needs and agreements with the customers. Initially, the maximum loan threshold for farmers was only around USD 700 (in 1999);[4] this was later successively increased to USD 1,300 (in 2002),[5] USD 2,500 (in 2010),[6] and USD 4,500 (in 2018)[7] without requirements for collateral assets.

In January 2003, an independent and non-profit financial institution – the Vietnam Bank for Social Policy – was established with the aim of supporting the government's poverty reduction efforts by providing credit loans for poor households with a loan of about USD 2,000.

In 2009, the government issued a policy to support agricultural producers to access short-term preferential loans for investment in equipment, machinery, and technology. It was expected to reduce production costs and improve agricultural productivity and industrial development in rural areas. The program provided around VND 776 billion (USD 41 million) loans to more than 1 million farmer households during the period 2009–2010 (OECD, 2015).

In 2015, the Government issued Decree No. 55/2015/ND-CP and Circular No. 10/2015/TT-NHNN of the State Bank of Vietnam, stipulating and guiding policies to

[4] Decision No. 67/1999/QĐ-TTg on 30 March 1999.

[5] Decision No. 546/2002/QĐ-NHNN on 30 May 2002.

[6] Decree No. 41/2010/NĐ-CP on 12 April 2010.

[7] Decree No. 116/2018/NĐ-CP on 7 September 2018.

endorse capital and credit for farms. Farm owners could borrow loans with a maximum amount of VND 1 billion (approx. USD 46,500) for farms without collateral and VND 2 billion (approx. USD 93,000) for aquaculture farms. However, to obtain the loan, the farm needed to meet the criteria specified in MARD and General Statistics Office Joint Circular No. 69/2000/TTLT/BNN-TCTK dated 23 June 2000. This circular was later replaced by MARD Circular No. 27/2011/TT-BNNPTNT dated 13 April 2011. Essentially, farms are classified by production sectors, including crop cultivation, animal husbandry, forestry, aquaculture, and combinations. The specific criteria used to define the farm economy are the area of farmland and the value of the farm's output.

The sample for this study is based on the criteria for determining the farm economy specified in both Circulars No. 69/2000 and No. 27/2011 above (Appendix 4)[8], namely, those *with an area of three hectares or more for farming and aquaculture farms in the Southeast and Mekong River Delta*. The justification for this sample selection is that commercial banks also apply a limit of three hectares when considering approval of loan terms.[9]

4. RESEARCH METHODOLOGY AND DATA

4.1. Regression Discontinuity (RD) Method

The RD method allowed us to compute intervention effects by comparing participants and non-participants within a certain standard threshold. The RD method enables the computation of observable as well as non-observable heterogeneities. The threshold is usually determined through instrumental variables. Discontinuity in program implementation based on participating criteria is very useful in the impact assessment of a non-experimental program, that is, in this case the loan support program for farms. With the assumption that the treatment group and the control group have similar observable characteristics, it is possible to distinguish between subjects above and below the intervention threshold based on their results. To ensure comparability, the observations should be sufficiently close to the threshold, and sample selection error can occur when there is unobserved heterogeneity of subjects within the intervention range.

The RD method is used when non-compliance occurs at the intervention threshold. In this study, the intervention threshold is the land area of three hectares according to the criteria for certification of the farm economy. Commercial banks review loan applications based on this criterion. Accordingly, farms with a land area of three hectares or more are authorized to obtain loans from the Government. For sharp

[8] Available at: https://jed.cau.ac.kr/archives/48-2/48-2-3-Appendix.pdf

[9] See, for example, VietinBank, "New product: Farm economy loan" (in Vietnamese), https://www.vietinbank.vn/web/home/vn/events/10/101005_2.html&p=1.

regression discontinuity (Sharp RD), the probability of becoming involved in a loan jumps from 0 to 1 from the left to the right of the threshold (c is the threshold), which means there is a compliance. For Fuzzy RD, the probability of participation changes around the intervention threshold c, implying incomplete compliance. There are farms that qualify for a loan but do not borrow, while some unqualified farms find ways to obtain a loan. This allows for the use of the RD method to estimate the impact of the program. In this context, after examining the RAF 2016 survey data, we found that there was a phenomenon of incomplete compliance in policy participation. Many farms with land areas of less than three hectares could still access loans (1,080 farms), and many farms with more than three hectares did not take loans (6,647 farms). Therefore, we used Fuzzy RD design as the main research method.

Model identification

The empirical model used to estimate the impact of the loan support program on outcome variables (Y_i) with Fuzzy RD is defined as follows:

a) Criteria For Loan Participation and Intervention Threshold

The loan program's eligibility is determined based on the farmland variable (X_i), where farms with an area below three hectares (c^*) are not eligible, while farms with an area of three hectares or more are eligible for the program. At the threshold of three hectares, the program is expected to cause specific disruptions, including:

(i) Discontinuity in the dependent variable (farm's income) around the three-hectare threshold: The farm's income is expected to exhibit a sudden change or discontinuity at the three-hectare threshold. This implies that farms just below the threshold and farms just above the threshold may have significantly different income levels due to their eligibility or ineligibility for the loan program.

(ii) Discontinuity in the probability of participating in a loan around the three-hectare threshold: The likelihood or probability of farms participating in the loan program is expected to exhibit a sudden shift or discontinuity at the three-hectare threshold. Farms with an area just below the threshold may have a significantly lower probability of participating compared to farms just above the threshold.

