The impact of the Vietnam Bank for Social Policies preferential credit on household welfare in Vietnam: a panel data analysis

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Abstract

Purpose – The study examines the impact of the preferential credit provided by the Vietnam Bank for Social Policies on poverty reduction in Ninh Binh province, Vietnam. It also identifies and ranks the barriers of accessing the credit.

Design/methodology/approach – The study applies fixed-effects method to handle the panel data to examine the impact of the credit on poverty reduction. It also uses face-to-face interviews and group discussions to identify and rank the barriers of accessing to the credit.

Findings – The results show that the credit (represented by loan volume) positively and significantly helps improve household income, but does not help to improve household consumption. The major barriers include the time spent to get to the nearest bank branch, banking support services provided to clients and the transparency of household poverty status assessment.

Research limitations/implications – Data are collected in three years and the number of the observations is limited to 300 households.

Practical implications – The VBSP preferential credit may need to be modified to significantly help reduce poverty and the VBSP and involved parties may need to eliminate the barriers so that the poor can have a better access to the credit.

Social implications – The VBSP preferential credit is one of the reasonable sources that can help eliminate poverty though increasing household income.

Originality/value – The VBSP preferential credit can help increase household income, but does not really help improve household consumption due to the small volume of loans. In addition, banking support services and the household poverty assessment are seen as barriers to the access of the poor.

Keywords Household welfare, Preferential credit, Barriers, Panel data, Fixed effects, Vietnam

Paper type Research paper

1. Introduction

There are multiple factors that can contribute to household welfare, hence to poverty. Among those, the constraint to access to credit, particularly preferential credit (preferential credit and preferential loans are interchangeably used in the current

study) is the most important reason that attributes to household welfare and poverty (Banerjee and Newman, 1993; Galor and Zeira, 1993; Hudon, 2009; Pitt and Khandker, 1998; Quach *et al.*, 2005). Previous studies showed inconsistent results on the contribution of preferential credit to household welfare and poverty reduction. In the international context, Pitt and Khandker (1998) showed that access to microfinance credit (a specific type of preferential credit) helped the poor in Bangladesh to improve household welfare, hence reduce poverty. However, Roodman and Morduch (2014) used the same data set and found that the impact was insignificant. In Vietnam, previous studies showed mixed results. For example, Duong and Izumida (2002), Duong and Nghiem (2014), Quach *et al.* (2005), Nguyen (2008), Pham and Lensink (2007) found that microfinance credit helped reduce poverty, but Nghiem *et al.* (2012) showed that the impact of microfinance credit on household welfare and poverty reduction was modest. Ninh Binh province is the ancient capital of Vietnam with many world-famous tourism spots such as the Trang An World Heritage, Cuc Phuong National Park and Con Noi World Biosphere Reserve. It also has diversified economic potentials. The province has achieved impressive improvement in improving household welfare and poverty reduction. For example, during 2016–2018, the poverty rate of Ninh Binh is approximately half of that of Vietnam (DoLISA, 2020; Bank, 2018). In Vietnam, the Vietnam Bank for Social Policies (VBSP) is the largest bank that provides preferential loans to poverty reduction programmes. The current study examines if the preferential loans provided by the VBSP plays any roles in the achievement and identifies barriers to the access to the loans.

The structure of the current study is organised as follows: the previous studies on the impact of preferential loans on household welfare and poverty reduction are briefly reviewed in Section 2. Research methodology, data, and variable description are addressed and critically discussed in Section 3. Results and discussions are presented in Section 4, and the conclusion is presented in Section 5.

2. Literature review
2.1 Background
The VBSP is the largest preferential credit provider in Vietnam and the remaining preferential credit providers are non-government organisations (NGOs) and microfinance institutions. Currently, it provides 19 credit programmes to all types of policy beneficiaries. The top five priorities include credit programmes for the poor, near-poor, disadvantaged students, clean water supply and rural sanitation and household businesses in disadvantaged areas. These programmes account for 81% of the VBSP credit.

Total outstanding loans of the VBSP (shown in Table 1) increased significantly from approximately US$1,734m in 2016 to US$1,863m in 2017 and to US$1,941m in 2018. However, the VBSP branch in Ninh Binh experienced a reduction in total outstanding loans during the study period. The reason is that during this period, a large number of borrowers have repaid the loans that they took previously and the number of new borrowers is modest (see Figure 1).

The number of borrowers that the VBSP serves can be considered as a quantitative indicator, while the number of borrowers who took a loan and have escaped from poverty can be seen as an indicator of quality. These numbers are presented in Figure 2.

