

Credit composition and income inequality in Vietnam: an empirical analysis

Credit
composition
and income
inequality

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Abstract

Purpose – This paper examines credit composition and income inequality reduction in Vietnam. In particular, the authors focus on the distinction between policy and commercial credits and investigate whether these two types of credit adversely affect on income inequality. The authors also examine whether the educational level and institutional quality condition the impact of policy credit on income inequality.

Design/methodology/approach – The authors use the primary data set, which contains a panel of 60 provinces collected from the General Statistics Office of Vietnam from 2002 to 2016. The authors employ the generalized method of moments to solve the endogenous problem.

Findings – The authors show that while commercial credit increases income inequality, policy credit reduces income inequality in Vietnam. In addition, we provide evidence that the institutional quality and educational level condition the impact of policy credit on income inequality. Based on the findings, the paper implies that it was not the size of the private credit but its composition that mattered in reducing income inequality due to the asymmetric effects of different types of credit.

Practical implication – The government should focus on credit for the poor by helping them to exit poverty through investing in human capital, health and micro enterprises activities.

Originality/value – This is the first study that examines the links between the two components of credit and income inequality as well as the constraints of the links. The authors argue that analyzing the separate effects of commercial and policy credits is more important for explaining the role of credit in income inequality than the size of total credit.

Keywords Commercial credit, Policy credit, Income inequality, Vietnam

Paper type Research paper

1. Introduction

Income inequality is a widespread concern worldwide, especially in developing countries. Former US President Barak Obama even called the rise in income inequality the challenge of our time (Dabla-Norris *et al.*, 2015). Income inequality has increased globally, but there is still no consensus on its cause. In recent research, the impact of financial development in general and credit in particular on income inequality has been theoretically and empirically investigated. Theoretically, there are many different views on the impact of credit on income inequality. Some theoretical studies argue that more credit extension may make it easier for the poor to access loans to improve their lives, which can reduce income inequality (Galor and

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Moav, 2004). Imperfect information and credit transaction costs may create constraints on the poor such as a lack of collateral; thus, loosening these credit restrictions is considered beneficial for the poor (Beck *et al.*, 2007). In another theoretical view, Greenwood and Jovanovic (1990) argue that the credit market is only better for the richer group with better mortgage conditions to access credit, thereby increasing income inequality.

In terms of empirical research, the studies have not entirely agreed on the impacts of credit on income inequality. Although many empirical studies show that countries with higher levels of credit growth, income inequality is lower (Li *et al.*, 1998; Clarke *et al.*, 2006; Beck *et al.*, 2007; Kappel, 2010; Hamori and Hashiguchi, 2012; and Zhang, 2016), other studies suggest that there is a non-linear relationship between credit and income inequality (Kim and Lin, 2011; Law *et al.*, 2014), or credit increases income inequality (Jauch and Watzka, 2012; Jaumotte *et al.*, 2013; Dabla-Norris *et al.*, 2015). Thus, studies at different levels with different aspects show that income inequality is related to credit; however, the mechanisms and degrees of impact differ from countries to countries and are subject to each country's institutional and socio-economic background.

Vietnam has made a number of remarked achievements in social and economic development more than 30 years of its economic reform. Economic growth has brought Vietnam from the country with the rate of more than 58% poor population in 1993 to about 5% in 2018 (Pham and Riedel, 2019). Policy credit is considered to contribute to this great achievement. However, income inequality in society tends to increase with the achievement of rapid economic growth and sharp poverty reduction in Vietnam. Gini coefficient, a common measure of income inequality, increases from 0.34 in 1993 to 0.42 in 2018 (GSO, 2019). So far, there have been several studies examining the impact of financial development and credit on income inequality in Vietnam (Le and Chu, 2013). However, there is not any study on credit composition and income inequality. In addition, the studies also have not clarified the constraints of economic and institutional factors on the impact of credit on income inequality. In this paper, we study the link between the two components of credit and income inequality. We argue that analyzing the separate effects of commercial and policy credits is more important for explaining the role of credit in income inequality than the size of total credit.

