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Capital Account Liberalization and Income Inequality: A Panel Study of 28 European Countries

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A R T I C L E I N F O

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A B S T R A C T

Financial globalization has evolved from domestic policy to international scope policy. One of its form is capital account liberalization which can be observed from the declining number of restrictions among countries for cross-border financial transaction, and the increasing level of capital flow between countries. Europe cross-country financial transaction has increased for the last three decades and this increase happened simultaneously together with that of income inequality as measured with Gini index. This condition indicates that there is a positive correlation between income inequality and capital account liberalization. This research aims to study whether income inequality corresponds to the increase of capital account liberalization in 28 European countries. Furthermore, this research seeks to understand the role of institutional quality and financial depth as threshold variables. By employing System GMM Estimator on balanced panel data, this study finds that capital account liberalization positively correlated with income inequality and institutional quality has proven to be an important threshold variable. These findings emphasize the urgency for policy makers to consider institutional quality before or during the implementation of capital account liberalization.

A B S T R A K

Globalisasi keuangan telah berkembang dari kebijakan domestik menjadi kebijakan lingkup internasional. Salah satu bentuknya adalah liberalisasi neraca modal yang dapat kita amati dari semakin menurunnya pembatasan transaksi keuangan antar negara dan meningkatnya aliran modal antar negara. Transaksi keuangan lintas negara Eropa mengalami peningkatan selama tiga dekade terakhir dan peningkatan ini terjadi bersamaan dengan peningkatan ketimpangan pendapatan yang diukur dengan indeks Gini. Kondisi ini memberikan kesan bahwa terdapat korelasi positif antara ketimpangan pendapatan dengan liberalisasi neraca modal. Penelitian ini bertujuan untuk mempelajari apakah ketimpangan pendapatan berhubungan dengan peningkatan liberalisasi neraca modal di 28 negara Eropa. Lebih lanjut, penelitian ini berupaya untuk memahami peran kualitas kelembagaan dan kedalaman keuangan sebagai variabel ambang batas. Dengan menggunakan System GMM Estimator pada data panel berimbang, studi ini menemukan bahwa liberalisasi neraca modal berkorelasi positif dengan ketimpangan pendapatan dan kualitas kelembagaan terbukti menjadi threshold variable yang penting untuk diperhatikan. Temuan ini menekankan pentingnya pengambil kebijakan untuk mempertimbangkan kualitas kelembagaan sebelum atau selama pelaksanaan liberalisasi neraca modal.

1. INTRODUCTION

The subject of income inequality has attracted many researchers to do studies concerning the influential variables. However, when they have extensively studied the financial liberalization regarding its impact on economic growth, the case is not the same with income inequality. Income inequality has risen in most countries for the last three decades, including European countries, as shown in Figure 1.

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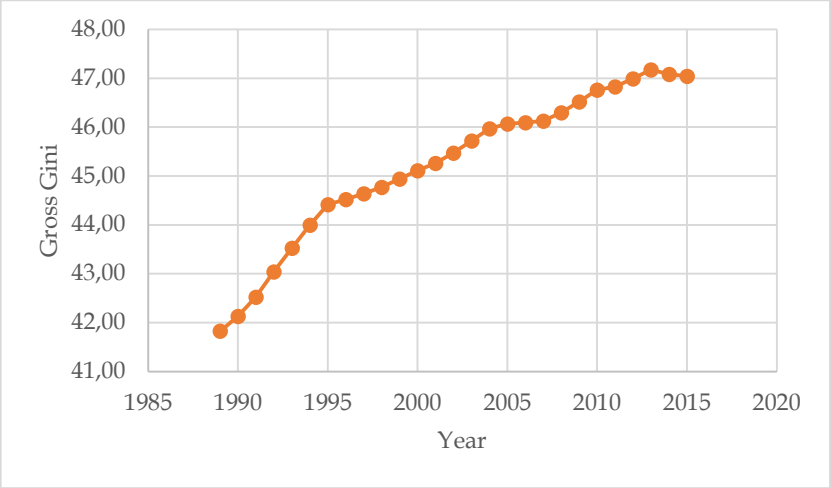

Figure 1 Gross Gini Europe-28 Countries (1989-2015)
Source: SWIID Database (Solt, 2020)

The seminal paper of McKinnon & Shaw (1973) introduced the term of financial liberalization. Being proposed as a domestic policy, the current financial liberalization has involved an external dimension that can be observed with cross-country financial flow. Quinn (1997) was among the first who studied the impact of financial liberalization on income inequality, and the study systematically explains the mechanism on how financial liberalization affects income inequality. They are progressive taxation and transfer funds, the relative price of capital, and labor.