The VBSP still experienced an increase in the number of borrowers who took preferential loans and the number of borrowers who escaped from poverty during the study period. The VBSP branch in Ninh Binh witnessed a different story, although the number of borrowers

Credit programme	% of total credit
1	24.56
2	18.94
3	7.52
4	12.31
5	15.18
6	10.39
7	5.15
8	2.43
9	0.32
10	0.62
11	0.59
12	0.16
13	0.31
14	0.27
15	0.07
16	0.11
17	0.52
18	0.05
19	0.5

Note(s): [1]credit for poor households, [2]credit for near-poor households, [3]credit for just-escaped from poverty households, [4]credit for disadvantaged students, [5]credit for clean water supply and rural sanitation, [6]credit for business households in disadvantage areas
[7]Credit for job creation, [8]credit for housing for the poor under Decisions 167 and 33, [9]credit for limited-term migrant workers, [10]credit for Mekong Delta mortgage, [11]credit for extreme poor ethnic minority households, [12]credit for entrepreneurs in disadvantaged areas, [13]credit for forestation development, [14]credit for poor ethnic households in Mekong Delta areas, [15]credit for small and medium enterprises, [16]credit for flood-proof housing for the poor, [17]credit for productive land and job change, [18]credit for foreign-funded projects, [19]credit for other purposes
Source(s): Drawn by the author based on the VBSP 2018 Annual Reports

Table 1.
Preferential credit
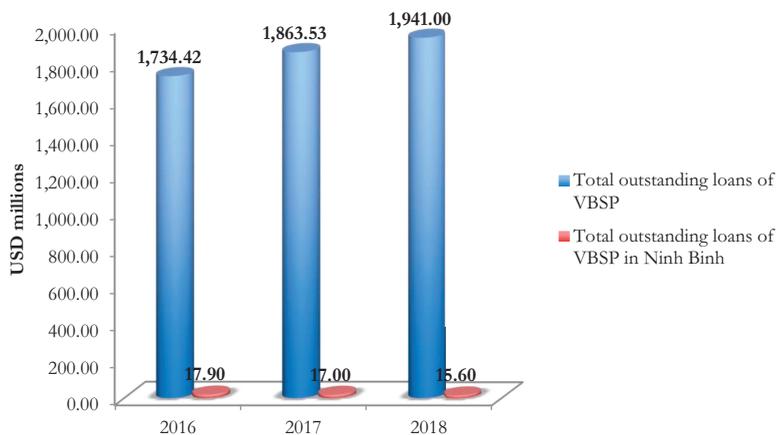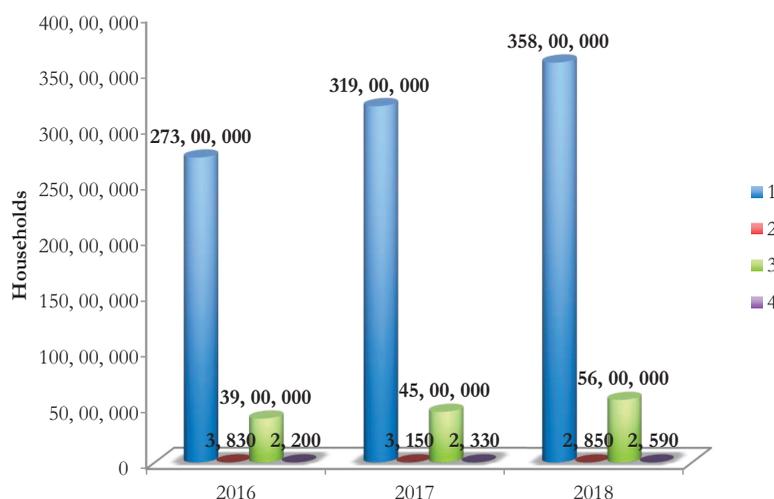programmes provided
by the VBSP

Figure 1.
Total outstanding
loans of the VBSP and
its branch in Ninh Binh

Source(s): Drawn by the author based on the data provided by VBSP and its branch in Ninh Binh

Note(s): [1]Number of poor households as borrowers from VBSP, [2]Number of poor
households as borrowers from VBSP Ninh Binh, [3]Number of poor households as
borrowers from VBSP escaped from poverty, [4]Number of poor households as
borrowers from Ninh Binh VBSP escaped from poverty
Source(s): Drawn by the author based on the data provided by the VBSP and its
branch in Ninh Binh

decreased during the study period, the number of households escaped from poverty still
increased. The reason has been addressed previously. Although VBSP Ninh Binh has smaller
numbers, its contribution to poverty reduction appears to be greater. For example, the
percentage of VBSP borrowers who have escaped from poverty is 14.29, 14.02 and 15.64% in
2016, 2017 and 2018, respectively. Remarkably, that of Ninh Binh VBSP in the same period is
57.44, 73.97 and 90.88%, respectively.