The paper is organized as follows. Section 2 provides the theoretical framework and literature review. An overall credit and income inequality in Vietnam is presented in Section 3. Section 4 describes the model specification, data and methodology. The empirical results and discussion are presented in Section 5. And, section 6 is conclusions and policy implications.

2. Credit and income inequality: theory and literature

There have been three main strands of theory about the credit–inequality nexus. The first one developed by Greenwood and Jovanovic (1990), also known as non-linear or inverted U-shaped hypothesis, states that credit leads to higher income inequality in early stage of economic development, but the income gap may decrease as the credit market has been grown to mature. The second one proposed by Galor and Zeira (1993) and Banerjee and Newman (1993) concludes that credit reduces income inequality. In the third strand, Aghion and Bolton (1997) provides a trickle-down theory, which shows that when capital accumulation is high enough, a governmental policy may still make income distribution more equal if it redistributes more wealth of the richer lenders to poorer borrowers, which could be done through the credit allocation mechanism.

Based on those theoretical frameworks, the extensive empirical literature on the relationship between credit and income inequality provides mixed findings. Beck *et al.* (2007) use data for 65 countries over the 1960–2005 period and report a negative relationship between private credit-to-GDP and the growth rate of the Gini coefficient controlling for real per capita gross domestic product (GDP) growth and a wide array of other country-specific factors. Using a similar model for a group of 83 countries in the period of 1960–1995,

Clarke *et al.* (2006) also find that credit market development reduces income inequality. Kappel (2010) finds that credit reduces income inequality in high-income countries, but is not significant for low-income countries. Using panel fixed effects, generalized method of moments (GMM) and annual panel data for a sample of 126 countries over the 1963–2002 period, Hamori and Hashiguchi (2012) find that private credit-to-GDP reduces household income inequality.

Based on a cross-section sample of 81 countries over the period 1985–2010, Law *et al.* (2014) conclude that credit tends to reduce income inequality only after a certain threshold level of institutional quality has been achieved. Until then, the effect of credit on income inequality is nonexistent. Cournede *et al.* (2015) examine the effects of intermediated credit for Organization for Economic Co-operation and Development (OECD) countries and a European subset and find a negative impact of intermediated credit on average household disposable income growth, controlling for country and time-fixed effects and financial crises. Beck (2011) shows the positive effect on inequality that decreasing credit constraints will benefit the poor at least in developing countries. Marta *et al.* (2020) analyze the relationship between finance and income inequality for a group of nine OECD countries over the pre- and post-crisis periods (2000–2015). The model proposed in this study simultaneously considers two explanatory variables for measuring financial depth (credit provision and capital markets) and a new multidimensional variable to measure the financial system's resilience (a composite indicator) and conducts panel data analysis. The empirical results confirm that a financial system's resilience helps alleviate existing income inequality, and that income inequality appears higher in liberal market economies than in coordinated economies.

On a national level, Cruz and Imperial (2014) use data from 1961–2000 and certify that credit increases inequality in the Philippines. Law and Tan (2009) find no evidence to conclude that credit can reduce the rich–poor gap when analyzing national data from 1980 to 2000 in Malaysia. Re-examining this correlation in the context of better government institutional quality, Law *et al.* (2014) conclude that credit only reduces income gap after the institutional quality has reached a certain threshold. In India, Ang (2010) provides quantitative analysis of time-series data during 1951–2004 and finds that credit expansion for the private sector and bank consistency may narrow income inequality. Using GMM and panel data for a sample of 60 provinces over the 2002–2010 period, Le and Chu (2012) show that the financial development measured by private credit-to-GDP increases income inequality in Vietnam.

