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The impact of financial inclusion on income inequality in transition economies

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C H R O N I C L E

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A B S T R A C T

Financial inclusion is considered as a critical factor that contributes to the reduction of income imbalance. This paper uses a two-stage least squares (2SLS) model and two different financial inclusion index to examine the impact of financial inclusion on income inequality in 22 transition economies over 11 years from 2005 to 2015. The paper finds that there was a negative relationship between the financial inclusion index and the GINI coefficient. The paper also suggests some policy recommendations to reduce income inequality through developing financial inclusion.

1. Introduction

Starting from the 1970s, there have been several researches discussing the impact of financial inclusion (FI) on economic growth and income inequality. FI was presented as single sectors: types of financial services or financial access. Later, the concept of financial inclusion has become popular and is defined as the state of easy and voluntary access to basic financial services (savings accounts, types of deposit, credit and money advice) at a suitable fee to all society. It is reported that more than 70% of the total world population do not have the access to some basic banking services (Sehrawat & Giri, 2016). According to the World Bank (2018), financial inclusion is a key enabler in reducing poverty and boosting prosperity. As a result, it is expected that financial inclusion would help reduce poverty and then income inequality. However, when some countries become richer, the gap between the poor and the rich is not narrower. This raises the question of whether financial inclusion could really help reduce income inequality through wider access to finance for different groups of people. There are several researches on the impact of financial inclusion on income inequality. Especially, when the relationship between financial growth and income inequality has been proven by many researchers from many countries, the solutions to reduce income inequality have been more and more concentrated on. There are many questions arising in three levels of country, economic group and worldwide, that look at whether financial inclusion affects income distribution. Clearly, if the role of financial inclusion were proved, it would be very meaningful for countries to directly reduce inequality in incomes.

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Transition economies are defined as a group of countries that are on the process of transformation from planned economies into market economies. Transition economies have included the economies of Central and Eastern European (CEE) and the Baltics that are closely approaching membership of the European Union, some countries of Commonwealth Independent States (CIS) and some in Asia. Although all of them have the differences in growth rates, region and geographical location, they all have similarities in the transition process. In a transition process, they are faced with many changes such as liberalization, macroeconomic stabilization, restructuring and privatization and institutional reforms, where financial development is a major term. Keane and Prasad (2002) emphasize that income inequality plays an important role in transition economies and suggest that inequality-reducing redistribution can enhance growth. The International Monetary Fund (2000) reports that inequality in incomes has increased, not surprisingly, over the process of transition. Thus, to support this process, this paper aims to examine the impact of financial inclusion on income inequality that will provide significant policy recommendations to this economic group.

This paper is organized as follows. Section 2 presents the literature review which groups different past researches with various hypotheses and suggests some important gaps. Section 3 provides an overview of financial inclusion in transition economies. Section 4 describes methodology and data used. Section 5 shows the empirical results and section 6 discusses the implications of the results.

2. Literature review

Financial inclusion allows financial services to be spread to the concept of 'unbanked' and it is an integral dimension of financial development (Hogel et al., 2013; Kim, 2015). Recently, more and more researchers are concerned about the impact of financial inclusion on income inequality. There are studies, both directly and indirectly, that explore this topic in different research contexts. This part includes three main contexts: developing countries, developed countries and mixed countries.

2.1. Measurement of financial inclusion

There are numerous researches that have studied FI and its measurement in developing countries. One method to calculate a multidimensional FII is to apply United Nations Development Programme's (UNDP) approach. Chithra and Selvam (2013), Chattopadhyay (2011) and Michael and Sharon (2014) ran an Ordinary Least Squares (OLS) model in India and Nigeria and they all concluded that the higher the income distribution, the higher the FI, for both the individual level and state level. Moreover, Michael and Sharon (2014) found that the financial system development is determined by the extent to which it improves financial services' access for poorer classes in the population. Although there are differences in selected countries and variables, they all calculated a FII related to bank branches' density that is based on the Euclidean distance method and UNDP's approach.

Using the same approach, Arora (2010) not only used data from banking branches, but also collected from 3 dimensions of FI, including outreach, cost and ease of transaction. He confirms that low financial access will increase the external financing constraint that prevents the expansion of firms and income inequality. Meanwhile, Park and Mercado (2015) performed another study on 37 developing countries using an OLS model, and emphasis on rule of law, primary education completion and growth in banks to reduce the GINI coefficient.