2.2 Literature review
There have been a number of studies that used different methods and different data to
examine the impact of credit on poverty reduction in both international and Vietnam context.
These are briefly reviewed as follows.

Pitt and Khandker (1998) obtained data from a quasi-experimental survey in 87 villages of
29 sub-districts in rural areas of Bangladesh during 1991–1992 to examine the impact of
microcredit provided by the Grameen Bank and two other credit programmes. The sample size
included 1,798 households, of which almost 60% were credit participants, and the method used
was the maximum likelihood. The results showed that the impact of microcredit on women's
expenditure was significantly greater than that on men. However, Roodman and Morduch
(2014) used the same data set and applied simpler study methods and found that the impact of
participating in microfinance programmes on household welfare was not statistically
significant. Particularly, the methods used were sampling weights and similar controls. In
addition, instead of separating borrowers by gender as Pitt and Khandker did, the authors used
three dummy variables representing three lending programmes as Grameen Bank, an NGO
named as BRAC and the Bangladesh Rural Development Board – BRDB. They also controlled

for household characteristics (Model 1), household and village characteristics (Model 2) and household characteristics and village fixed effects (FE) (Model 3). The results showed that the impact of female borrowing from all the credit programmes was negative and significant at the 1% level. These results were different from what Pitt and Khandker found in 1998. Kondo *et al.* (2008) used data collected from quasi-experimental surveys of 2,276 household in the Philippines in 2006 and applied the FE method to examine the impact of microfinance programmes on household welfare. The variables that represented the household welfare included per capita income, per capita consumption, per capita savings and per capita food consumption. The treatment variables that represented microfinance participation were a dummy variable of microfinance participation, the microfinance programme age, the loan volume and the number of loan cycles. The results showed that in the areas that microfinance existed, the impact of microfinance on income was positive and significant at the 10% level, that on savings was positive and significant at the 5% level. However, the impact of microfinance on expenditure and food consumption was not significant. In addition, the impact of microfinance on household welfare in the expansion areas was not significant.

In Vietnam, a number of previous studies found that rural, micro and preferential credit significantly helped reduce poverty. Quach *et al.* (2005) used two cross-sectional data sets obtained from the Vietnam Household Living Standard Surveys (VHLSS) conducted in 1992–1993 and 1997–1998 and Tobit and two-stage least squares models to examine the impact of credit on household welfare and poverty reduction. The sample size of the first data set was 4,799 households surveyed in all areas of Vietnam, and that of the second data set was 5,999 households surveyed in all areas of Vietnam. In addition, preferential credit of the Vietnam Bank for the Poor (later is the VBSP) was included in both data sets. The results showed that credit significantly helped improve household welfare. For example, for the VHLSS 1992–1993, an additional VND1m value of loan was associated with an increase of almost 7%, approximately 5% and approximately 12% in per capita expenditure, per capita food expenditure and per capita non-food expenditure, respectively, and all were significant at the 1% level. The results produced from the VHLSS 1997–1998 showed that the impact of credit on household living standards was slightly lower than that generated from the VHLSS 1992–1993. For example, an additional VND1m value of loan was associated with an increase of almost 6%, approximately 3% and approximately 11% in per capita expenditure, per capita food expenditure and per capita non-food expenditure, respectively, and all were significant at the 1% level. As VHLSS are secondary data, they may not contain important variables such as interest rate of the loans, the costs to obtain the loans (i.e. distance from the household to the bank) or the number of shocks that the household experienced. In addition, the impact of relevant factors on household welfare may need time to take effect; hence, panel data would shed more light. Nguyen *et al.* (2007) used the same data source as Quach *et al.* (2005) – the VHLSS conducted in 2002 and 2004 to analyse the impact of the VBSP preferential credit on household welfare and poverty reduction (represented by per capita expenditure and income). The panel data set constructed from these two data sets contained 4,000 households. The results from the FE models showed that participation in the VBSP preferential credit programme is associated with an increase of 6% in per capita expenditure, significant at the 1% level and approximately 7.4% in per capita income, significant at the 5% level. In addition, an additional of VND1,000 in the loan volume was associated with 0.002% increase in per capita expenditure and income, significant at 5 and 10% levels, respectively. Like the work of Quach *et al.* (2005), important variables were not available in the secondary data. Duong and Nghiem (2014) constructed a pseudo panel data set from VHLSS, 1992, 1998, 2002, 2004, 2006, 2008 and 2010 and the FE method to examine the impact of the VBSP microcredit (preferential credit) on household welfare and poverty reduction. The results showed that participation in the VBSP microcredit programme was associated with an increase of 41% in per adult-equivalent income and 99% in per adult-equivalent consumption, both were

significant at the 1% level. Additionally, a 1% increase in the loan volume was associated with an increase of almost 15% in per adult-equivalent income and approximately 23% in per adult-equivalent consumption, both were significant at the 1% level. Still, secondary data offer limited options for important factors that may have an impact on poverty reduction. Nghiem *et al.* (2012) used primary data obtained from quasi-experimental surveys with 470 households located in 25 villages in the North and Central of Vietnam and the FE method to examine the impact of NGO microfinance institutions (represented by per adult-equivalent income and consumption). The results showed that participation in a microfinance programme had no significant impact on household welfare and poverty reduction.