The equation representing this relationship is as follows:

$$Y_i = \beta X_i + c_i. \quad (3)$$

In this equation, Y_i represents the farm's income, X_i represents the farmland area, and c_i represents the intervention threshold of three hectares. Farms with an area less than three hectares ($X_i < 3$) are not eligible for loans, while farms with an area equal to or greater than three hectares ($X_i \geq 3$ ha) are eligible for the program. By comparing

farms above and below the intervention threshold, it is possible to examine the impact of the program while accounting for the similar outcomes these groups may have had before the intervention.

b) Determination of Impact

Studies of this kind all involve four target farm groups: "always takers", "never takers", "compliers", and "defiers". However, like most other studies, this research ignores defiers, always takers, and never takers. At this point, the impact on the compliers will reflect the impact of the policy intervention.

Assume that there exists a limit on either side of the intervention threshold c^*, and the equation for calculating the impact for an optional small $c > 0$ around the intervention threshold will be:

$$E[Y_i \,|c^* - c] - E[Y_i \,|c^* + c] = E[\beta X_i|c^* - c] - E[\beta X_i \,|c^* + c]. \quad (4)$$

Taking the limit of either sides of Equation (4) when $c \to 0$ will determine the impact β, which is the rate of difference in outcome of farms between farms above and below the intervention threshold.

$$\beta_{FRD} = E[Y_i(1)|X_i = c] - E[Y_i(0)|X_i = c] \quad (5)$$

$$= \frac{outcome\ discontinuity}{treatment\ discontinuity}$$

$$= \frac{\lim_{x \to c^+} E[Y|X = c] - \lim_{x \to c^-} E[Y|X = c]}{\lim_{x \to c^+} P[D = 1|X = c] - \lim_{x \to c^-} P[D = 1|X = c]}, \quad (6)$$

where $P[D = 1|X = c]$ is the actual probability of participating in the loan program, assessed at both sides of the intervention threshold.

c) Estimation of the Impact β_{FRD} by 2SLS Regression with Instrumental Variables

As there are also non-compliers, participation in the loan program (T) is not completely random. That is, observations on both sides of the intervention threshold are not the valid control group and treatment group. Estimation of β_{FRD} by OLS may be biased and inconsistent due to endogenous variables in the model when the participation status can be correlated with selection on unobservable. The instrumental variables and two-phase regression (two-stage least squares – 2SLS) can handle endogenous problems and establish the causal effect relationships between the intervention program and the outcome variable.

$$T_i = \alpha_0 + \alpha_1 Z + \alpha_2 S_i + \alpha_3 S_i^2 + \alpha_4 \tilde{X} + \alpha_5 Z \times \tilde{X} + \alpha_j S_j + u_i, \quad (7)$$

$$\ln(Y_i) = \beta_0 + \beta_{FRD} \widehat{T\imath} + \beta_2 S_i + \beta_3 S_i^2 + \beta_4 \tilde{X} + \beta_5 \widehat{T\imath} \times \tilde{X} + \beta_j X_j + v_i, \quad (8)$$

where Z is the index variable of land area exceeding the threshold of three hectares, which is used as a tool to determine the program participation status of the farm (T_i). The variable Z is suitable when considering two conditions of the instrumental variable: (1) it is correlated with the control variable (land area), and (2) the variable Z is not correlated with the residue or does not affect farm's income. The variable S_i is the size of the land area. Because land size affects income, a quadratic function was used to control for this relationship (Aung et al., 2019). $\tilde{X}$ is the deviation from the policy intervention threshold ($\tilde{X} = X - 3$). $\ln(Y_i)$ is the logarithmic form of the farm income variable Y_i. X_j represents the other explanatory variables in the model, based on previous studies about factors affecting income (Section 2.4).

Effect estimation β_{FRD} has an intrinsic effect around threshold c of the intervention variable X, so it is termed the local average treatment effect ($LATE$) on the compliance group.

d) Determination of Bandwidth

A small bandwidth around the intervention threshold can reduce the accuracy of the results. Therefore, the identification of the land area above and below the discontinuity point is necessary to ensure both the comparability of the sample and the power of the instrument variable. To limit the loss of observations and the accuracy of the estimation results, a bandwidth from 0 to 20 hectares was chosen.

4.2. Data

The data set of RAF (2016) was derived from a large scale nationwide survey, involving more than 17 million farming households, 33,488 of which were involved in agriculture, forestry, salt production and aquaculture. The survey is conducted every five years under the National Survey Program,10 and this survey conducted in 2016 was the fifth such survey.[11]

In this research, only a part of the RAF 2016 data set, including *15,749 farms* at *23* provinces in the Central Highlands, Southeast, and Mekong River Delta was utilized (Appendix 3)[12]. We focus mostly on Southern provinces because farms belong to agricultural sectors which have a greater presence in the Southern provinces. It is also

[10] Decision No. 1225/QĐ-TTg, on 31/7/2015 of the Prime Minister.

[11] The four prior surveys were conducted in 1994, 2001, 2006 and 2011.

[12] Available at: https://jed.cau.ac.kr/archives/48-2/48-2-3-Appendix.pdf

difficult to find farms in Northern areas since there is no land available for farming. Farms in Northern provinces are mostly concentrated on livestock, which is not of interest in this study. The number of observations in the intervention range from 0 to 20 hectares was 14,625 farms, of which 1,534 farms were provided with loans.