The above studies, however, do not consider rural/urban variables, gender or people with disabilities to calculate a FII and examine its impact on income inequality. Montfort et al. (2016) contributed to filling this research gap by finding that, using panel data and the generalized method of moments (GMM) in Sub-Saharan Africa, FI for men and women significantly reduced income inequality. In the same year, Sehrawat and Giri (2016) divided their research scope into rural and urban areas in Asia's developing countries. They conclude that financial reforms contribute to the reduction of the rural-urban field. Moreover, instead of using a GINI coefficient to present income inequality, these studies use the ratio between agricultural and industrial value-added as a share of gross domestic product (GDP) to present the rural area's income inequality.

There are some other studies applying different methods from UNDP's approach and Euclidean distance, but these still draw the same conclusion that FI has a negative impact on income inequality. Karpowicz (2014) used cross-sectional data of 942 institutions in Colombia. This paper presented a FII through 3 dimensions (Access, Depth and Efficiency) and principal component analysis (PCA) was applied to calculate the index. The importance of financial literacy was emphasized to estimate FI. The conclusion was that the development of a financial market would result in more benefits for constrained workers.

Unlike the above, there are also some papers that did not mention FI directly. Sehrawat and Giri (2015), Kapingura (2017) mentioned financial inclusion as *an integral dimension of financial development* and suggested its negative influence on the gap between poor and rich. Both used time series with autoregressive distributed lag bound testing co-integration. Moreover, both found that the trade variable captures the impact of trade openness on income inequality. The only difference is that Sehrawat and Giri (2015) used an additional error correction model for short run dynamics and presented a FII via financial deepening while Kapingura (2017) used the private-domestic sector and automated teller machines (ATMs) as a measure of index.

Burgess and Pande (2005) in India and Karlan and Zinman (2006) in South Africa mentioned financial inclusion through *expansion of bank branches and access* would lead to a statistically significant decline in income inequality. All three researches used panel data and emphasized that deregulation would narrow the income disparity by disproportionately supporting the poor instead of damaging the rich.

Finally, Chen and Jin (2017), Brune et al. (2011) and Motonishi (2006) indirectly mentioned financial inclusion via *financial services*. Applying secondary data of households in China, Chen and Jin (2017) used the credit use of households to emphasize its impact on socioeconomic characteristics such as household income and net worth. On the other hand, Brune et al. (2011) and Motonishi (2006) used a survey method in rural Malawi and Thailand respectively.

2.2. Empirical review

Beck et al. (2007) mentioned FI through expansion of bank branches would lead to a reduction in income inequality in their study in the United States (US). Utilizing the Weibul hazard model, they collected data for the 31 years of bank deregulation from 1976 to 2006 and for 48 sections. The conclusion was that the deregulation of banks noticeably had decreased disparity of income by pushing the lower-class workers' incomes higher. Also in the US, Hogarth et al. (2005) did a survey on 4449 households for 4 years. Using a logistic regression model, their paper found that the positive change in bank account ownership, a proxy of FI, could bring low-to-moderate-income families into the financial mainstream.

There are some studies that included both developing and developed countries in their data pool. Sarma (2008) used UNDP's approach to calculate a FII through three basic dimensions of FI − accessibility, availability and usage of banking services. Honohan (2008) did a study on 160 countries by collecting banking information, Monetary Financial Institution (MFI) account numbers, banking depth and GDP growth rate as well, plus data from household surveys for a smaller set of countries. Using OLS and single Probit regression, Demirguc-Kunt and Klapper (2013) exploited demand-side information through the Gallup World Poll survey of 148 countries, while Camara and Tuesta (2014) applied two-stage PCA including both supply-side and demand-side information. Both concluded that the influence of FI on the disparity of income had been negative.

Based on findings of the previous studies, there are some gaps suitable for further research. Despite the numerous studies on this topic, very few have been carried out in the context of transition economies, which have had rapid growth. Moreover, this paper will explore the difference in the GINI index between high- and low-income countries and high- and low-fragility countries. The method to calculate a FII has also been a controversial topic. Different methods have brought out various results. Thus, this paper will include both popular approaches (UNDP and PCA) to measure a FII and then estimate the impact of FI on income inequality.