Barriers of accessing to finance or credit varied from country to country. These are briefly discussed as follows: a bank with larger coverage can help clients easier to access to finance or credit services. Beck *et al.* (2005) collected data from 99 countries to examine the barriers of accessing finance and credit. They found that the number of bank branches in African countries like Ethiopia was relatively lower than that in Europe such as Spain. In another study in 2008, the authors found that the required deposit or bank account maintenance fee might discourage people from accessing to finance or credit. For example, in some African countries like Cameroon, the minimum deposit to open an account with a commercial bank was higher than the average per capita gross domestic product (GDP). In Sierra Leone, the yearly fee to maintain a bank account was greater than a quarter of the average per capita GDP. The time to process a loan may encourage or discourage a client from taking a loan from a bank or not. For example, in Denmark, it only took one day for the bank to process a loan, while in some Asian countries such as Bangladesh, Pakistan and the Philippines, it took more than a month (Beck *et al.*, 2006). Having a bank account can be used as a proxy of being able to access to finance or credit. Honohan (2008) found that nearly 20% of the population in Sub-Sahara African countries had a bank account, while 90% of those in Europe had one. Osili and Paulson (2008) used the property protection and investment incentive as proxies to examine finance or credit demand of immigrants in the USA. It showed that a bank with better mechanism to protect private property or can create incentives for clients to invest will encourage them to access to finance or credit. High interest rate and small loan volume may discourage credit seekers. Johnston and Morduch (2008) found that distance could be a barrier for clients to access bank savings services in Mexico. Luan (2019) identified barriers of accessing formal credit of cinnamon growers in the Northwest of Vietnam included lack of collateral, bank accounts and geographical difficulties.

To conclude, the previous quantitative studies mainly used secondary data and found positive impact of preferential credit on household welfare and poverty reduction. Few studies used primary data, and the results were mixed. Barriers of the access to preferential credit are occasionally examined in the previous studies. To the best of the author's knowledge, there has not been any study that used the FE method to examine the impact of the VBSP preferential credit on poverty reduction and identify barriers of accessing the VBSP preferential credit in Ninh Binh province, Vietnam. Therefore, this study aims at filling those gaps.

3. Methodology, data and variable selection
3.1 Methodology
The mixed research method is used in the current study to exploit advantages and mitigate disadvantages of both quantitative and qualitative methods (Savela, 2018; Malina *et al.*, 2011; Yvonne Feilzer, 2010; Myers *et al.*, 2010; Booth *et al.*, 2003). Particularly, the quantitative method examines the impact of the VBSP preferential loans on poverty reduction, while the qualitative method identifies barriers of the access to the preferential credit and ranks the barriers based on their severity level (Savela, 2018; Malina *et al.*, 2011; Yvonne Feilzer, 2010; Myers *et al.*, 2010; Booth *et al.*, 2003). Because of the availability of the panel data, a number of methods are available to deal with such data. Among these, FE and random-effects methods are considered. The former approach can produce unbiased estimates, but the produced

estimates may face the problem of high variance. By contrast, the latter method can minimise the impact of high variance problem, but the estimates produced by this method may face the problem of bias. To identify which method is appropriate to deal with the data set, Hausman test is designed to detect violation of the random-effects model, which is the regressors are orthogonal to the unit effects (Clark and Linzer, 2015). As the Hausman test shows the Prob > chi^2 = 0.000 [1], the current study uses the following multiple regression model and the FE approach to examine the impact of the VBSP preferential credit on household welfare:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_{it} \tag{3.1}$$

where:

Y_{it} is the household welfare of the ith household (represented by household income and consumption) in year t. Although poverty is a multidimensional problem, the current study resources allow using household income and consumption as the two main proxies for poverty status. It is expected that a household with higher income and consumption is less likely poor.

X_{1it} is a vector of the VBSP preferential loans' characteristics of the ith branch in year t such as loan volume and duration [2].

X_{2it} is a vector of the householder characteristics of the ith household in year t such as age and education. The impact of householder age on income or consumption is expected mixed, but that of education is expected to be positive. As the current study used the FE method, time-invariant variables are excluded, including gender of the householder.

