

THE IMPACT OF THE NEW RURAL DEVELOPMENT PROGRAM ON RURAL HOUSEHOLDS' WELL-BEING IN VIETNAM

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Abstract

Rural development has played important role in the economic development strategy of Vietnam. With the aim at enhancing sustainably rural households' income, Vietnam launched the National Target Program on New Rural Development (also called the New Rural Development Program) in 2010. This study devotes to evaluating the impact of the New Rural Development Program (NRDP) on rural households' well-being in Vietnam. The data for empirical analysis in this study are collected from a structured questionnaire survey of 360 rural households conducted in Hau Giang and Vinh Long province, the Mekong river delta region of Vietnam. Using the propensity score matching (PSM) and difference-in-differences (DID) methods, we find that the NRDP has significantly positive impact on rural households' well-being in Vietnam. Based on the empirical findings, it is concluded that there is merit in greater interest being taken in initiatives like the NRDP in Vietnam by policy makers in developing countries.

Keywords: The New Rural Development Program, rural households, well-being, Vietnam

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1. INTRODUCTION

Since the launch of comprehensive economic reforms known as Doi Moi in 1986, Vietnam has recorded remarkable achievements in economic growth. In fact, Vietnam's GDP annual growth rate averaged 7.5% for the period of 1991-2000 and 6.19 percent during the period from 2000 to 2021. However, high economic growth has not been accompanied with equally income distribution amongst groups of people. Notably, the average income of rural households were about two thirds of average income in urban ones. In addition, poverty in rural areas were nearly five times higher than in urban areas and more than 90 percent of the poor live in rural areas (the World Bank). In this context, Vietnamese government launched the New Rural Development Program (NRDP) in 2010. The program is the unique for rural development in the World, consisting of 11 main activities that were designed in order to enhance sustainably well-being of rural households in Vietnam.

Although the NRDP introduced in Vietnam over 10 years, there have been only few studies on this Program. Do and Park (2018) evaluated the impact of the NRDP on rural households' income by employing a hierarchical linear model. The authors documented that the NRDP has

positive impact on the rural households' income through investments in roads, income generation models, and technical trainings. Similarly, Do and Park (2019) investigated the determinants of rural households' income through the implementation of the NRDP in Vietnam. Using the Hecman section model, they found that rural infrastructure development and technology transfer in the implementation of the Program are the key determinants of the rural households' income improvement. The limitation of these studies is that the authors did not measure exactly how much households's income improved as a effect of the NRDP. Moreover, Hieu and Thong (2018) determined the impact of the NRDP on households' income in Go Quao district, Kien Giang province, Vietnam. Empirical results derived from the difference in differences (DID) method reveal that the NRDP has significantly positive impact on the households' income. In another aspect, Hoang (2020) investigated determinants of the outcome in implementing the NRDP in 63 provinces of Vietnam. Using the OLS model, the author found some factors that positively impact on the progress in implementing the NRDP. It is concluded that the NRDP is the unique rural development model implemented only in Vietnam and the knowledge about the impact of the Program on households' well-being has been limited.

To fill the gap in the literature, this study devotes to measuring the impact of the NRDP on rural households' well-being in Vietnam. The main contribution of the study to the current literature is twofold. Firstly, with our best knowledge, this analysis is the first to employ PSM and DID methods to investigate the impact of the NRDP on rural households' well-being in Vietnam. By using these methods, we can control bias in the differences between treatment and control groups and other factors concurrently impacting the treatment group over time. Secondly, the NRDP is the unique for rural development implemented only in Vietnam. Therefore, empirical findings of the study have merit in greater interest being taken in initiatives by policy makers in other developing countries. It is hypothesized that the NRDP has a positive impact on rural households' well-being in Vietnam. Then, we empirically tested the hypothesis by using a sample of 360 rural households that were surveyed through structured questionnaires in the Mekong river delta region of Vietnam. It is found that the NRDP has significantly positive impact on rural households' well-being in Vietnam. The rest of the paper is structured as follows. Section 2 briefly introduces the NRDP in Vietnam. Section 3 presents the data employed in the study and the research methodology. Section 4 discusses the empirical results. Finally, conclusions are summarized in Section 5.