Most studies focus on the impact of the total credit on income inequality. There have been few systematic studies that distinguish between the components of credit. For example, Beck *et al.* (2012) use data from 33 cross-country from 1992 to 2005 to examine the differential effects of household and enterprise credits on economic growth, income inequality and poverty. They find a negative relation between enterprise credit and growth of the Gini coefficient, but no statistically significant impact of household credit. Jianu (2020) estimated a positive impact of private-sector credit growth on income inequality, this being caused by the existence of disequilibrium in the distribution of the credit. This research demonstrated that the income inequality has a historical cause. The proper conduct of macro-prudential policy can provide a solution in terms of moderating the impact of excessive lending to the private sector on the income inequalities. More recently, Seven *et al.* (2018) identified the heterogeneous behaviors of income inequality in response to credit to non-financial corporations (firm credit) and credit to households and non-profit institutions serving households (household credit) across 30 developed and developing countries. They find that the impact of private credit on reducing income inequality goes through firm credit rather than household credit.

Our study is further related to the empirical studies on the distinction between household and firm credits, all of which show that credit composition matters for income inequality.

3. Credit and income inequality in Vietnam

3.1 Commercial credit

In 2000–2010, commercial credit grew rapidly at an average rate of 32.2% year-on-year, peaking at 54% in 2007 (Figure 1). Successively high commercial credit growth for many years contributes significantly in rising financial depth of credit market. According to the Asian Development Bank (2015), outstanding domestic credit claims by private sector (as a percentage of GDP) in 1999 were only equivalent to 22%, increased rapidly to 115% in 2010, then dropped to 100% in 2014. However, from 2011 to 2018, the average credit growth rate remained at only about 13.3% year-on-year.

It can be seen that Vietnam has taken commercial credit expansion as a factor in promoting economic growth for a long time. However, a large proportion of commercial credit has not been transformed into real productive activities, such as agriculture, manufacturing, but is transferred to speculative activities such as construction, real estate. Statistical data from the State Bank of Vietnam (2019) show that commercial credit for agriculture and manufacturing industry in the period of 2015–2018 accounted for 10 and 25% of the total credit; about 55–59% of communes across the country have difficulty in accessing to the formal credit market; 70% of small and medium enterprises have challenges or cannot reach a credit from an official financial institution. These facts explain why GDP growth is not strongly correlated with credit growth, as shown in Figure 1.

3.2 Policy credit

To implement the national target program on sustainable poverty reduction in the period of 2016–2020, the Vietnam government has implemented many policies, of which policy credit is considered an important tool. By the end of 2018, policy credit had been implementing more than 20 national programs and some programs and projects entrusted by provinces, organizations and individuals. Total capital reached VND207,708bn, an increase of VND63,052bn; total outstanding loans reached VND199,823bn, an increase of

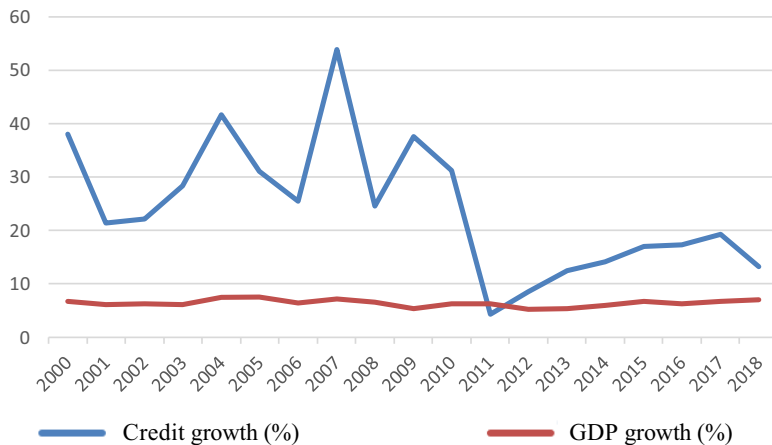


Figure 1.
Commercial credit
growth and GDP
growth 2000–2018

Source(s): State Bank of Vietnam

VND57,295bn compared to 2015, the average annual loan growth reached 9.7%, with over 6.6 million outstanding customers. With nearly 11,000 transaction units in communes, wards and towns across the country and nearly 200,000 savings and loan groups operating in 100% of villages, hamlets, the Vietnam Bank for Social Policies (VBSP) have implemented policy credit in 100% of communes, wards and towns across the country, in which focusing priority to ethnic minorities groups and mountainous areas, disadvantaged and border areas, contributing significantly to gradually reduce income inequality.