X_{3it} is a vector of the household characteristics of the ith household in year t such as the number of labours, income and the distance between the household and the nearest bank, market and concrete or tarred road. Economic theories show that more family labours are expected to improve family income, but also increase consumption. The impact of household income on consumption is anticipated to be positive. The further the distance between the household and the nearest bank, market and concrete or tarred the higher expenditure. A household that is located in a poor area is likely to be poorer than that located in non-poor area. Therefore, the regional poverty status may have an impact on the household welfare. Unfortunately, such information was not collected for the current study. Other unobserved variables such as business skills, attitude towards risks are included in the error term.

Multiple regression analysis is more amenable to *ceteris paribus* analysis because it allows researchers to explicitly control for many other factors that simultaneously affect the dependent variable. This is important both for testing economic theories and for evaluating policy effects when researchers must rely on non-experimental data. Since multiple regression models can accommodate many explanatory variables that may be correlated, researchers can hope to infer causality in cases where simple regression analysis would be misleading. Naturally, if more variables are added to the model that are useful for explaining why, then more of the variation in y can be explained. Thus, multiple regression analysis can be used to build better models for predicting the dependent variable. An additional advantage of multiple regression analysis is that it can incorporate fairly general functional form relationships. In the simple regression model, only one function of a single explanatory variable can appear in the equation, or in other words, the multiple regression model allows for much more flexibility (Wooldridge, 2012).

The most recognised advantage of the ordinary least squares (OLS) is that it is simple and straightforward. However, the OLS approach requires assumptions such as the zero conditional mean and the homoskedasticity. In addition, the results may be biased due to including irrelevant variables in the model or in contrast relevant variables are omitted from the model. Also, the multicollinearity issue should be considered (Verbeek, 2004; Baltagi, 2011). These challenges can be mitigated by applying sophisticated methods such as difference-in-differences or FE. The current study applies the FE method to examine the impact of VBSP preferential loans on household welfare in the study areas.

Previous studies show that the access to credit, especially preferential credit, plays an important role in household welfare and poverty reduction (Quach *et al.*, 2005; Pitt and Khandker, 1998; Pham and Lensink, 2007; Khandker, 2005; Morduch, 1998). To identify the barriers of accessing to the VBSP preferential loans and rank the difficulties, a qualitative study (in-depth interviews and focus group discussions) is conducted. In particular, in-depth interviews are conducted with relevant parties such as borrowers, mass organisations (Women's Union, Farmers' Association, Youth Organisation and War Veterans' Association), local authorities, bank officers and experts (Guion *et al.*, 2001; Legard *et al.*, 2003). In the in-depth interviews, the respondents are asked to list and prioritise the difficulties (barriers) in the access to the loans. The current study follows previous studies and bases on the study context to select the following factors representing barriers of accessing to VBSP preferential loans. Previous studies show that the distance (measured in km) from the household to the nearest bank plays an important role in accessing credit (Hinson, 2011; Özyildirim and Önder, 2008; Presbitero and Rabellotti, 2014). Particularly, the distance consumes resources such as time and fuel of the borrower. Due to the road conditions, the distance may not be the best proxy. The current study selects the time that the borrower spent (measured in minutes) to get to the nearest VBSP branch. A number of previous studies found that high interest rates discourage borrowers from taking a loan (Bakhtiari, 2006; Jalilian and Kirkpatrick, 2002; Hulme and Mosley, 1996; Johnson and Rogaly, 1997). The current study identify if the interest rate (measured in annual percentage) charged by VBSP is reasonable (compared to the ability of the household to pay). They are encouraged to rate the interest rate (1 = not reasonable, 2 = reasonable and 3 = low). The time spent (in minutes) to complete a loan application shows the complexity of the loan application, hence can encourage or discourage the applicant (Johnson and Rogaly, 1997; Mayoux, 1998). The participants are asked to rate the complexity of the loan application (1 = very complex, 2 = moderate complex, 3 = not complex, 4 = simple, 5 = very simple). If the application is complex, the applicants may need assistance. They are asked who they can seek help (1 = do not know who can help, 2 = friends, 3 = relatives). Similar to the time spent to complete a loan application, time (in minutes) spent and the complexity of the procedure to repay can encourage or discourage borrowers. Apart from reporting the average time to repay, participants are encouraged to rate the complexity of the repayment procedure (1 = very complex, 2 = moderate complex, 3 = not complex, 4 = simple, 5 = very simple). Similarly time (measured in days) for the bank and relevant parties to process the loan application can encourage or discourage the applicant. The interview participants are also asked to rate the procedure of loan application consideration (1 = very complex, 2 = moderate complex, 3 = not complex, 4 = simple, 5 = very simple). In Vietnam, the household poverty status is assessed annually by the local authorities, mass organisation representatives, other relevant parties and other households in the community. The interview participants are asked to report the time (measured in minutes) that the local authorities and involved parties spent to access the poverty status for a household. The procedure to access the household poverty status determines the access to the VBSP preferential loans and other favourable policies. Therefore, the transparency of the procedure is very important for involved parties and the household. The interview participants are encouraged to rate the transparency of the procedure (1 = not transparent, 2 = moderate transparent, 3 = transparent, 4 = very transparent, 5 = complete transparent). The focus group discussions are organised to seek solutions to overcome such challenges (Wong, 2008; Nyumba *et al.*, 2018; Seal *et al.*, 1998; Powell and Single, 1996; Wilkinson, 2011; Parker and Tritter, 2006). In particular, individuals representing the relevant parities (previously addressed) are invited to form a group, they are encouraged to re-identify the barriers (that have been identified by interview participants), prioritise and rate the severity level of the barriers. The difference among study locations and other characteristics are taken into account in the group discussions. To achieve the best results, the respondents should