Survey data show that only *2,837* farms received support from the government through a loan program, accounting for 18% of the sample under study. The greatest difficulty for farms was the ability to access loans. Up to 27% of the farmers surveyed said that they had difficulty with capital, and 31% (9,880 farms) wanted to get a loan (Appendixes 5 and 6)[13]. Thus, it could be seen that loans play a critical role in the development of the farm economy, and one of the main reasons affecting the development and expansion of the farm is limited access to loans.

4.3. Hypotheses

At the intervention threshold of three hectares, the loan support program is expected to have a positive impact on the farm's income ($LATE$) via the various theoretical channels discussed in Section 2. In particular, it is postulated that:

H_1: The program has a positive impact on income from annual crops, including income from rice cultivation.

H_2: The program has a positive impact on income from perennial crops, including income from pepper and coffee cultivation.

H_3: The program has a positive impact on income from aquaculture, including income from shrimp and fish.

H_4: The program has a positive impact on total income from crop cultivation (annual crops and perennial crops).

H_5: The program has a positive impact on total income (crop cultivation and aquaculture).

4.4. Equilibrium condition test

4.4.1. Production and Demographic Characteristics

The results in Table 1 for the whole sample, the sample size between [0–20 ha] and [0–5 ha], show that most demographic and production characteristics of farms differ between the treatment group and the control group with varying degrees of statistical significance (at 1%, 5%, and 10% levels). The farm owner's age characteristics alone showed no statistically significant meaning in the whole sample and range [0–20 ha].[14] The educational attainment of the owners obtaining loans was lower than those without

[13] Available at: https://jed.cau.ac.kr/archives/48-2/48-2-3-Appendix.pdf

[14] H_0 hypothesis cannot be denied: Means of control group and intervention group are same [Mean (0) – Mean (1) = 0].

loans. This interesting result can be explained by the fact that there is still a large number of farms which are unable to access loans due to lack of a clear credit mechanism. In other words, many farm owners, even with a higher level of education, still do not have easy access to capital due to complex farm-based loan procedures. The number of workers of farms without loans is greater than that of farms with loans. This can be an indication of the owner's investment in machinery, equipment, science and technology to replace workers after loan attainment.

Table 1. Results of Checking Equilibrium Conditions around the Intervention Threshold

Variable code	Mean (0)-Mean (1)		
	Whole sample	Observed sample [0-20 ha]	Observed sample [0–5 ha]
$genderhead$	-0.044***	-0.041***	-0.047**
	0.007	0.008	0.021
$agehead$	-0.779	-1.050	-8.749***
	1.069	1.175	2.926
$eduhead$	0.488***	0.460***	0.297***
	0.048	0.049	0.116
$flabor$	-0.337***	-0.463***	-0.489*
	0.128	0.112	0.276
$hhlabor$	-0.334***	-0.330***	-0.362***
	0.025	0.026	0.057
$farmland$	-5.863***	-5.376***	-2.701***
	0.753	0.136	0.097
Total observations	15713	14625	9183
Observation (Treat = 1)	1742	1534	254

Notes: ***, **, and * denote statistical significance at 1%, 5% and 10% levels, respectively. Explanation of all variable denotations is set out in Appendix 7.[15]

[15] Available at: https://jed.cau.ac.kr/archives/48-2/48-2-3-Appendix.pdf

4.4.2. Characteristics of Income

Table 2. Comparison of Income between Treatment and Control Groups at the Intervention Threshold of 3 ha (VND million/year)

Variable	[0-20ha]	
	Treatment	Control
incomeacrop	628.0***	166.9
No. of observations	1534	13091
incomerice	608.2***	152.5
No. of observations	1534	13091
incomepcrop	327.1	292.3
No. of observations	1534	13091
incomepeper	653.5	725.1
No. of observations	172	1,690
incomecafe	439.7	405.7
No. of observations	178	1,713
incomeaqua	373.4	391.6
No. of observations	1534	13091
incomeshrimp	1632.8	3851.3
No. of observations	72	727
incomecrop	955.1***	459.2
No. of observations	1534	13091
totalincome	1328.5	850.8
No. of observations	1534	13091

Note: ***, **, and * denote statistical significance at 1%, 5% and 10% levels, respectively. Explanation of all variable denotations is set out in Appendix 7.

The results in Table 2 show that the group of income indicators of loaned farms from crops, including annual crops and rice cultivation, is about two to four times higher than income of farms without loans, with statistical significance at 1% level. Income from perennial crop and aquaculture of farms borrowing loans also seemed to be higher than that of farms without loan. However, the test results were not statistically significant. Although there were considerable differences in farm incomes, about 1.6 times (1,328 million VND/year compared to 850 million VND/year, which is equivalent to US$57,600/year compared to US$37,000/year) between the treatment group and the control group, the test results were not statistically significant. In Section 5, we present the results obtained using the RD method.