Table 1 shows that the outstanding loans of VBSP increased continuously from VND124,456bn in 2014 to VND187,792bn in 2018. Of the total outstanding loans of VBSP, loans to poor households always account for the highest proportion (over 20% in the period 2014–2018), followed by loans to near-poor households, loans to clean water and rural sanitation projects and loans to manufacturing or business households in difficult areas.

From 2016 to 2018, nearly eight million poor households and other policy beneficiaries were lent from VBSP, with the loans of VND221,693bn, contributing to taking over 1.4 million households to overcome the poverty line, creating jobs for over 775,000 labors (over 17,000 laborers working abroad in a limited time), nearly poor 200,000 students reached study loans, nearly 4.9 million clean water station and rural environmental sanitation construction are built, over 108,000 houses for poor households are constructed. It can be affirmed that the policy credit has achieved positive results, consistent with the guidelines and policies of the Vietnamese government on sustainable poverty reduction, ensuring social security, improving living standards and gradually reducing income inequality. The quality of policy credit continues to improve, the ratio of overdue and frozen debts of the entire VBSP system in 2018 is only 0.75% (overdue debt 0.42%, frozen debt 0.33%).

3.3 Income inequality in Vietnam

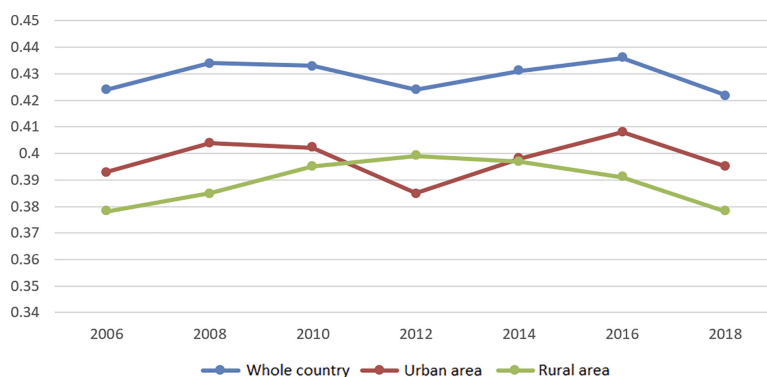
Figure 2 shows the Gini coefficient, which presents Vietnam's income inequality in the period of 2006–2018 is unstable and fluctuates. The Gini coefficient increased from 0.424 in 2006 increased to 0.434 in 2008, then gradually decreased to 0.424 in 2012, increased again, reached the highest value during this period of 0.436 in 2016, and dropped to 0.422 in 2018. Although the fluctuation degree of the Gini coefficient is not much (0.422–0.436), it also shows that the income of employees has changed over the years. According to Cornia and Court (2001), the Gini coefficient in the range of 0.30–0.45 shows the safe and effective range of income inequality. Based on the actual Gini data, it can be affirmed that Vietnam's income inequality is still in a safe area. With this threshold, the level of income inequality in Vietnam is acceptable in tradeoff for high economic growth.

However, the level of inequality in Vietnam may be higher than what is shown by the Gini coefficient because the Gini coefficient does not take into account the inequality factor caused by the differences in assets, opportunities to access resources, health care, education, corruption, etc. This may be partly reflected by the income gap between the richest quintile (group 5) and the poorest quintile (group 1) in Table 2.