have been taking the loans in the study period (during 2016–2018), and they should be the householders.

3.2 Data source, sampling and description
The data used for the quantitative analysis in the present study are collected during 2016–2018 from face-to-face interviews with 300 households who were clients of VBSP. As Ninh Binh has three unique geographical economic zones, which are the lowland, the central and the mountainous, these areas are sampled during the data collection process. The lowland region includes Yen Khanh and Kim Son districts, the central region includes Tam Diep and Ninh Binh cities and the mountainous area includes Gia Vien and Nho Quan districts. The central region has a better infrastructure condition, higher economic growth and better access to credit, including that provided by the VBSP. By contrast, the lowland and mountainous regions have a poorer infrastructure condition, lower economic growth and poorer access to credit. To capture the difference of the geographical economic zones of the province, three study locations are randomly selected from three lists of districts and cities. The study locations selected are Kim Son and Nho Quan districts and Ninh Binh city. Due to the limitation of the study resources, in each selected district or city, a commune is randomly selected from a list (of communes) provided by the local authorities. Thach Binh, Ninh Tien and Con Thoi communes are randomly selected to represent Kim Son district, Ninh Binh city and Nho Quan district, respectively. In each commune, 100 households that had taken at least a preferential loan from the VPBS during 2016–2018 are selected to interview. The total number of observations is 900. The in-depth interviews are conducted in early 2019 with involved parties such as borrowers, local authorities, mass organisation officers, the VBSP representatives and bank experts. Due to the limitation of the study resources, 15 VBSP borrowers in each study location are interviewed, approximately 80% are the borrowers. As the responses of 15 participants in one study location do not show similar patterns, three additional participants in this location are surveyed. The total survey participants are 48 (Malterud *et al.*, 2016; Marshall *et al.*, 2013; Sandelowski, 1995). For the same reason, a focus discussion group is organised in each study area. As the number of the focus discussion group is limited, the number of representatives of each party is not limited to one person. This method is believed to give better results.

The data set for the quantitative study contains a number of the VBSP loans, householder, household, regional and the loan characteristics. These characteristics are described in Table 2.

The loan volume is relatively small, approximately VND34m compared to VND100m, which is the maximum loan volume provided by the VBSP. As data distribution of a number

Variable	Mean	SD[a]	Min	Max
Loan volume (VNDm)	34.321	12.323	10.000	62.000
Loan duration (months)	37.091	5.217	24.000	48.000
Householder age (years)	45.256	10.762	26.000	73.000
Householder education (schooling years)	7.180	2.557	3.000	12.000
Household labours (persons)	2.372	0.741	1.000	4.000
Shocks (number of shocks experienced)	1.580	2.002	0.000	9.000
Household annual income (VNDm)	80.140	46.395	13.500	225.000
Household annual consumption (VNDm)	72.360	42.175	13.500	189.000
Distance to the nearest bank (km)	8.220	3.934	1.500	12.750
Distance to the nearest market (km)	1.930	0.591	0.000	3.000
Distance to the nearest concrete/tarred road (km)	0.530	0.392	0.000	1.350

Table 2.
Descriptive statistics of selected variables

Note(s): [a]standard deviation, [b]ot available nor applicable
Source(s): Author's calculations from surveyed data

of variables is skewed, natural log form is applied where applicable. The average loan duration is 37 months, which is approximately three years. On average, a householder is approximately 45 years old and spends approximately seven years in school. The average number of labours in a household is approximately two persons, experiences two shocks annually, earns and spends approximately VND46m and VND42m, approximately. The households are located near concrete or tarred roads and markets. However, the distance to the nearest bank is approximately four times that to the nearest market.