5. RESULTS

5.1. Estimation Results by Lpoly Regression with Fuzzy RD

The results of estimating the impact of loans on farm income using the Fuzzy RD in Table 3 show that for income from annual crops, participation in the loan program had a positive effect on income, increasing income by 34.7% with a standard error of 1.915. However, the *t*-score shows that the estimated effect is statistically insignificant. For rice, which is the key agricultural product of the southern region, the loan support program was shown to have a negative impact on income from rice cultivation, reducing it by 12.2%, but it was statistically insignificant. The study also showed that the loan support program had a positive effect on income from perennial crops, estimated as 319%. The *t*-statistic test result showed that the estimated impact was significant at the 5% level. For the perennial crop of pepper, one of the export products holding a leading position in the market and accounting for 70% of the world pepper export market share, the impact of loans is very prominent. The results showed that loans had a positive effect on income from pepper cultivation (207%), although the effect is statistically insignificant. Like pepper, coffee is also a staple agricultural product and can be considered the backbone of agricultural revenue. The estimation results showed that the loans had a negative effect on income from coffee (-648%), and this effect was quite significant at the 5% level.

Table 3. Estimation Results by Lpoly Regression with Fuzzy RD

Variables	Impact	SE	t
lnincomeacrop	0.34784	1.91533	0.181
lnincomerice	-0.12284	1.24109	-0.098
lnincomepcrop	3.19428	1.3117	2.4352
lnincomepeper	2.07517	4.33785	0.4783
lnincomecafe	-6.48085	3.37453	-1.9205
lnincomecrop	**1.40377**	**0.90525**	**1.5506**
lnincomeaqua	**1.59212**	**2.24684**	**0.7086**
lnincomefish	17.5923	18.5258	0.949
lnincomeshrimp	-6.61162	6.26279	-1.055
lntotalincome	**-149.175**	**98.3879**	**-1.516**

Source: Synthesized by the authors.

For income from crop cultivation, the estimation results show that loans had a positive effect on income, with an increase of 140% compared to a farm without loans, and this effect was significant at the 5% level. For aquaculture farms, farms obtaining loans had 159%

higher income than farms without loans, but the estimated impact was statistically insignificant. In the aquaculture sector, fish and shrimp are the two main products. The estimation results suggested that the loan support program had a positive effect on income from fish farming but a negative effect on income from shrimp farming. There was not much evidence that this result was significant.

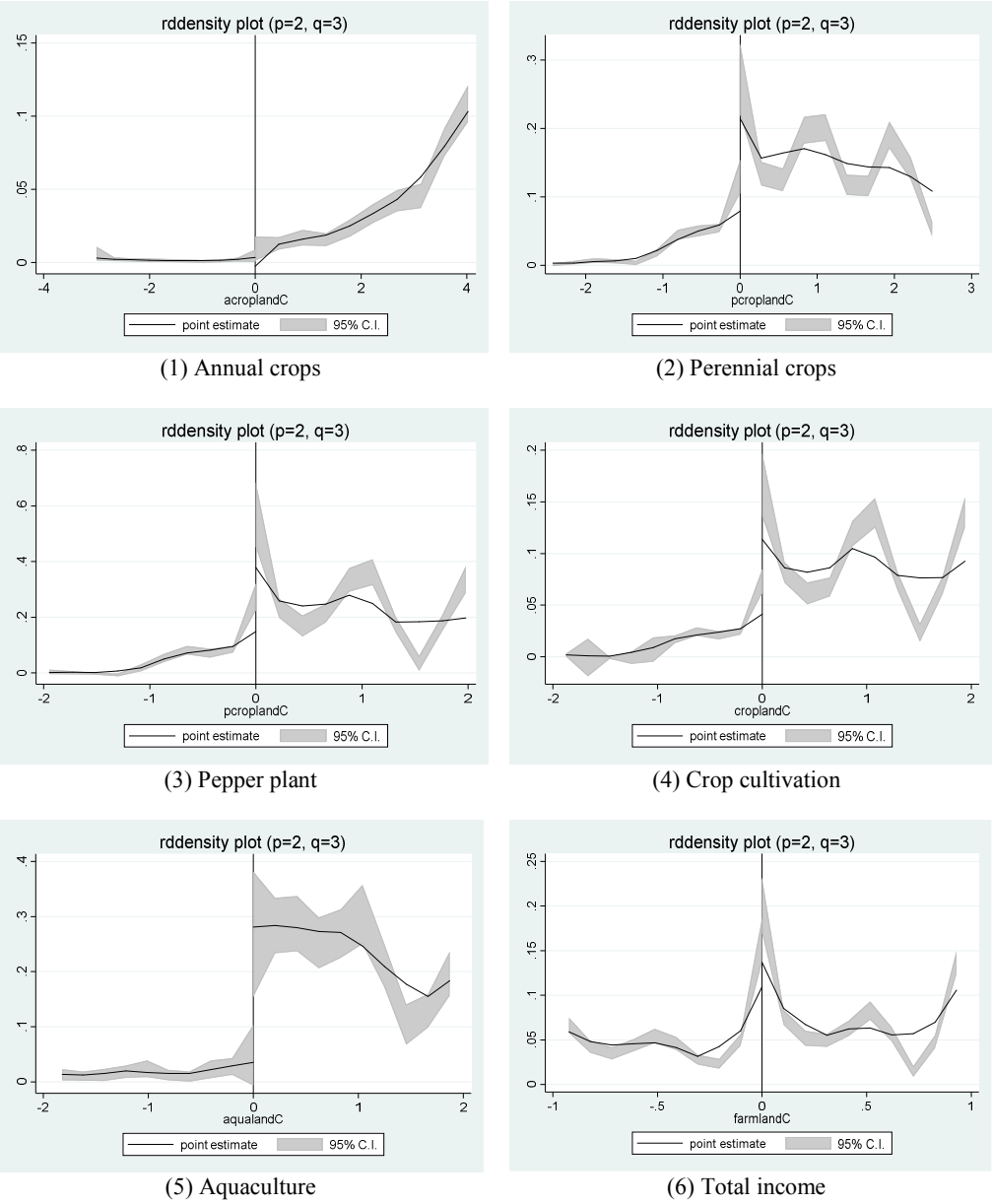
For the total income of the farm, including income from crop cultivation and aquaculture, the estimation results indicate that the program has a negative effect on the total income at the 10% significance level.