2. OVERVIEW OF THE NEW RURAL DEVELOPMENT PROGRAM IN VIETNAM

Vietnam started the NRDP in 2010 with the aim at enhancing sustainably well-being of rural households. The first phase started in 2010 and ended in 2020 while the second phase launched in 2021. This program is considered as the most important initiative of Vietnam in agriculture and rural development. The program is a continuous and sustainable process of cultural, social and economic change towards to enhance the long-term well-being of the rural households' well-being.

Rural areas and community are the targeted subject of the NRDP. In the early stage, the Program was implemented in 8,267 communes spanning across all 63 provinces of Vietnam

with the specified object to have 50% of communes acknowledged as new rural commune in 2020 (General Statistics Office of Vietnam, 2010). To achieve this goal, there were many activities that have been specified to contribute the NRDP, such as planning to build a new countryside; developing socio-economic infrastructure; restructuring and developing the economy and increasing rural households' income; renewing and developing forms of effective production organization in rural areas; developing education and training in rural areas; developing medical services and providing health care for rural inhabitants; developing information and communications channels in rural areas; improving clean water supply and environmental sanitation in rural areas; raising the quality of party organizations, administrations and socio-political organizations in localities; and maintaining social security and order in rural areas. The performance of those activities was measured by a set of 19 national indicators, which were issued by Vietnamese Government in order to evaluate the results of the implementation of the NRDP at the commune level.

The results of the NRDP of the first stage in Vietnam has been reviewed and assessed in order to proceed to the next stage. The achievements of the NRDP was outstanding of the targeted objectives, which were indicated in the initial plan of Vietnamese Government. Accordingly, there were 5,012/8,267 communes (60.6%) of the whole country meet the New Rural Development standards and were certified the New Rural commune in 2020 (Central coordination office–NRDP, 2021). The details of achievements of the first stage of the NRDP are presented in Table 1.

Table 1: The achievements of the first stage of the NRDP

No.	Indicators	Unit	2010	2020
Infrastructures				
1	Roads built and upgraded	Km	63,057	206,743
2	Electricity	%	96.2	99.1
3	Health care station	%	98.9	100.0
4	Schools available at all levels in rural area	Number of schools	10,855	31,016
5	Upland crops applying advanced and water saving irrigation	Hectare	64,940	288,620
6	Building of culture & sport facilities at communes level	Villages		72,952
Rural economy				
7	Rural average income	Mil. VND per capita	12.9	35.9
8	Rural poverty rate	%	17.4	4.9
9	Income from non-agricultural activities	%	79.9	89.2
10	Accessibility to clean water	%	47.9	56.7
11	Labor force in agricultural sector	%	48.2	38.1

Sources: General Statistics Office of Vietnam 2010, 2020; Open Development Vietnam, 2021; White book of Vietnam's Cooperatives 2021.

As can be seen in Table 1, infrastructure development was the most successful result of the first stage of the NRDP program. The outstanding achievements from transportation, electricity, health care, and education have played an important role in improving the livelihood

standards for farmers, and creating the opportunities to meet the travel and transportation needs of those in concentrated large-scale production areas. In additions, the applying of advanced technology in irrigation systems helps to save the water and reduce the production cost in agriculture activities.