Furceri & Loungani (2018) stated three facts related to the impact of liberalization on income inequality. First, the quality of financial institution strength plays a role in determining the extent to which risk-sharing occurs. Financial liberalization may reduce income inequality by allowing better consumption smoothing and lower volatility in countries with better financial institutions. On the contrary, in countries with weak financial institutions, liberalization may aggravate credit access as it improves access only for those who are well off. Second, when financial crises occur, the falling asset price and bankruptcies may have a larger impact on the better off, and hence, the crisis may reduce the income gap between classes. Finally, capital account openness may affect income inequality by altering labor share income. When resource owners reallocate production abroad, this move will increase the profit-wage ratio but decrease labor income share.

The previous studies concerning the impact of financial liberalization on income inequality yields inconclusive results. For example, Agnello, Mallick & Sousa (2012) studied the impact of financial reforms on income inequality and found the association of financial liberalization with less income inequality. An addition, Bumann & Lensink (2016) extended the literature by using financial depth (private credit to GDP ratio) as threshold variable for capital account liberalization, they found that financial depth effectively performs as threshold variable for countries with financial depth over 25% which mostly can be found on middle to high income countries. These findings implied for countries with financial depth under 25%, capital account liberalization tends to aggravate income inequality. On the other side, de Haan, Pleninger & Sturm (2018) found the opposite result, by studying the impact of capital account liberalization and financial development as threshold variable to 89 countries during 1975-2005, they found that financial development aggravate income inequality, particularly in countries which the level of financial development, is already high. De Haan et al. (2018) distinguished the role of political institutions from financial institutions. They found that political institutions play a more significant role in determining the impact of liberalization towards income inequality, which differs from Furceri & Loungani (2018).

Most of the existing literature regarding the impact of capital account liberalization on income inequality employs a wide sample selection and this research does not focus on a specific sample. Furthermore, most of the previous studies focused only on developing countries due to the assumption that developed countries already have a better condition such as good institutional quality and developed financial sector so that developed countries assumed to successfully gain the benefits

of capital account liberalization or at least does not suffer from the adverse effect of capital account liberalization. This research aims to understand the correlation between capital account liberalization measured by Chinn-Ito index and income inequality with data collected from the SWIID database within European countries. The researchers employ dynamic panel data approach with System GMM estimator on 28 European countries. This is intended to understand the impact of financial liberalization specifically on 28 European countries which has good institutional quality and financial depth over 25%. The results of this study can be beneficial for the policy makers to understand and consider institutional quality, financial depth, and the implementation of capital account liberalization itself.

This study found that capital account liberalization is positively correlated to income inequality, implying the implementation of capital account liberalization correlated with wider inequality condition. This study also found that the interaction between capital account liberalization and financial depth has positive correlation to income inequality. Conversely, the interaction between capital account liberalization and institutional quality is in a negative correlation towards income inequality level. These findings emphasize the urgency for policy authority to consider institutional quality before and during the implementation of capital account liberalization.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

Furceri & Loungani (2015) stated that there are three main channels of transmission between capital account liberalization and the impact towards income inequality that comes from various previous studies. The first channel is through the impact of financial liberalization on risk sharing. Theoretically, capital account liberalization should increase the opportunity for international risk sharing and domestic consumption smoothing, but a good financial institution quality has a crucial role to reap those opportunities (Kose, Prasad & Terrones, 2009). In countries with good financial institution, capital account liberalization may reduce income inequality by allowing consumption smoothing and also reduce economic volatility. Otherwise in countries with not good enough financial institution quality and unequal credit access, capital account liberalization may exacerbate income inequality due to difference of financial accessibility between those with better of condition and those who can hardly access financial services (Furceri & Loungani, 2015).