5.2. Estimation Results by Fuzzy RD with 2SLS/IV

The results of impact estimation by Fuzzy RD with instrumental variables and additional control variables, that is, farm production characteristics, included in the model are summarized in Table 4 and Appendices 8 to 17. When the *bandwidth* was changed between [0–6 ha], [1–5 ha], and [2–4 ha], the results suggest that for income from annual crops, the program had an obviously positive effect on the bandwidth [0–6 ha]. Specifically, the farms with loans had an increase of more than 8.5% in income, a significance level of less than 1%, with no impact in the bandwidth [1–5 ha] and [2–4 ha]. The study found that the program had a negative effect on rice income, illustrated by a 2.8% decrease in the bandwidth [1–5 ha], and no evidence of effect in the bandwidth [0–6 ha] and [2–4 ha]. In the bandwidth [0–6 ha], the program had a small but insignificant impact (31.8%, *p*-value: 10.1%) on perennial crop income, and there is no evidence of impact in the bandwidth [1–5 ha] and [2–4 ha]. For pepper cultivation, the program had a negative impact on income in all three bandwidths. Income of farms with loans decreased by 20.9%, 14.9%, and 18.8% in the bandwidths [0–6 ha], [1–5 ha], and [2–4 ha], respectively. The significance level was below 5%. As for coffee plants, there was little evidence that the loan support program had a positive effect on income. In the bandwidth [2–4 ha], the results showed that the income of the coffee farms with loans increased by 12.7% compared to the non-loan farms, at a significance level of 10%.

For income from crop cultivation, when there were control variables in the model, the estimated results differed from those in the simple model. The loan program had a negative impact on income at different bandwidths, at 8.2% and 9.4% for the bandwidth [1–5 ha] and [2–4 ha] respectively. On aquaculture farms, the program had a positive effect on the bandwidth [2–4 ha]; in particular, farms participating in the loan program had a 34.3% increase in income compared to non-loan farms, at a significance level of 5%. For fish, the program had an impact, but it was not statistically significant in the bandwidth [1–5 ha]. For shrimp, the program had a positive effect by increasing income by 8.4% with a significant level of 5% in the bandwidth [2–4 ha]. For the total income of the farms, the results indicate that the program had a positive effect at the 5% significance level in the bandwidth [2–4 ha], but no evidence of an effect in the bandwidth [1–5 ha] was found. Graphical examination (Figure 3) and a placebo test of fake intervention at the threshold (Figure 4) showed discontinuity about income at the

intervention threshold. Table 5 presents a summary of the empirical results found in this study.



(1) Annual crops (2) Perennial crops

(3) Pepper plant (4) Crop cultivation

(5) Aquaculture (6) Total income

Figure 3. Income Discontinuity at the Intervention Threshold

Table 4. Impacts of Loans on Income of Farms at Different Thresholds

Variables	Income from crop cultivation			Income from aquaculture			Total income		
	[0-6ha]	**[1-5ha]**	**[2-4ha]**	**[0-6ha]**	**[1-5ha]**	**[2-4ha]**	**[0-6ha]**	**[1-5ha]**	**[2-4ha]**
land	0.189*	0.261*	0.413***	0.137*	0.15	(0.93)	1.656***	1.990***	4.256***
	(0.094)	(0.11)	(0.09)	(0.06)	(0.25)	(1.22)	(0.22)	(0.19)	(0.57)
floan	-0.0544*	-0.0829*	-0.094***	0.0686	0.31	0.343*	0.0352	0.11	0.145*
	(0.02)	(0.04)	(0.02)	(0.05)	(0.23)	(0.14)	(0.06)	(0.09)	(0.07)
agehead	-0.00011*	-0.000075**	-0.0001***	-0.00016*	(0.0003)	(0.0010)	-0.00033***	-0.00041**	(0.0000)
	(0.00)	(0.00)	(0.00)	-(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
eduhead	0.0254***	0.01	0.0227*	0.0384***	0.0343**	0.01	-0.0639***	-0.075*	-0.10***
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.03)	(0.03)
genderhead	0.0594	0.01	(0.03)	0.0672	0.08	0.09	0.267***	0.363***	0.186*
	(0.07)	(0.03)	(0.03)	(0.06)	(0.08)	(0.16)	(0.04)	(0.06)	(0.08)
landsqu	-0.0148	(0.02)	-0.0484*	-0.0139	(0.02)	0.17	-0.150***	-0.245***	-0.60***
	(0.01)	(0.01)	(0.02)	(0.00)	(0.03)	(0.18)	(0.03)	(0.03)	(0.08)
flabor	0.0415***	0.0443***	0.0442***	0.206***	0.210***	0.239***	-0.00819	0.01	0.02
	(0.006)	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)	(0.00)	(0.01)	(0.01)
hhlabor	-0.018***	-0.0223***	-0.0221**	-0.174***	-0.16***	-0.17***	0.196***	0.0765**	0.0751*
	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)	(0.02)	(0.04)	(0.03)	(0.03)
Cons	6.249***	6.194***	5.959***	6.546***	6.510***	7.888***	0.956**	1.452**	(1.96)
	-0.258	(0.22)	(0.07)	(0.17)	(0.48)	(1.91)	(0.33)	(0.46)	(1.23)
Obs	1888	1,432	946	690	521	333	9777	3,892	1,975
R-sq	0.15	0.23	0.23	0.32	0.33	0.35	0.72	0.47	0.38

Note: *, ** and *** define significances of the tested variables at 10%, 5%, and 1%, respectively.