The average growth rate of rural areas during the first stage of implementation of NRDP in Vietnam was 12.2% per year (General Statistics Office of Vietnam, 2021). The income sources have continuously shifted from agricultural sectors to non-agricultural sectors (i.e. industry, commercial, and services). As shown in Table 1, the non-agricultural income accounted about 80.0% in 2010, but this increased to 89.2% in 2020. The labor force in the agricultural sector also decreased from 48.2% to 38.1% between 2010 and 2020. Based on the achievements of the Program for the period of 2010-2020, the second stage of the NRDP launched in 2021. In this stage, the government focused on the general goal of effectiveness, comprehensiveness, and sustainability in building NRD. In order to achieve the goal, the government has paid special attention on developing social and economic infrastructure synchronously, ensuring rural-urban connectivity and regional connectivity, improving rural households' income sustainably, responding to climate change, and focusing on exploiting each region's advantages, improving environmental protection and rural landscape, developing education, healthcare and rural tourism while also preserving and promoting traditional cultural values and maintaining security and social order in rural areas. Instead of focusing on the commune level only as the first stage, in the second stage, the program has the goal of sustainable economic development at all administrative levels, including province, district, commune, and village in order to meet the national strategy on sustainable agriculture development.

3. DATA AND RESEARCH METHODOLOGY

3.1. Data description

The data for our empirical analysis are obtained from a structured questionnaire survey conducted in Hau Giang and Vinh Long province, the Mekong River delta region of Vietnam, from March 19th to April 19th 2022. A total of 360 rural households in 6 villages were randomly chosen as a sample for the survey. To measure the impact of the NRDP on the households' well-being, the sample is divided into two groups, namely treatment group and control group. Specifically, the treatment group includes 180 rural households living in communes that have certified the "New Rural commune" in 2019 while the control group consists of 180 rural households located in communes that have not certified the "New Rural commune" until 2022. The head of each household, who is assumed to be the dominant decision maker in the family, is appointed as a respondent. In this study, the households' yearly income and consumption are used as indicators to measure the impact of the NRDP. The households' income and consumption are collected for both pre-certificate period (2017 and 2018) and post-certificate period (2020 and 2021).

3.2. Characteristics of the sample

Based on the collected data, some descriptive statistics of the sample are calculated and presented in Table 2. It is observed that generally the households' characteristics do not have

significant differences between two groups. Specifically, mean of household size and labors of the two groups are 4 and 2 persons respectively. These statistics are likely to reflect the real situation of rural families in Vietnam. In addition, the average of land area is lightly different between the treatment group (8,348 m²) and control group (7,810 m²). However, the land area among households in both two groups fluctuates highly, ranging from 1,000 m² to 170,000 m² with a standard deviation of 13,772 for the treatment group and from 750 m² to 120,000 m² with a standard deviation of 10,192 for the control group.

Table 2: Descriptive statistics of sample characteristics

Variables	Obs.	Minimum	Mean	Maximum	Standard Deviation
Treatment group					
Age of household head (year)	180	26	52	84	12
Household size (person)	180	1	4	10	1
Number of labors(person)	180	1	2	6	1
Land area (m ²)	180	1,000	8,348	170,000	13,772
Control group					
Age of household head (year)	180	25	54	94	12
Household size (person)	180	1	4	10	2
Number of labors(person)	180	1	2	7	1
Land area (m ²)	180	750	7,810	120,000	10,192

3.3. Research methodology

The propensity score matching (PSM) method

To assess the impact of the NRDP on the households' well-being, the propensity score matching (PSM) method is used to compare the difference between income and consumption of a group of households living in communes that have certified the "New Rural commune" in 2019 (treatment group) and those located in communes that have not certified the "New Rural commune" until 2022 (control group). To ensure that the two groups are similar, we match each household based on the propensity score which is the estimated treatment probabilities determined by the characteristics of each household using a logit model. The average treatment effect is computed by taking the average of the difference between the observed and potential outcomes in terms of income and consumption for each household is considered as the effects of the NRDP.

The advantage of this method is that it allows to control bias in the differences among households. The matching is conducted between each household in the treatment group and a household in the control group with the same propensity score. The study uses a popular pairing method called caliper matching (0.5), whereby a household in the control group will be matched with a household in the intervention group when the propensity scores of these two individuals are close to most similar and the difference should be within the allowable propensity score, in this case of 0.5.