Table 2 shows that the average monthly income in all five income groups has increased over the years. The average monthly income per person in 2018 was 3.78 times higher than in 2008. In 2008, the income of group 5 was 8.9 times higher compared to group 1, but by 2018, group 5 is 9.86 times higher compared to group 1, pushing income gap increasingly far. These data show that income inequality in this period tends to increase rapidly. Comparing income in 2018 and 2008 indicates that group 1 is the group with the slowest increase degree (3.38 times) compared to the remaining groups, while group 2 increases 3.79 times, group 3 increases at the highest degree of 3.96 times and group 4 increases 3.85 times, group 5 increases 3.73 times.

Table 1.
Outstanding loans
of VBSP

	2014		2015		2016		2017		2018	
	Debt (billions dong)	Proportion (%)	Debt (billions dong)	Proportion (%)	Debt (billions dong)	Proportion (%)	Debt (billions dong)	Proportion (%)	Debt (billions dong)	Proportion (%)
Credit programs										
To poor households	38,268	28.1	35,457	24.9	37,714	24.1	39,061	22.7	38,014	20.2
To near-poor households	16,947	12.4	27,147	19.1	29,259	18.6	30,295	17.6	30,142	16.0
To households who just got out of poverty	–	–	–	–	11,663	7.4	20,653	12.02	28,293	15.1
To poor students	29,794	21.8	24,456	17.2	19,375	12.3	15,813	9.2	13,046	6.9
To clean water and rural sanitation projects	15,294	11.2	19,914	14.1	23,602	15.1	26,573	15.47	29,898	15.9
To manufacturing or business households in difficult areas	13,854	10.1	15,366	10.8	16,216	10.3	18,107	10.54	21,123	11.2
To employment support	–	–	–	–	4,356	2.8	10,834	6.31	15,234	8.1
Total	124,456	94.7	142,528	97.3	157,372	96.9	171,790	97.1	187,792	96.7
Source(s): VBSP										



Source(s): General Statistics Office of Vietnam

Figure 2. Income inequality (Gini coefficient) in Vietnam from 2006 to 2018

Year	Average	Group 1	Group 2	Group 3	Group 4	Group 5	(1)	(2)
2008	995	275	477	700	1,067	2,458	2,183	8.94
2010	1,387	369	669	1,000	1,490	3,410	3,041	9.24
2012	2,000	512	984	1,500	2,222	4,784	4,272	9.34
2014	2,637	660	1,314	1,972	2,830	6,413	5,753	9.72
2016	3,098	771	1,516	2,301	3,356	7,547	6,776	9.79
2018	3,760	931	1,808	2,774	4,110	9,175	8,244	9.86

Note(s): (1) income gap between group 5 and group 1; (2) number of income disparities between group 5 and group 1

Unit: thousand dong

Source(s): General Statistics Office of Vietnam

Table 2. Average monthly income per person by five income groups in Vietnam (2008–2018)

Another measure of inequality, the “40%” standard of the World Bank, also reflects this. Specifically, the income proportion of the poorest 40% of the total population and the total population has continuously decreased from approximately 18% in 2002 to about 15% in 2010, 14.9% in 2012 and continued to decline to 14.6% in 2018, which reflects the rise of absolute inequality in Vietnam (Pham and Riedel, 2019). It can easily be seen while the relative inequality level measured by the Gini coefficient is acceptable, the absolute income gap is strongly concern, because this demonstrates the increasingly rich–poor gap in Vietnamese society. It is also important to clarify that rising inequality does not imply that the rich become richer, and the poor become poorer, but the income growth of the rich group is faster than the income growth of the poor and low-income groups.