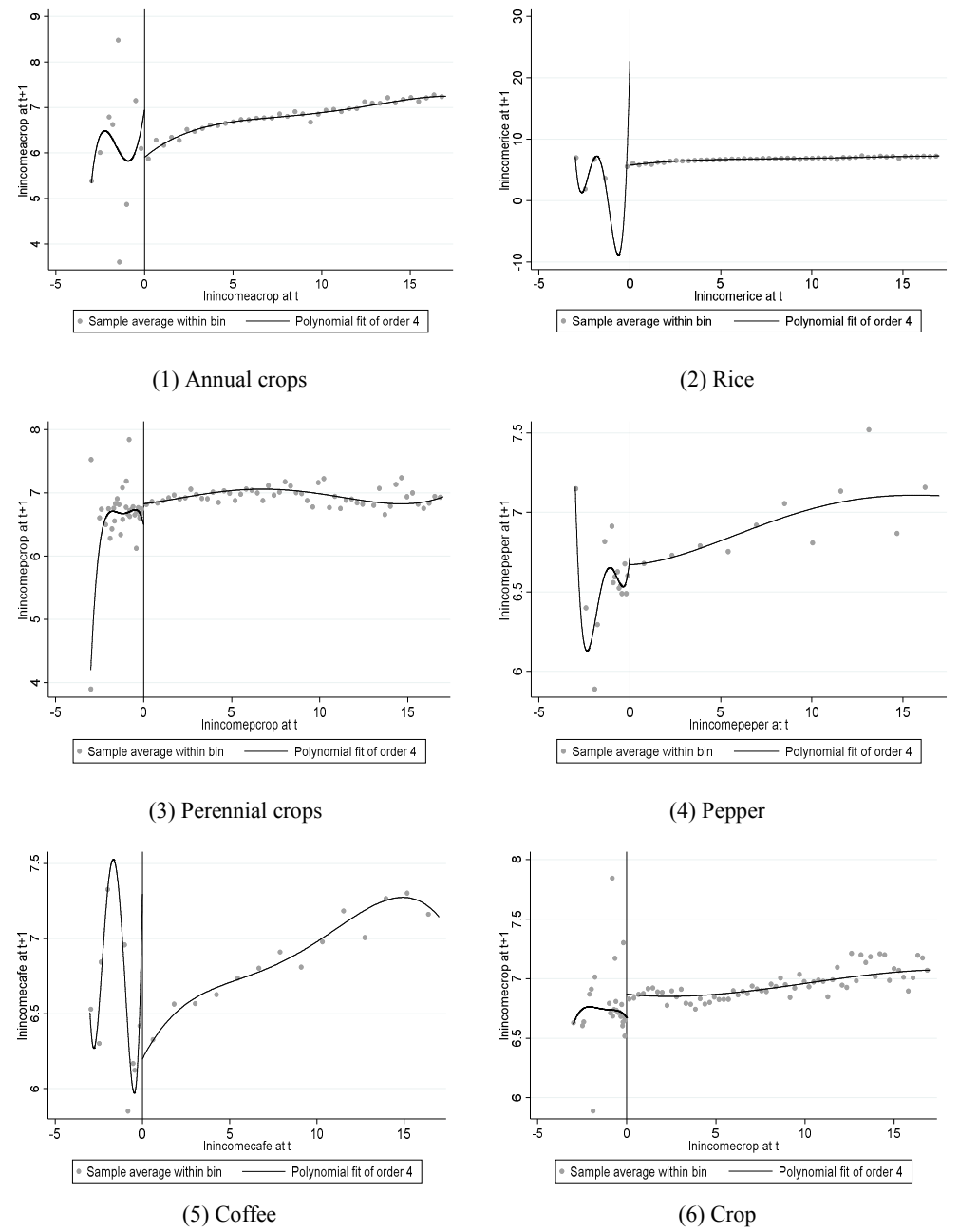
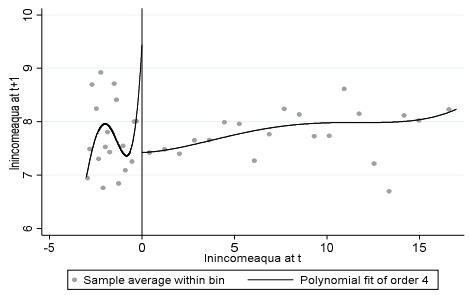
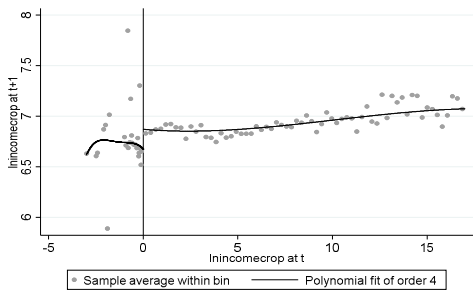