The second channel is through the effect of liberalization on financial crisis. On the one hand, the financial crisis can reduce income inequality due to bankruptcies and a significant decrease in asset value, thereby eroding the total value of ownership of the rich. On the other hand, if the financial crisis is supported by a prolonged recession, this will threaten the welfare of the poor.

The third channel is through increasing foreign direct investment in developing countries. It is due to the capital and labor that tend to be complementary (Cragg & Epelbaum, 1996). Liberalizing capital account will increase the accumulation of domestic capital so that, in this condition, the productivity of labor will be demanded to be better. The demand for skilled labor will be higher when compared to unskilled labor. This phenomenon causes the widening of inequality between skilled labor and unskilled labor. Income inequality caused by the capital account can also occur due to a decrease in the share of labor income. Foreign direct investment that enables capitalist to move their production abroad to minimize the production cost may also lead to the widening of income inequality by reducing the labor income share.

Bumann & Lensink (2016) developed theoretical approach to explain the role of financial depth as threshold variable, the positive impact of capital account liberalization towards income inequality. The model stated that there are two actors in economy such as investors who gain from their investment (return to capital) and savers who gain from their labor wage and saves the income. They assumed that financial liberalization increases bank efficiency thereby reduces borrowing costs. Restoring equilibrium in the financial market will increase deposit rates. This increase of deposit rates will increase the income of savers thereby reducing the income gap between savers and investors. Financial depth act is due to increasing the elasticity of credit interest rate, and loan demand will increase in countries with high financial depth. However, there is a possibility of opposite event. For example, when financial liberalization leads to economic volatility, the savers will accumulate precautionary their savings. It is possible that deposit rate actually fall thereby increasing income inequality (de Haan et al., 2018).

Various theoretical approaches that have been developed emphasize the crucial conditioning factors. Capital account liberalization in countries

with high financial depth may also lead to income inequality due to the increase of volatility. This means, capital account liberalization still poses a risk even to countries with high financial depth. Therefore, this study hypothesizes a positive correlation between capital account liberalization and income inequality, and negative correlation between both financial depth and institutional quality towards income inequality. This implies that institutional quality and financial depth may reduce the adverse effect of capital account liberalization and thereby countries may benefit from it.

3. RESEARCH METHOD

This section describes our datasets and methods the researchers used. The key variables are measures of income inequality, capital account liberalization, institutional quality, and financial depth.

Data

This study covers 28 European countries which are divided into two income level groups based on the World Bank classification. The first group is European countries with the classification of high-income countries, namely countries with a national income per capita of more than $ 12,536, the countries in question are: Austria, the Netherlands, Belgium, Croatia, Cyprus, Denmark, Estonia, Finland, England, Germany, France, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Malta, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden, and Switzerland. The second group is two European countries that are classified as upper-middle-income countries, namely countries with national income per capita in the range of $ 4,046 - $ 12,535, namely: Belarus & Bulgaria. The objective of estimating with balanced panel data limits the number of countries that can be included in the analysis.

Variable Definition and Measurement

This research focuses on the role of two threshold variables, namely the quality of institutions and financial depth, in preventing the risk of widening income inequality due to the implementation of financial liberalization policies on the European continent.

Income inequality is the distribution of income or distribution of total national income that is not proportional between individuals (Todaro & Smith, 2015). Income inequality can be measured using several measurement tools such as the Theil index, Palma index, and the Gini coefficient or the Gini ratio. According to Todaro & Smith (2015), the Gini ratio can fulfill four principles in measuring income inequality: anonymity, the principle of scale independence, population independence, and the principle of the transfer. The anonymity principle states that measurement does not need to care about whom the parties or individuals are at a certain income level in an economy. This study uses Gini data from the Standardized World Income Inequality Database (SWIID) developed by Solt (2020). SWIID is the standardized data from the United Nations University's World Income Inequality Database (WIID), which is obtained from the OECD Income Distribution Database, CEDLAS, World Bank, Eurostat, and the Luxembourg Income Study. SWIID data includes market income, gross income, disposable income, consumption. This study uses market income, namely income received by households without taxation and subsidies in any form, either from the government or non-profit organizations. Market income with a data range (0-100) where 0 means perfect equality while 100 stands for perfect inequality because, according to Jauch & Watzka (2016), income redistribution policies can obscure the theoretical link between financial development and income inequality. The researchers take a different point of view, the same way to avoid bias caused by redistributive policies on the link between capital account liberalization and income inequality.