3. Overview of financial inclusion in transition economies

The development of FI can be seen as the solution to deal with income inequality. Financial access is used as the measurement of FI, which consists of the number of bank accounts and the popularity of financial services among people. During the last few years, there was a noticeable change in terms of the number of ATMs per 100,000 adults in several nations worldwide. The Russian Federation witnessed the fastest movement from nearly 80 ATMs in 2009 to over 180 ATMs in 2014. The increase was also captured in the CEE (around 40-60 ATMs) and the CIS group of countries (over 60 ATMs) in 2015. Croatia has gained the most outstanding performance compared to other countries in the same area. In Asian transition countries, the number of ATMs fluctuated between 65 and 80 in 2015. However, Vietnam and Lao experienced a slower pace where the figures just reached 25 ATMs in 2015 (Figs. 1 to 4).

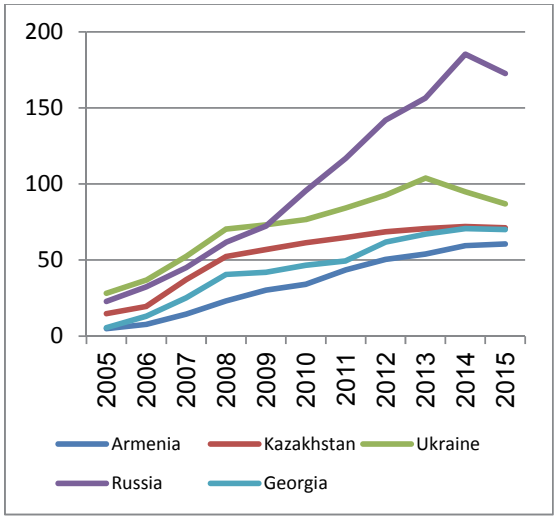


Fig. 1. ATMs per 100,000 adults in CIS transition countries

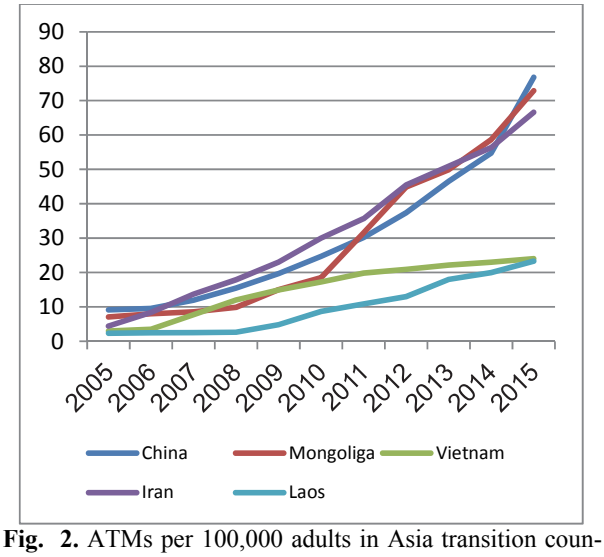


Fig. 2. ATMs per 100,000 adults in Asia transition countries

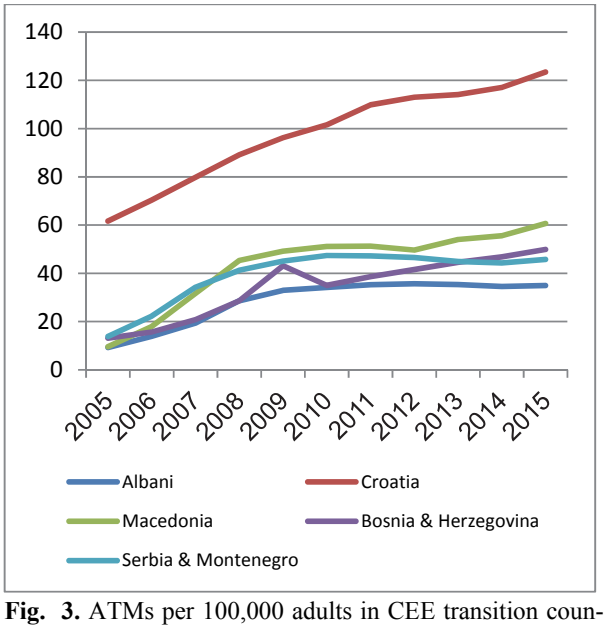


Fig. 3. ATMs per 100,000 adults in CEE transition countries Source: World bank

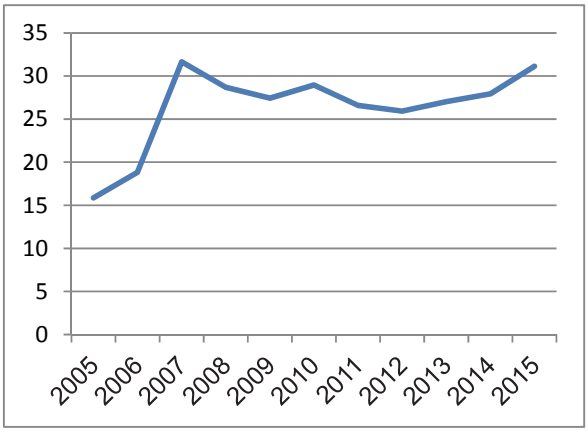


Fig. 4. ATMs per 100,000 adults in Botswana