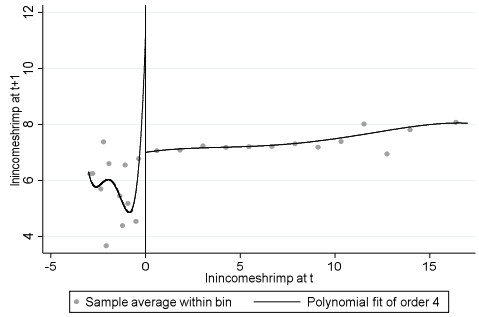
Figure 4. Placebo Test of Fake Intervention at Threshold



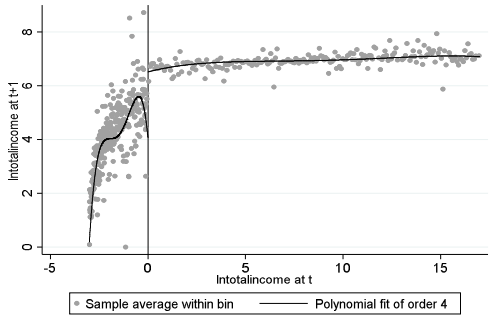
(7) Aquaculture



(8) Fish



(9) Shrimp



(10) Total Income

Figure 4. Placebo Test of Fake Intervention at Threshold (cont')

Table 5. Summary of the Empirical Results of This Study

Income (outcome variables)	Expected sign	Estimation results (*βFRD*)			
		Lpoly regression	2SLS/IV		
			[0-6ha]	[1-5ha]	[2-4ha]
Annual crop	(+)	(+) insignificant	(+)		
Rice	(+)	(-) insignificant		(-)	
Perennial crop	(+)	(+)	(+) insignificant		
Pepper	(+)	(+) insignificant	(-)	(-)	(-)
Coffee	(+)	(-)			(+) insignificant
Crop cultivation	(+)	(+)	(-)	(-)	(-)
Aquaculture	(+)	(+) insignificant			(+)
Fish	(+)	(+) insignificant		(+) insignificant	
Shrimp	(+)	(-) insignificant			(+)
Total income	(+)	(-)			(+)

6. CONCLUSION AND POLICY IMPLICATIONS

6.1. Conclusion

This study evaluated the impact of the loan support program on the income from farms in Vietnam by employing the fuzzy RD method on RAF 2016 data with a sample size of 15,749 farms in the southern region of Vietnam. An area of three hectares for farm size as the intervention threshold was used to assess the impact. Under the RD method, the bandwidth around the intervention threshold affects the estimation results, so the study evaluated the impact by varying the bandwidth in [0–6 ha], [1–5 ha] and [2–4 ha] categories. Despite the varying significance of the estimation results under the different methods, we may conclude as follows:

The loan support program increased the income of farms growing annual crops. The results of both methods – lpoly regression with Fuzzy RD and Fuzzy RD with 2SLS/IV – were quite similar. Loans helped increase farm income by about 8.5% per year. However, the impact is statistically insignificant. The program also had a negative effect on the income of rice-growing farms, particularly in the bandwidth [1–5 ha]. This indicates that although loans may improve the income of farms that grow annual crops, the improvements are not applicable to rice growing farms. This might be because the yield and value of rice are not high enough to offset the costs of loans.

Loan programs may have increased the income of perennial crop farms. The results of lpoly regression with Sharp RD design (Appendices 19 to 24) show that income of farms borrowing loans increased by 7.8% with statistical significance below the 1% level. The lpoly regression with the Fuzzy RD method also showed similar results, but there was less evidence that the program had an impact when using Fuzzy RD with 2SLS/IV. When the impact of the program on two typical perennial crops including coffee and pepper was considered, the results indicated that a loan support program reduced income of farms growing pepper. There was less evidence that the program increased the income of coffee farms, with positive yet statistically insignificant results. Estimated results for these two crops were also inconsistent among the methods.

The loan support program may have increased or decreased the income of crop cultivation farms (including income from annual crops and perennial crops). The results of the lpoly regression with the Sharp RD and Fuzzy RD both showed that the loan support program increased income (Table 3 and Appendix 25). However, the results estimated by 2SLS/IV showed contradictory results (Table 5.2). Differences in results are due to control variables, such as demographic and production characteristics, which were added in the 2SLS/IV model. Therefore, we observed that the loans did not always increase income. While the Central Highlands, Southeast, and Mekong River Delta are regions with high agricultural production value, in the past 10 years, there has been a trend of stable development, even declining, as the yields of some crops have reached a tipping point. Borrowing more capital will lower the internal rate of return than before, or as compared to other fields with potentials not yet exploited.

For aquaculture farms, loans had the impact of increasing income. Farmers acquiring loans increased their income by 34.3% per year at the threshold in the bandwidth [2–4 ha]. The positive effect was also present in the bandwidth [1–5 ha], but it was statistically insignificant. For shrimp farms, the program increased income by 8.4% per year compared to farms without loans for the results estimated in the bandwidth [2–4 ha]. It could be seen that loan support policies for aquaculture farms were necessary. Unlike crop cultivation, this was an industry with great potential for development, and the output product has high economic value. Thus, to meet the increasingly demanding needs of local and international markets, many farm owners are prepared to invest more in equipment, expand production scale, and apply advanced technology in aquaculture.