4. Research methodology

4.1 Model specification

This study estimates the impact of credit composition on income inequality by using model specifications as follows:

$$Gini_{i,t} = \beta_0 + \beta_1.CRED_{i,t} + \beta_j.X_{i,t} + \beta.Interactions + \mu_i + \epsilon_{i,t}$$

In this equation, Gini is the Gini coefficient, taking values from 0 to 1. CRED is abbreviation for credit, measured by two variables: C.CRED, commercial credit, is computed by taking domestic credit claimed by private sector as percentage of GDP; and P.CRED, policy credit, is

computed by taking policy credit as percentage of GDP. X is a set of other control variables, including GDPPC – GDP per capita in real terms at comparable 1994 price; EDU – a proxy for educational attainment, computed by number of schooling years of household head; OPEN – a proxy for openness of the economy, calculated by sum of import and export revenue as percentage of GDP; INF is abbreviation of inflation; GEX – government size, measured by government expenditure size over GDP, included in the model to control government intervening into redistribution process through fiscal policy; FDI (foreign-owned sector investment as percentage of GDP) to examine the impact of FDI area on income equality; PCI is provincial competitive index, which is used to proxy for institutional quality.

This study tests two binding factors on the impact of credit and income inequality: institutional quality and educational attainment. Specifically, in the estimation equation, the interaction variables are interacting variables between CRED variables with two variables, namely, EDU and PCI. Also, in the equation, μ_i is a fixed effect that does not change over time, showing the specific characteristics of each province/city, and $\varepsilon_{i,t}$ is an unseen random component. i and t are symbols for province/city and year.

4.2 Data

Data to calculate the income inequality index (Gini coefficient) is calculated by author from VHLSS (Vietnam Household Living Standard Survey) from 2002 to 2016. Since 2002, General Statistics Office of Vietnam has conducted VHLSS every two years. The survey is designed to cover the whole country to represent the socio-economic changes of the country at national and provincial levels. Data on education in the model are also computed from these surveys in corresponding years. Data on policy credit outstanding are collected from VBSP. Data for generating other variables in the model are collected from General Statistics Office of Vietnam, which includes: GDP, import and export revenue, public expenditure (recurrent and development), inflation. Data on the PCI index are collected from Vietnam Chamber of Commerce and Industry. Vietnam today has 63 cities/provinces; however, to have a balanced panel data without reducing observations, we combine data of pairs of respectively separated/merged provinces for the whole studying period. Thus primary data set contains a panel of 60 provincial observations during the 2002–2016 period.

4.3 Methodology

Theoretically, there could be some technical problems when exploiting panel data, which if unsolved would lead to inefficient estimates. These may consist of the following: (1) some variables may be endogenous; (2) fixed effects within the data may prevail and the effects may correlate with other explanatory variables in the model; (3) income inequality is of dynamic process, which means that the level of income inequality in the current period is influenced by the past ones.

To solve the above problems, we utilize the GMM in this study. Technically, difference GMM (DGMM) could be used to generate empirical results by taking the first difference. While seeking for exogenous instrument is not feasible, constructing instruments using lagged variables that already exist in the model is highly possible. Supposing $E(\varepsilon_{i,t}|X_{i,s}) = 0$ given that $t > s$, then second- or higher-order lag of variables in the right-hand side of the model could be treated as instruments. This condition holds if serial correlation in $\varepsilon_{i,t}$ does not exist in the model. Nevertheless, DGMM may still contain limits because taking first-order differentiation would make cross-province and within-province long-term information disappear. Furthermore, lagged variables could be weak instruments for its differenced variable. To solve this, we could use an alternative technique that uses both lagged differenced dependent and independent variables as instruments. Arellano–Bond is applied with error terms in differenced equations to test phenomenon of auto-correlation. Sargen/

Hansen test indicates the overall validity of set of instruments. However, there is no instruction on how much instrument is too many (Roodman, 2009). Moreover, when executing robust regression to correct heteroskedasticity, the Hansen test of over-identification could be unreliable. Therefore, as Roodman (2009) suggested, we the rule of thumb that the number of instruments does not exceed that of observation groups.