According to Kim (2015), from 2004, financial inclusion increases over time, with higher levels for high-income countries than for low-income countries. The trends are similar for low-fragility and high-fragility countries, which also indicates a growing gap in recent years (Fig. 5).

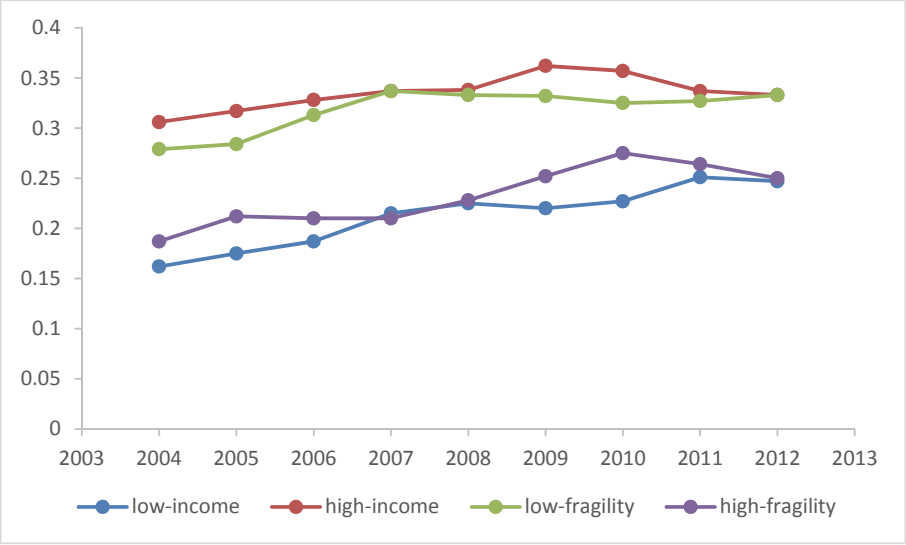


Fig. 5. Financial inclusion index trends (Source: Kim, 2015)

In 2009, at the peak of the global financial crisis, the gap between high-income and low-income countries widened, yet the gap between low-fragility and high-fragility countries narrowed. At least two reasons were found. First, activities which support FI abated in low-income countries during the crisis. Second, although high-fragility countries had relatively high financial limitations, they still had strong incentives for enforcing financial inclusion during that time.

4. Data and methodology

4.1. Estimation methods

This framework is used by Rojas-Suarez (2010) and Beck et al. (2007). There are 2 estimated models and the more suitable model would be chosen.

$$GINI_{i,t} = \beta_0 + \beta_1 FII_{i,t} + \beta_2 RULE_{i,t} + \beta_3 log_{GDPpc_{i,t}} + \beta_4 UN_{i,t} + \beta_5 DOMCRE_{i,t} + \beta_6 DumINC_{i,t} + \beta_7 DumFRA_{i,t} + \varepsilon_{i,t}, \quad (1)$$

$$log\_GINI_{i,t} = \beta_0 + \beta_1 log_{FII_{i,t}} + \beta_2 RULE_{i,t} + \beta_3 log_{GDPpc_{i,t}} + \beta_4 UN_{i,t} + \beta_5 DOMCRE_{i,t} + \beta_6 DumINC_{i,t} + \beta_7 DumFRA_{i,t} + \varepsilon_{i,t}. \quad (2)$$