To predict the propensity score, a binary regression model (logit) is used with the dependent variable being a binary variable (taking the value of 1 if a household belongs to the treatment

group, and 0 otherwise). Independent variables include household characteristics such as gender of the household head, ethnic of household head, age of household head, household size, number of members having income in the household and land area of the household. The propensity score is the predicted value calculated after performing the binary model estimation. After performing PSM method, we continue to apply the DID method with the purpose of taking advantage of both PSM and DID methods in assessing the impact of the NRDP.

The difference-in-differences (DID) method

To measure the impact of the NRDP on the households' well-being, the DID method is also used in this study to check for the robustness of the estimates by PSM method. The household's income and consumption are employed for measuring the household's well-being. To serve for the DID method, the average of each indicator is first computed for each household during the 2017-2018 and 2020-2021 periods. Then, differences in the household's income and consumption between two periods are separately calculated for the treatment and control groups. The impact of the NRDP on the households' well-being is determined as the difference between the differences in the indicators for the treatment and control groups. Finally, the non-parametric Mann-Whitney test is applied to test for statistical significance of the difference in each indicator between two groups. The DID analysis is summarized in Table 3.

Table 3: Summary of the DID method

	Mean of the indicators for the period of 2017-2018	Mean of the indicators for the period of 2020-2021	Differences in the indicators between two periods	Difference-in-differences of the indicators
Treatment group	WT(0)	WT(1)	DT = WT(1)-WT(0)	D = DT-DC
Control group	WC(0)	WC(1)	DC = WC(1)-WC(0)	

4. EMPIRICAL RESULTS

4.1. Empirical results from the PSM method

The average treatment effects (ATE) estimated from the PSM method are presented in Table 4. As expected, it is found that the NRDP has significantly positive impact on the rural households' income. Specifically, the households live in communes that have certified the "New Rural commune" have an average yearly income of 21.43 million VND higher than those located in communes that have not certified the "New Rural commune" until 2022 with the similar household characteristics. This empirical finding is consistent with the findings of Do and Park (2018), Do and Park (2019), Hieu and Thong (2018). The significant improvement in the rural households' income can be explained by the facts that after communes certified the "New Rural commune", farmers could take advantages of the good infrastructure and technology transfer, easily accessing the market for agricultural products and diversifying their income (Do and Park, 2019; Hieu and Thong, 2018). Therefore, it can be concluded that the NRDP has brought benefits for rural households in terms of income.

However, the results of the PSM method summarized in Table 3 indicate that there is no statistically significant difference in average consumption between households living in communes certified the “New Rural Village” and those living in communes without this certification. In other words, the NRDP has no impact on households’ consumption in Vietnam.

Table 4: Summary of results from the PSM (in million VND)

Indicators	Average treatment effect (ATE)	Z-value
Average yearly income	21.43	2.62***
Average yearly consumption	5.45	1.09

*** represents significant at 1% level.

4.2. Empirical results from the DID method

As discussed in Section 3, this study employs the DID method to evaluate the impact of the NRDP on rural households’ well-being in Vietnam. Using the sample of 360 rural households divided into two groups, namely treatment and control groups, results of the DID analysis are shown in Table 5. It is important to note that before testing for significant changes in the households’ well-being, the Jarque-Bera test is employed to examine whether the indicators are normally distributed or not. The results derived from the Jarque-Bera test (not presented in this paper, but to be available upon request) indicate that all indicators are not normally distributed. Therefore, the nonparametric two-tailed Wilcoxon signed-rank test is employed to test for significant changes in the median of the indicators following communes certified the “New Rural commune”.

As expected, the results indicate that income of the households increases significantly following communes certified the “New Rural commune”. Specifically, the mean (median) income increases from 112.83 (95.35) million VND in the pre-certificate period to 137.14 (115.45) million VND in the post-certificate period. After taking into account the difference in differences, the mean (median) gains in average yearly income of the households is 17.78 (9.65) million VND. The results of Wilcoxon signed-rank test confirms that the increase in the households’ income is statistically significant at the 1 percent level. This result is consistent with the one estimated by the PSM method.