5. Empirical results and discussion

The estimated results in Table 3 show that the coefficient of policy credit variable (CRED) is slated to be negative, implying that the increase of policy credit may push to decrease income inequality in Vietnam. Specifically, for a province whose policy credit rate on the GDP is one percentage point higher than that of another province, its Gini coefficient would be average 0.11% lower. In other words, this suggests that provinces with high levels of policy credit may experience lower-income inequality probably due to various positive externalities of policy credit expansion. This also reflects that policy credit impacts helping the poor and vulnerable people, thereby contributing to reducing income inequality in Vietnam.

The coefficient of C.CRED is initially slated to be positive, implying that the increase of commercial credit may push to raise income inequality in Vietnam. Specifically, the coefficient of C.CRED falls in range of 0.0022–0.0024, which could be briefly interpreted that on average, a province whose credit market depth is one percentage point higher than that of another province, its Gini coefficient would be roughly 0.23% higher. The estimation results are consistent with the fact that credit market in Vietnam triggers speculative investment.

Table 4 shows that institutional quality and education attainment are influential on the impacts of policy credit on income inequality in Vietnam. Specifically, the estimated coefficients of interacting variables between institutional quality, educational attainment and policy credit are positive and statistically significant. This implies that in the provinces/cities with better institutional quality and higher education attainment, policy credit has better effect on reducing the income inequality in these provinces/cities. This can be explained by the fact that better institutional quality and higher education attainment allow the poor and vulnerable to access policy credit easier to invest more in production and business, to improve income, thereby reducing income inequality.

Explanatory variables	1	2	3
C.CRED	0.0023*** (4.14)		0.0022*** (4.02)
P.CRED		-0.0012*** (3.88)	-0.0011*** (3.92)
RGDPPC	0.0016 (1.17)	0.0021* (1.97)	0.0019 (1.62)
EDU	-0.0334*** (-3.70)	-0.0323*** (-3.57)	-0.0328*** (-3.60)
CPI	0.0038*** (3.51)	0.0039*** (3.52)	0.0040*** (3.31)
OPEN	-0.0001 (-0.68)	-0.0001 (-0.57)	-0.0001 (-0.66)
GEX	0.0007 (1.11)	0.0007 (1.12)	0.0007 (1.13)
SINV	0.0003 (0.20)	0.0003 (0.21)	0.0003 (0.22)
PINV	0.0008 (0.27)	0.0008 (0.28)	0.0008 (0.29)
FDI	-0.002*** (-3.60)	-0.002*** (-3.62)	-0.0021*** (-3.63)
PCI	-0.005*** (-3.60)	-0.005*** (-3.67)	-0.005*** (-3.62)
No. of observations	415	415	415
No. of instrument	21	21	21
AR(1)	0.000	0.000	0.000
AR(2)	0.780	0.842	0.832
Hansen test	0.305	0.287	0.256

Table 3. Regression results of credit composition and income inequality

Note(s): numbers in bracket indicate *t*-statistics, and asterisk marks with *, ** and *** indicate the estimated coefficients are statistically significant at level of 10, 5 and 1%, respectively

Table 4.
Regression results of
credit composition and
income inequality with
interaction variables