The dependent variable is income inequality, which is presented through the Gini index (GINI). Independent variables include FI and other variables. In terms of a FII, it will be calculated based on the following two methods. First, we follow Sarma (2008)'s approach which identified a FII by using a multidimensional approach of indexing similar to UNDP's approach used for human development index (HDI) calculation. This method is easy to calculate and understand. There are four main factors: ATM per 100,000 adults, commercial bank branches per 100,000 adults, borrowers from commercial banks per 1,000 adults and depositors with commercial banks per 1,000 adults. The banking services' availability as a dimension of FI is represented by the first two factors while the last three represent usage as another FI dimension. The dimension index is calculated as follows:

$$d\text{-}i = \frac{A_i - m_i}{M_i - m_i},$$

where: A_i is Actual value of dimension i; m_i is the value of dimension i at minimum; M_i is the value of dimension i at maximum. The index will be normalized inverse of Euclidean distance of point d_i in Eq. (1). The formula is given by:

$$FII_i = 1 - \frac{\sqrt{(1-d_1)^2+(1-d_2)^2+\cdots+(1-d_i)^2}}{\sqrt{n}}.$$

The FII has a range from 0 to 1 where 1 represents the highest FII and vice versa.

Second, we use Demirguc-Kunt and Klapper's (2013) approach. The FII would be estimated by four dimensions that are similar to these under Sarma's approach. It is easy to make the comparison between the two methods of FII calculation. Using the World Bank's global index, World Bank data, the four dimensions are: ATM per 100,000 adults, commercial bank branches per 100,000 adults, borrowers from commercial banks per 1,000 adults, depositors with commercial banks per 1,000 adults. The four components will be calculated and weighted under a PCA approach and the FII will be valued following the formula:

$$FI_i = \omega_1 Y_i^1 + \omega_2 Y_i^2 + \omega_3 Y_i^3 + \omega_4 Y_i^4 + e_i,$$

where i denotes the country and $Y_i^1, Y_i^2, Y_i^3, Y_i^4$ capture the four dimensions respectively. The result of PCA will be shown in the Appendix. Accordingly, the weighted values of four dimensions are similarly equal. It means the important extent of the four dimensions is the same to explain the FII. In terms of the conditioning information, there are 6 explanatory variables. Firstly, RULE (Rule of law) captures the awareness of the extent to which agents have reliance on and stand for the rules of society, especially the quality of contract implementation, property rights and the probability of crime and violence. GDPpc (GDP per capita) is the proxy that represents growth of the economy. This variable will be represented under a logarithm in the model. UN (Unemployment) captures the labor force situation. DOMCRE (Ratio of domestic credit to the private sector as % of GDP) is the best measure for financial depth. Additionally, there are 2 dummy variables which stand for high- and low- fragility transition countries and high- and low-income countries. Specifically, national non-performing loans each year are compared to the median value of the world to sort the high- and low-fragility countries that if they were lower, the country would be high-fragility in that year. Meanwhile, if the GDP-per-capita value compared to the median value of the world were lower, the country would be classed as 'low-income' (Kim, 2015).

In this paper, panel regression is chosen to capture the impact of the FII on income inequality. The regression includes pooled OLS, fixed effects and random effects (See Appendix). With the problem of endogeneity, 2SLS estimation is chosen to solve it. 2SLS uses an instrumental variable to deal with endogenous issues. In this case, the lag of financial indicators that include the lag of the FII and the lag of GDPpc are applied as instrumental variables in the model. Model (1) is chosen to run 2SLS.

4.2. Data

There are 22 countries with transition economies and data will be collected over an 11-year period between 2005 and 2015 (See Appendix). Data for all of variables will be collected from the World Bank Database including World Development Indicators, the Global Financial Database, World Governance Indicators, the International Monetary Fund (IMF) and some national reports.