Financial openness (FO) can be measured by de jure and de facto indicators. De jure describes the deregulation or easing of capital flows restrictions, which are generally seen from a country's capital control policy. Meanwhile, the de facto indicator is used to see the degree of capital account liberalization from how much capital flows into a country.

There is an important difference between de jure measures such as restrictions on capital account transactions and de facto measurements where there can be changes in the degree or application of the restriction policy over time. According to Ayhan Kose, Prasad & Taylor (2011), it is more important to know how deep an integrated economy is in the international capital market. According to Collins (2007), although the de jure indicator can cause bias to determine the correct degree of capital account openness, the de jure indicator has the advantage of being more insensitive to reverse causality in the data regressions panel. De jure indicator data in this study were obtained from the Chinn & Ito index (KAOPEN), this index is based on the binary dummy variable of restrictions on financial transactions between countries in the Annual Report

on Exchange Arrangements and Exchange Restrictions (AREAER) database then expressed in ranges - 1,856 (more controlled) to 2,456 (less controlled).

Institutional quality (IQ) is the rules of the game in a society, or formally it deals with the tools that limit human interaction. Consequently, institutions arrange incentive structures in accounting, whether political, social, or economic (North, 1990). Institutions influence society through their role to reduce uncertainty and create stable structures. In general, economic institutions include the rules that ensure the proper market functioning such as the enforcement of property rights, financial freedom, and labor, and credit market regulations (Kuncic, 2012). This study uses institutional quality indicators sourced from the publication of ICRG (International Country Risk Guide), the index is based on 12 composites in the scope of political risk. Weighting is used to determine the value of each composite with a total index value of 100. Overall, a value of 0-49.9 indicates a very high risk; 50 - 59.9 a high risk; 60 - 69.9 moderate risk; 70 - 79.9 low risk; and greater than equal to 80 very low risk.

Financial depth (Fin depth) is the ratio between private credits to GDP obtained from World Bank database. Theoretically, the link between economic development and inequality through several studies found that economic development can reduce inequality by providing better access to various groups, including low-income groups, to gain access and improve capital allocation efficiency (de Haan & Sturm, 2016). Meanwhile, according to a study conducted by Bumann & Lensink (2016) the impact of capital account liberalization towards income inequality depends on the level of financial depth, where capital account liberalization can alleviate income inequality if the level of financial depth as measured by the ratio of private credit to GDP exceeds 25 percent.

Labor Income Share (LIS) is conventionally measured by dividing total compensation to national income (Guerriero, 2019). Although this calculation sounds undemanding, several problems arise regarding the calculation of labor income share. The main challenge in calculating the labor income share is estimating the income of self-employed or entrepreneurs. This is because entrepreneurship has two sources of income at once, namely income received as labor and income received as the owner of capital (capital share income). Gollin (2002) suggests three methods of adjustment. First, it is by treating all mixed-income as labor income. Second, assuming that capital and the share of labor in the informal sector are the same as those in the formal sector. Third, it is by assuming the average wage of entrepreneurs to be the same as for labor. This research uses labor income share data from PWT (Penn World Table) published by Feenstra, Inklaar & Timmer (2015), where adjustments have been made as suggested by (Gollin, 2002). In addition, PWT also adds a share of income from the agricultural sector to match developing countries' characteristics (Doan & Wan, 2017).

Empirical Methodology

The researchers hypothesized a positive correlation between capital account liberalization and income inequality. Second hypothesis for the interaction of institutional quality and capital account liberalization yields negative correlation with income inequality. Third hypothesis is the interaction of capital account liberalization with financial depth, yields negative correlation towards income inequality. The hypotheses indicate aggravating role of capital account liberalization towards income inequality if not conditioned with good institutional quality and enough financial depth.