4. Results and discussion
4.1 The impact of the Vietnam Bank for Social Policies preferential loans on household income
As addressed previously, the current study selects household income and consumption to represent the household welfare. The results from the FE models are presented as follows (Table 3).

The impact of loan volume on household income is positive and statistically significant, but that on household consumption is not significant. For example, a 1% increase in the loan volume is associated with an increase of almost 0.69% in the household income, significant at the 1% level. This implies that a larger loan volume may help improve household welfare. The VBSP may need to modify the loan volume to meet the needs of clients. The impact of this variable is consistent with that found by Duong and Nghiem (2014) and Quach and Mullineux (2006). The impact of the number of household labours on income is positive and significant. For example, a 1% increase in the number of household labours is associated with approximately 0.003% increase in household income, significant at the 1% level. The impact of the number of shocks (that the household experiences) on household income is negative and significant. For example, a one additional shock is associated with 0.001% reduction in household income, significant at the 1% level. The impact directions of other variables, including that of loan duration, on household income are explainable, but their impact is not significant. This suggests further studies, with a data set collected from a longer period in different study areas, are necessary (Table 4).

4.2 The impact of the Vietnam Bank for Social Policies preferential loans on household consumption
The results created from the consumption model show that the impact of VBSP preferential loans (represented by loan volume and duration) on household consumption is not statistically significant. This finding is similar to that found by Nghiem et al. (2012). The loans

Household income (natural log)	Coef	p-value
Loan volume (natural log)	0.690	0.001
Loan duration (natural log)	0.178	0.748
Householder age (natural log)	−0.010	0.660
Householder education (natural log)	0.018	0.259
Household labours (natural log)	0.003	0.003
Shocks (number of shocks experienced)	−0.001	0.000
Distance to the nearest bank (natural log)	−1.634	0.391
Distance to the nearest market (natural log)	−1.470	0.352
Distance to the nearest concrete/tarred road (natural log)	−1.397	0.334
Constant	1.994	0.584

Note(s): [a]Coefficient, [b]standard error
Source(s): Author's calculations from surveyed data

Table 3.
The impact of VBSP preferential loans on household income (FE)

Household consumption (natural log)	Coef	p-value
Loan volume (natural log)	0.005	0.924
Loan duration (natural log)	0.007	0.959
Householder age (natural log)	−0.076	0.244
Householder education (natural log)	−0.023	0.300
Household labours (natural log)	−0.202	0.283
Shocks (number of shocks experienced)	0.001	0.000
Household income (natural log)	0.630	0.000
Distance to the nearest bank (natural log)	0.222	0.626
Distance to the nearest market (natural log)	0.218	0.614
Distance to the nearest concrete/tarred road (natural log)	0.144	0.407
Constant	1.622	0.068

Note(s): [a]Coefficient, [b]standard error
Source(s): Author's calculations from surveyed data

may help households to increase their income, but as households have to repay the loans, their consumption may not increase. In addition, households, especially poor ones in Vietnam, in particular, and in Asian countries in general, tend to save what they earn as savings to deal with shocks rather than spending. The study results also show that shocks significantly increase household consumption. For example, a one additional shock (that the household encounters) is associated with almost 0.001% increase in household consumption, significant at the 1% level. The impact of income on consumption is positive. For example, a 1% increase in income is associated with approximately 0.63% increase in household consumption, significant at the 1% level. The impact of other variables on household consumption is not significant as expected, and the possible reasons have been addressed previously.

4.3 Barriers of the access to the Vietnam Bank for Social Policies preferential loans
To create a better access for the beneficiaries to the VBSP preferential loans, it is essential to identify the barriers and their severity. The current study conducts interviews and group discussions with relevant parties and the results are presented in Table 5.

Variable	Mean	Median	SD[a]	Min	Max
Time to get to nearest bank branch (min)	37.292	40.000	11.848	10.000	60.000
Interest rate rating[b]	2.250	2.000	0.729	1.000	3.000
Time to complete loan application (min)	42.292	40.000	18.188	15.000	120.000
Complexity of loan application[c]	3.604	4.000	0.893	2.000	5.000
Time to repay (min)	17.917	15.000	9.444	10.000	60.000
Complexity of repayment procedure[d]	4.083	4.000	0.679	3.000	5.000
Time for bank and relevant parties to consider a loan application (days)	12.292	12.000	3.957	7.000	21.000
Complexity of the procedure of loan application consideration[e]	3.917	4.000	0.577	3.000	5.000
Time to assess the poverty status for a household (minutes)	46.542	42.500	23.211	20.000	120.000
Transparency of the household poverty status assessment[f]	3.333	3.000	0.476	3.000	4.000