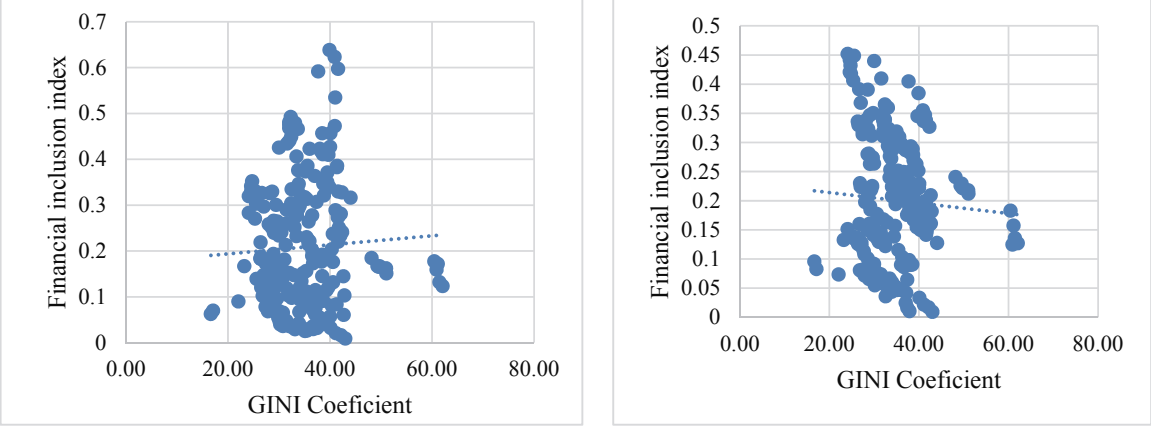
5. Empirical results

5.1. Descriptive analysis

Table 1
Descriptive statistics

Variable	Observation	Mean	Std. Dev.	Min	Max
GINI	242	35.511	6.964	16.640	62.071
FII	242	.208	.140	.009	.638
FIIpca	242	.262	.221	.012	.910
Log_GDPpc	242	8.082	.879	5.821	9.681
RULE	242	-.570	.456	-1.37	.710
UN	242	10.593	8.240	.102	37.312
DOMCRE	242	42.920	27.065	5.874	152.552
DumFRA	242	.814	.390	0	1
DumINC	242	.095	.294	0	1

Table 1 shows the descriptive statistics of both dependent and independent variables. Accordingly, the lowest value of GINI is recorded at 16.64 and its highest value is at 62,071 in Botswana in 2005. Meanwhile, the FII under the 2 approaches has the most noticeable difference in maximum value. This is 0.638 in Russia (2014) and 0.910 in Croatia (2015) under Sarma's and PCA's approach respectively. Fig. 6 suggests different relationships between FII and the GINI coefficient when FII is computed by two methods. FII calculated by PCA seems to have negative relationship with GINI coefficient, while the upward trend line showing that a higher FII calculated by Sarma's approach will lead to a higher GINI coefficient. A negative relationship implies that if financial inclusion improves, income inequality declines in transition economies.



FII calculated by Sarma's approach FII calculated by PCA

Fig. 6. Correlation between the FII and the GINI index
Source: Authors' calculations based on data from world development indicators of World Bank

5.2. Empirical results

The models have been estimated by pooled OLS, fixed effects and random effects which will be shown in the Appendix. Their diagnostic tests including the F-test and the Hausman test have also been done. However, the expected signs and the significant results are not as expected, and the problem of endogeneity has not been solved. By using 2SLS estimation, the lag variables were applied as the instrumental variables and the estimated result is expressed in Table 2.

Table 2
Empirical results of 2SLS model

Model	(a)	(b)
Dep.Var	GINI	
FII	-18.316 (0.000)***	- 9.655 (0.017)**
Log_GDPpc	-.896 (0.093)*	-1.594 (0.012)**
RULE	9.724 (0.000)***	10.608 (0.000)***
UN	.113 (0.027)**	.054 (0.357)
DOMCRE	.081 (0.000)***	.012 (0.446)
DumFRA	- 4.497 (0.000)***	- 4.007 (0.005)***
DumINC	- 2.099 (0.205)	-4.238 (0.028)**
Constant	51.335 (0.000)***	57.990 (0.000)***

Note:
- Values in brackets are t-stat. ***, **, and * refer to significant at p<0.01, p<0.05, and p<0.10, respectively.
- Model (a) refers to model with FII calculated by PCA's approach
- Model (b) refers to model with FII calculated by Sarma's approach
- Instrumental variables include l.FII, l.log_GDPpc

Table 3
Statistical tests

Test	Model	
	(a)	(b)
Cragg-Donald Wald F statistic		
Statistic value	2307.026	2746.844
Critical values:		
10% Maximal IV size	19.93	19.93
15% Maximal IV size	11.59	11.59
20% Maximal IV size	8.75	8.75
25% Maximal IV size	7.25	7.25
Sargan statistic		
Statistic value	0.374	2.046
P-value	0.541	0.153

The Sargan statistic tests and weak identification test (Cragg-Donald Wald F statistic) show that there are no specification errors as the P-values are all above the significant level in terms of the Sargan test and the F-statistic value is higher than all critical values in terms of the Cragg-Donald test (Table 3).