In addition, the results of the DID analysis confirm that the NRDP has a positive impact on the households’ consumption. Specifically, the mean (median) consumption of the households in the post-certificate period increases by 12.93 (12.00) million VND compared to the pre-certificate period. Moreover, the results shown in Table 5 indicate that the mean (median) increase in the households’ consumption is 2.86 (3.00) million VND in the post-certificate period after adjusting for other effects. The increase in the households’ consumption is also statistically significant at the 1 percent level.

In short, the results of the DID and the PSM methods consistently confirm that the NRDP has significantly positive impact on the rural households’ income in Vietnam. In addition, the findings derived from the DID approach indicate that the consumption of households increases following communes certified the “New Rural commune”. However, the results of the PSM

method show that the NRDP has no impact on households' consumption in Vietnam. It can be concluded that the NRDP has the positive impact on the rural households' well-being in Vietnam.

Table 5: Summary of results from the DID method

Measures	Control group				Treatment group				Mean (median) change between two groups	Z-Statistic for difference in medians between two groups
	N	Mean (median) for the period of 2017-2018	Mean (median) for the period of 2020-2021	Mean (median) change	N	Mean (median) pre-certificate period (2017-2018)	Mean (median) post-certificate period (2020-2021)	Mean (median) change		
Yearly households' income (in million VND)	180	107.17 (83.25)	113.70 (90.00)	6.53 (5.35)	180	112.83 (95.35)	137.14 (115.45)	24.31 (15.00)	17.78 (9.65)	5.06***
Yearly households' consumption (in million VND)	180	60.35 (45.80)	70.42 (54.80)	10.07 (6.00)	180	64.45 (53.60)	77.38 (65.60)	12.93 (10.00)	2.86 (4.00)	3.24***

*** represents significant at 1% level.

N: Number of observations

5. CONCLUSIONS

The NRDP has been a key strategy of Vietnamese government in enhancing rural households' well-being through upgrading services, infrastructure and other conditions for rural communities. The Program is the unique for rural development which has been only implemented in Vietnam. This study devotes to evaluating the impact of the Program on rural households' well-being by using the sample of 360 rural households in the Mekong river delta region of Vietnam. To deal with the self-selection bias in measuring the impact of the Program on the rural households' well-being, the PSM method was used in this study. In addition, the DID method was employed in order to check for the robustness of the results derived from the PSM method. It is important to stress that the average treatment effects estimated from the PSM method indicate that households live in communes that have certified the "New Rural commune" have an average yearly income of 21.43 million VND higher than those located in communes that have not certified the "New Rural commune" with the similar household characteristics. In addition, the results of the DID method confirm that the NRDP has significantly positive impact on the rural households' income. Specifically, after taking into account the difference in differences, the gain (median) in average yearly income of the households is 9.65 million VND. Furthermore, we find evidence from the DID method that the rural households' consumption increases following communes certified the "New Rural commune". However, the results of the PSM method indicate no impact of the NRDP on households' consumption in Vietnam. Therefore, it can be concluded that the NRDP has the positive impact on rural households' well-being in Vietnam.

Given the empirical evidence of positive impact of the NRDP on the rural households' well-being, it is recommended that the government should have relevant regulations to accelerate the Program in the future. First of all, the government should pay much attention on

development of rural infrastructure because good infrastructure can help farmers to enhance agricultural production efficiency as well as to access easily to the market for their products. In addition, agricultural cooperatives have played an important role in improving the efficiency of agricultural production in Vietnam (Cox and Le, 2014). Therefore, agricultural cooperatives have significantly contributed to the implemented process of the NRDP in communes. However, due to some seasons, the number of farmers participating in agricultural cooperatives are limited (Dung, 2020). Therefore, Vietnamese government should have some policies to encourage farmers participating agricultural cooperatives in order to improve their income. Especially, with the positive impact of the NRDP on the rural households' well-being in Vietnam, it is concluded that there is merit in greater interest being taken in initiatives like the NRDP in Vietnam by policy makers in developing countries.

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