The loan support program had a favourable effect on farm total income at the intervention threshold in the bandwidth [2–4 ha], with an increase of 14.5% per year. This showed that loans were the appropriate solution for farm development.

The research also showed that the owner's educational attainment was an important factor affecting the farm's income. The total number of workers also affected the income of the farm. As the number of outsourced workers increased, so did farm income. This may reflect an increasingly large-scale and reinforced production capacity of the farm.

Although the findings are quite similar to those of previous studies, this study is more extensive and inclusive in its conclusions. The government's loan support policy is appropriate for agricultural farm development, but it does not always have a positive impact. Many models find no evidence of impact, which can come from different causes and depends on the production type.

6.2. Policy Implications

The survey data show that only 2,837 out of a total of 15,749 farms (18%) have access to a form of loan support, in which loans with preferential interest rates were offered to 1,025 farms. Survey results (Appendices 5 and 6) showed that the greatest difficulty for farms was capital (accounting for 27%) and that most farms wanted to get loans with a preferential interest rate (31%). However, the research showed that the preferential interest rate was not the problem; in fact, loans with commercial interest still help increase income of farms. To reach appropriate policy suggestions, in addition to the conclusions mentioned above, we utilized published reports, documents, and interviewed policy-makers in the agriculture sector to understand what make(s) it difficult for agriculture farms to access loans. The application of criteria for the farm economy according to Circular No. 27/2011 has decreased the number of farms. Only about 28.5% of farms are certified, while the remainder, although meeting the criteria of size, do not register for certification. Regions such as Central Highlands and Southeast are the key areas for coffee, rubber, pepper production, and some other valuable crops, so land prices in these regions are the highest nationwide. As a result, overpriced cultivation land has been fragmented, leading to ineligibility. The Southeast is an area where up to 100% of farms do not register for a certificate, and in the Mekong River

Delta and Central Highlands the rates of non-certification are 85% and 80% respectively.[16] This makes it difficult for farms to access loans due to failure to meet the required procedures of banks and credit institutions. From the above research results, the recommended policies are as follows:

First, loans should be prioritized, that is, more capital should be devoted to aquaculture farms as their operation requires more funds to invest in farming technology, equipment, and technology. In addition, it is a group of products with great potential for development, with high economic value. For crop farms, authorities should carefully consider applying a loan policy as the results show that loans do not always have a positive impact (e.g., rice, pepper).

Second, adjust the criteria for farms as specified in Circular 27/2011. Recently, the Ministry of Agriculture and Rural Development issued Circular 02/2020 to replace Circular 27/2011, which did adjust the criteria for farms regulating the minimum land area threshold of 3.1 hectares to 1.0 hectares. However, we consider that this criterion is not appropriate, and we propose removing this criterion altogether or leaving the area threshold as 1.0 hectares but not mandatory. The reason is that with the presence of science and technology, a large area of land is no longer a decisive factor in maximizing the productivity and yield of the farm. Another point is that the criteria should not be bounded together. For example, a farm should not need to satisfy both criterion [1] – average production value at or above VND 1.0 billion (approx. USD 43,500) per year, and criterion [2] – total productive land area 1.0 hectares or more. The application of both criteria is not necessary because it is difficult to follow and limits farms' ability to access loans. There is a need for more flexible mechanisms; specifically, only one of the two criteria above should be required to be met.

Third, loosen conditions of loans for farms, that is: (1) reduce registration procedures for certificates in the farm economy; (2) establish a flexible mechanism for non-certified farms to obtain loans through mortgages or collateral with other assets, such as business plans, certificates of land use rights, and revenue reports; and (3) remove preferential interest rates from the policy to encourage commercial banks and microfinance institutions providing loans for farms. Complicated approval procedures for loan amounts that are not high make it more difficult for farmers to access loans.

Fourth, there should be a microfinance policy that is specific to the farm economy. At present, the loan policy for farms is still being implemented under the Decree 55/2015,[17] where many criteria are not clearly delineated as between production types, making procedures more complicated or inflexible. Due to ineligibility for loans according to the regulations of banks and credit institutions, many farms wishing to borrow large amounts of VND 1 to 2 billion (approx. USD 43,500 to 87,000) can only borrow from VND 50 to 100 million (approx. USD 2,200 to 4,400), as applies to

[16] MARD, report results of section 1.5.1b / Science and Technology program for development of new rural area in period 2016-2020.

[17] Decree No. 55/2015/NĐ-CP stipulates the credit policies for development of agriculture and rural areas.

individual businesses and households.

Fifth, there should be a policy to attract and encourage NGOs, formal private credit institutions, and commercial banks to provide financial packages to support the development of farms. Currently, in rural areas (at the commune level), there are few or no commercial banks, partly because the low interest rate policy is not attractive enough for banks. In these areas "black credit" is prevalent due to the large demand for borrowing and for loan procedures that are not cumbersome and complicated. Even with extremely high interest rates, people still choose the black credit form of finance. Further, many NGOs implement microfinance programs aimed at supporting sustainable livelihoods for the poor, but there is no clear legal corridor for NGOs working in this field. The Vietnamese government should take effective advantage of these aid funds, especially in the field of farm economy development.

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Mailing Address: Thai-Ha Le, VinFuture Foundation, Office Administration Building, VinUniversity Campus, Vinhomes Ocean Park, Gia Lam, Hanoi, Viet Nam, E-mail: v.halt51@vinfutureprize.org

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