Firstly, the FII is found to be negatively significant towards the GINI index in both models. At a significance level of 5%, when the FII increases by 1 unit, the GINI index will decrease by 18.316 and 9.655 unit in model (a) and (b) respectively, ceteris paribus. Similarly, the logarithm GDPpc variable is found to significantly reduce the GINI index at a 5% level of significance in the model (b). This means that when the GDP-per-capita increases by one percentage point, it leads to a decrease by 1.594 units of the GINI index, assuming others remain constant. Adversely, GDP-per-capita is not found significant at a 5% level of significance in terms of model (a) although it has the same sign as expected and is significant at a 10% level of significance. By contrast, RULE has a positively significant impact on the GINI index in both models at a 5% level of significance. Ceteris paribus, when the rule of law index rises by an additional unit, the GINI index will also increase 9.724 units and 10.608 units in terms of model (a) and model (b) respectively. Similarly, UN also has a positively significant effect on the GINI index at a 5% level of significance in model (a). It implies that a 1-point percentage increase in the unemployment rate will raise 0.113 units in the GINI index. Differently, it has no impact on the GINI index in terms of model (b). This result also happens in the case of the DOMCRE variable that is only found significant in model (a). Holding the other things equal, an additional unit increase in domestic credit to the private sector (% of GDP) will rise 0.081 units in the GINI index.

In dummy variables, DumFRA has negative significance at a 5% significance level in both models. It means that the low-fragile countries have lower 4.5 and 4 GINI indexes in model (a) and (b) respectively in comparison with the high-fragile countries. Differently, DumINC has an impact on the GINI index in model (b) only. It implies that the high-income countries have lower GINI indexes than low-income countries by 4.238.

6. Discussion and policy recommendations

By dealing with the problem of endogeneity, the estimated result is very different under a 2LSL approach in comparison with the normal panel regressions. More interestingly, by using a different financial inclusion calculation approach, there are some differences in the results between the two estimations.

Using a different approach to calculate the financial inclusion index as a proxy of financial inclusion development, the result is significant in both cases. This result is supported by Kim (2015), Park and Mercado (2015), Sehrawat and Giri (2015) and Kapingura (2017). Interestingly, the financial inclusion index under the PCA approach shows an even more significant impact on income inequality reduction.

Financial inclusion is a process to serve certain social groups and individuals to gain access to the formal financial system. It concentrates and emphasizes popular financial services for all classes of an economy, especially the poor classes who do not usually use financial services (Leyshon & Thrift, 1995). The broad objectives of financial inclusion are discussed in both social benefits and economic development. The

poor can address their demands through the formal financial system, transform money-lender dependent rural poor into a highly banking group, create diversified and multiple livelihoods and inculcate a strong savings culture among them (Sarma, 2008). By offering a wide range of services, a fully formal financial system will ultimately benefit individuals, the commercial firms and then improve the quality of social life, faster growth and poverty reduction at a national level.

In this paper, a FII has been represented through some indicators of bank accounts and bank services. Although these indicators cannot cover and measure fully the value of financial inclusion development, it is still one of the most suitable proxies to represent a financial inclusion index. The result proved the core role of financial inclusion in balancing income distribution on the statistical side as expected by the hypothesis and matches the theory.

In CEE group countries, from the starting transition process in the 1990s, households are now the most important customers for banks (Wiesiolek & Tymoczko, 2014). In Albania, the Bank of Albania encourages the building of a highly adequate environment for pushing financial innovations and modernizing the financial structure. They have designed a payment framework that allows all banks and other suppliers of financial services to access the payment system in an equal and transparent way. In the period 2011-2014, the use of bankcards was increased, followed by the development of the necessary infrastructure, such as Point of Sale (POS) machines and ATMs. The use of electronic services such as home banking is also considered. In 2014, the activity of the Albanian Interbank Payment System rose by about 1.5 times compared with the year of 2004 (Gjoni, 2015). Although the government and central bank have made certain improvements in financial access, they have not been focused on individuals and the poorer classes. This may be a reason why the Albanian financial inclusion index increased but the GINI index has not fallen.