Explanatory variables	1	2	3	4
C-CRED	0.0022*** (4.23)	0.0021*** (4.13)		
P-CRED			-0.0011*** (3.92)	-0.0012*** (3.89)
RGDPPC	0.0021* (1.97)	0.0020* (1.75)	0.0019 (1.62)	0.0019 (1.72)
EDU	-0.0323*** (-3.57)	-0.0322*** (-3.67)	-0.0328*** (-3.60)	-0.0325*** (-3.64)
INF	0.0039*** (3.52)	0.0038*** (3.47)	0.0040*** (3.31)	0.0040*** (3.21)
OPEN	-0.0001 (-0.57)	-0.0001 (-0.58)	-0.0001 (-0.66)	-0.0001 (-0.67)
GEX	0.0007 (1.12)	0.0007 (1.13)	0.0007 (1.13)	0.0007 (1.18)
FDI	-0.002*** (-3.62)	-0.002*** (-3.59)	-0.0021*** (-3.63)	-0.0021*** (-3.65)
PCI	-0.023*** (-3.87)	-0.022*** (-3.76)	-0.022*** (-3.79)	-0.022*** (-3.81)
C-CRED* EDU	0.002 (1.23)			
C-CRED* PCI		0.034 (1.21)		
P-CRED* EDU			0.004*** (3.46)	
P-CRED* PCI				0.005*** (3.53)
No. of observations	415	415	415	415
No. of instrument	21	21	21	21
AR(1)	0.000	0.000	0.000	0.000
AR(2)	0.780	0.790	0.842	0.832
Hansen test	0.305	0.306	0.287	0.256

Note(s): numbers in bracket indicate *t*-statistics, and asterisk marks with *, ** and *** indicate the estimated coefficients are statistically significant at level of 10, 5 and 1%, respectively

Along with the results of the credit variables, the regression results also show the necessity of ensuring macroeconomic stability because the increasing inflation is not beneficial for the poor and increases income inequality. Although the estimated coefficient of RGDPPC is positive and not statistically significant, it still implies that economic growth in the country may have an inequality-widening effect at least over period 2002–2016. The estimation results show that the presence of foreign direct investment (FDI) sector helps reduce income inequality. This can be explained by the fact that FDI enterprises in Vietnam mainly focus on exploiting the advantages of low-cost and cheap skilled labor, thus reducing the income gap compared to high-skilled labor. In addition, there is evidence that the presence of FDI sector helps to deplete some inequality. This could be true given that FDI companies in Vietnam mostly focus on taking advantage of cheap and low-skilled labor, lowering the income gap between low-skilled and high-skilled laborers.

6. Conclusion and policy implications

On dissecting panel data of 60 provinces/cities in Vietnam over the period 2002–2016, this paper finds empirical evidence proving the important role of policy credit in reducing income inequality. Our findings are in line with the theoretical predictions of Galor and Zeira (1993), Banerjee and Newman (1993), which suggest that the impact of credit on reducing the income inequality goes through policy credit rather than commercial credit. These findings suggest that the credit composition between households and firms has key implications for policies tackling income inequality. When these two types of credits have different effects on the level of income inequality, the composition becomes even more important. This is because when policymakers are confronted with the need to restrict (or expand) credit growth, they should pay particular attention to the asymmetric effects that household and firm credits may have on income inequality. Hence, the composition of credit can support policymakers by enabling them to understand whether, and in which context, credit is an instrument that can be used to

influence income inequality, and whether the size of the total credit is always good for the poor. Moreover, if the government of Vietnam wants to fight against income inequality, they must make sure that poor and agrarian areas have sufficient access to credit to continue their development. Thus, it is important for the government to continue helping the poorer regions, they have managed to help through micro-credit programs and policies stimulating access to credit for poor rural households. However, they need to note that these programs are not the sole solution to decreasing income inequality in the country. The problem with credit is that it is difficult to make sure that the obtained credit is used for the project it was intended for. Instead, these loans in many cases seem to be going into increased consumption for the household. Supervision of the usage of credit is a factor that needs improvement, especially for policy credit programs for poor households where the incentive for reimbursement is not as high as for commercial banks.

In particular, the government should focus on credit for the poor by helping them to exit poverty through investing in human capital, health and microenterprises activities. We also confirm that the impact of credit on income inequality is conditioned on the levels of education and institution. These evidence imply that the government should focus on improving educational attainment and institutional quality to reduce income inequality in Vietnam. The expansion of education has an impact on income inequality by redistributing public resources; it can also have a longer-term impact on income inequality through its effects in promoting social mobility and boosting future earnings and opportunities.

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