Note(s): [a]Standard deviation, [b](1 = not reasonable, 2 = reasonable, 3 = low), [c](1 = very complex, 2 = moderate complex, 3 = not complex, 4 = simple, 5 = very simple), [d](1 = very complex, 2 = modest complex, 3 = no complex, 4 = simple, 5 = very simple), [e](1 = very complex, 2 = moderate complex, 3 = no complex, 4 = simple, 5 = very simple), [f](1 = not transparent, 2 = moderate transparent, 3 = transparent, 4 = very transparent, 5 = total transparent)
Source(s): Calculated by the author based on the interview data

The results show that it takes borrowers approximately 37 min to get to the nearest VBSP branch. The most common average time spent is 40 min and more than expected as road conditions in the study area is considerably good. This could imply that the coverage of the bank is not sufficient. If the bank coverage is expanded, it would give clients a better access to the credit and reduce the impact of "black credit". This barrier is almost similar to what Luan (2019) and Beck *et al.* (2005) found. The results show that the loan volume is sufficient (2 = sufficient) and meets demand of the borrowers. This finding is different from some of the previous studies. The difference could be explained that previous studies mainly examined loan volume provided by microfinance institutions. In addition, in 2019, the VBSP increased the maximum volume for preferential loans to VND100m. Since the loans are preferential, the interest rate is reasonable as rated (2 = reasonable) by the interview participants and group discussions. The common amount of time spent to complete a loan application is approximately 40 min. Although applicants need to spend a considerable amount of time to complete the application, most of them rate the loan application complexity as simple. As the complexity of the repayment procedure is simple (as rated), the common amount of time that a client spends to repay money is approximately 15 min. As previously addressed, the length of time (for the bank and other relevant parties) to assess a loan application can encourage or discourage the borrower. The results show that it takes almost two weeks to consider a loan application. This is reasonable as the bank and their local representatives in mass organisations need time to check the loan purposes, evaluate the business plan (if available) proposed by the applicant, and this is not an easy job. The poverty status allows poor and near poor households to access to essential resources, including the VBSP preferential loans. Therefore, the procedure to assess household poverty status is very important and should be completely transparent. The results show that the transparency is moderate, not so opaque, but not totally transparent. This finding implies that the transparency needs be improved to give the access to the right persons.

5. Conclusion
The current study constructed a panel data set from on 300 households located in one city and two districts in Ninh Binh province during 2016–2018 and uses the FE method to examine the impact of the VBSP preferential loans on household welfare, which is represented by household income and consumption. The results show that the loan volume has a positive and significant impact on household income. For example, a 1% increase in the loan volume is associated with an increase of almost 69% in household income, significant at the 1% level. Although, the impact direction of loan duration on household income is expected, the impact is not statistically significant. In addition, the number of household labours has a positive and significant impact on household income. For example, a 1% increase in the number of household labours is associated with approximately 0.26% increase in the household income, significant at the 1% level. As expected, the number of shocks that the household encounters has a negative and significant impact on the household income. For example, a one additional shock is associated with 0.02% reduction in the household income, significant at the 1% level. The impact direction of other variables is expected or explainable, but their impact is not significant. In contrast to the impact of the VBSP preferential loans on household income, that on household consumption is not statistically significant. Additionally, the number of shocks has a positive and significant impact on household consumption. For example, a one additional shock (that the household encounters) is associated with almost 0.2% increase in the household consumption, significant at the 1% level. Household income has

a positive and significant impact on the household consumption. For example, a 1% increase in income is associated with approximately 63% increase in household consumption, significant at the 1% level. The impact of other variables on household consumption is not significant as expected, but their impact direction is expected or explainable.

The results show that the amount to time for a client to get to the nearest VBSP branch is approximately a half of an hour. This is more than expected, as the road condition in most regions of the province is good. As it is preferential credit, the majority of borrowers can afford the interest rate. Although the loan application is not complex, on average, an applicant needs to spend approximately 40 min to complete. The amount of time to repay is approximately 15 min, and the procedure to repay is considered as simple. It takes the bank and involved parties approximately 12 days to consider a loan application though the complexity of the loan consideration is seen as simple. It takes the local authorities and other relevant parties approximately 42 min to assess the household poverty status of a household. The household poverty status assessment is considered as transparent, but not yet completely transparent. This indicates that the assessment transparency needs be improved. Despite the author's efforts, data on a number of variables, such as gender of the householder and the regional poverty status, are not collected or used. These variables may have an impact on the household welfare. Therefore, further studies may collect data on these variables and apply different methods to examine their impact on household welfare.

Notes

1. Results of Hausman tests are available upon request.

2. As the interest rate of the VBSP preferential loans is identically applied to all customers, it is not necessary to include to the model.

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