In the CIS group countries, the low financial inclusion level has been discussed as the result of the Soviet Union collapse that led to the loosening of life savings of many people. In 2011, European Bank for Reconstruction and Development (EBRD) hired Developing Market Associates to implement a project of financial inclusion development. EBRD launched the ETC Initiative to stimulate economic transition in the CIS in 2014. In terms of Moldova and Tajikistan, the numbers brought into the banks were higher than expected. Most accounts opened were savings accounts or deposits, and as such the average deposit size was over $1,000 equivalent. In Russia, they have presented a picture of fast and accelerating movement in the financial inclusion landscape for lower income Russians through the 2000s (Lyman et al., 2013). In the World Bank report of 2016, the number of adults owning financial accounts stands at 67.4% while this number in Europe and Central Asia is 51.4% on average (World Bank, 2016). However, many Russian banks have not served and provided a full range of basic products to the under-served, especially in the rural areas. It may also be a reason that the speed of income inequality reduction is still lower than expected despite the FII in Russia being recorded as one of the highest developments in the CIS.

In Asia, the concentration in financial inclusion has also been noticed in recent years. In China, the government decided to build a market-oriented banking system with reforms by promoting small and medium-sized enterprises (SMEs) of combined public and private or fully private ownership in the period of 1993-2005. At the same time, they found that the poorest households and the smallest enterprises were the groups that had the most difficulty accessing banking services. Since 2005, China introduced new guidelines and regulations that provided basic financial services especially for rural households and low-workers, and credit for enterprise investment for micro-, small- and medium- sized enterprises (MSMEs) (Sparreboom & Duflos, 2012). China's government realized the key factors of financial inclusion development that were needed to improve financial services for the poor class. China has achieved noticeable success in financial inclusion over the last 15 years and has become a leader in the fin-tech revolution (World Bank, 2018). Therefore, the FII is recorded as ascending while the GINI index has been declining remarkably. In Vietnam, the SBV (2017) emphasized the role of financial inclusion as the key socio-economic development. From 2010, Vietnam has executed many policies to ask credit institutions to allocate resources to meet the capital demand of agricultural and rural areas. The lending program has also been carried out through people credit funds and micro financial organizations. They have also conducted specific policies to lend to farmers and poor people, such as lending to poor households and

households that are running businesses in remote and difficult areas. Additionally, the Prime Minister supports the allocation of a credit package valued at 100,000 billion Vietnam Dong (VND) for high tech and clean agricultural enterprises. Additionally, the successful operation of MFIs has increased the number of micro-finance savings accounts. Almost 63% of low-income customers admit that microcredit has helped them mitigate poverty and get a better life. Through these improvements, Vietnam's FII has tended to increase since 2010 and the GINI index also has positive signals. Vietnam's FII is lower and the GINI index is higher than China's and this can be explained partly by the fact that the financial inclusion development plan of Vietnam had started slower than China's and there also exists a difference in economic conditions.

By examining this impact, this paper has provided policy suggestions to reduce income inequality in transition economies. Firstly, the success of financial inclusion development and income inequality reduction depends mostly on financial improvement in rural areas. By proving the convenience of using financial services and teaching people on how to use basic services it is possible to improve the population's literacy and increase financial penetration into rural areas. These are the first steps to help them become actively responsible for their own financial management. Secondly, it would be better to consider expanding some banking services. The poor will be served with basic services such as payment transfer, savings, etc., which also decrease the cost of using the service. Thirdly, institutions should impose free costs in some cases of using financial services for the poor. It may bring less benefit for the institutions in the short-term, but it will encourage usage among the poor. In the long-term, the larger the spread of financial service becomes, the more profits institutions can gain.

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Appendix

Appendix A: List of transition countries

Table 4
List of transition economies

CEE (Central and Eastern European economies)	CIS (Common wealth of Independent States)		Sub- Saharan Africa	Asia
Albania	Armenia	Kyrgyz Republic	Botswana	China
Croatia	Azerbaijan	Moldova		Cambodia
Macedonia	Belarus	Russia		Laos
Bosnia and Herzegovina	Georgia	Tajikistan		Vietnam
Serbia	Kazakhstan	Ukraine		Mongolia
				Iran

Source: IMF (2000)

Appendix B: PCA result

Table 5
FII under PCA

Component	Proportion	Variables	Comp 1	Weighted value
Comp 1	0.608	ATM	0.573	0.292
Comp 2	0.209	Branches	0.467	0.237
Comp 3	0.209	Borrowers	0.577	0.294
Comp 4	0.029	Depositors	0.347	0.177
1.Principal components / correlations		2.Principal components		

Where: ATM: ATM per 100,000 adults; Branches: commercial bank branches per 100,000 adults; Borrowers: borrowers from commercial banks per 1,000 adults; Depositors: depositors with commercial banks per 1,000 adults

Source: The authors' calculation using Stata.