To test the hypotheses, the researchers formulated the following empirical model:

$$Gini_{i,t} = c + \alpha Gini_{i,t-1} + \beta FO_{i,t} - \beta_1 Findepth_{i,t} - \beta_2 IQ_{i,t} - \beta_3 LIS_{i,t} - \gamma\left(FO_{i,t} * IQ_{i,t}\right) - \delta\left(FO_{i,t} * Findepth_{i,t}\right) + u_{i,t}$$

To control the possibility of the endogenity problem, the researchers employed the Generalized Method of Moments (GMM) as an estimator in the dynamic panel data model. In this, the researchers take first differences of the regression equation to eliminate time-invariant fixed effects. Furthermore, the researchers added the equation in first differences with that in levels where lagged. In the first differences serve as instruments as in Blundell & Bond (1998). A good instrument should be relevant and valid at the same time, or can be interpreted as correlating with endogenous regressors and at the same time being orthogonal to the error term (Baum, Schaffer & Stillman, 2003). To address this specification, the researchers tested for correlation both first and second order serial correlation and the researchers Sargan-test to address the validity of instruments (Roodman,

2009). Specifically, the Sargan-test uses the chi-squared value (x2) and the significance level to indicate whether the instrumental variables' validity (Baltagi, 2005). If chi-squared has a value greater than α, with α = 5%, H0 is accepted, indicating that the instruments are valid.

4. DATA ANALYSIS AND DISCUSSION

This study examines the correlation between capital account liberalization, institutional quality, financial depth, and the interaction between capital account liberalization and institutional quality with inequality in several European countries. Europe—with the majority of countries in it classified as high-income countries—is actually the main attraction of research related to how the role of institutional quality and financial depth as the threshold variable in reducing the risk of financial liberalization, where the two variables are thought to have reached a better point when compared to countries in level of income below.

Descriptive Statistic

Table 1 shows the descriptive statistic of research variables. The Gini index as a proxy for measuring income inequality (the dependent variable) has an average value of 47.3107 with a standard deviation of 4.73. Belarus has the least Gini with a score of 32.2 in 2015, while Ireland's Gini in 2012 is 56.4. Labor Income Share, hypothesized to correlate with income inequality negatively, has an average value of 57.64 with a standard deviation of 5.52. Ireland has the lowest Labor Income Share in 2015, while Iceland had the maximum value in 2002. The Financial Openness variable is a de jure parameter of financial openness with a range of 0-1, has an average value of 0.8720, and a standard deviation equal to 0.27.

Table 1. Descriptive statistic

Variable	Obs	Mean	Std. Dev	Min	Max
Gini	280	47.3107	4.7341	32.2000	56.4000
Labor Income Share (LIS)	280	57.6395	5.5178	33.1287	68.9944
Financial Openness (FO)	280	0.8720	0.2673	0	1
Institutional Quality (IQ)	280	78.1012	8.5521	53.1250	93.6667
Financial depth (Findepth)	280	102.6604	52.1562	21.7776	308.9784
FO x IQ*	280	69.1534	22.9997	0	93.6667
FO x Findepth*	280	93.9051	54.1153	0	243.2153

Notes: (i) Annual observations for the period 2006-2015; (ii) Countries under observation include: Austria, Netherlands, Belgium, Croatia, Cyprus, Denmark, Estonia, Finland, United Kingdom, Germany, France, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Malta, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden, and Switzerland; (iii) * is interaction variable

Institutional quality in this study comes from the ICRG, which measures the level of institutional risk of a country with a value range of 0-100 (the higher the lower the risk). Based on the descriptive statistics, the average value of the institutional quality variable is 78.1012 (low risk) with a standard deviation of 8.5521. Belarus received the lowest score for institutional quality in 2002 with a score of 53.13, while Finland obtained the highest score in 2007 with a score of 93.67. Financial depth is the ratio between credits in the private sectors to GDP which has an average value of 102.6604 with a standard deviation of 52.1562. The value of standard deviation can be interpreted as the variability in the value of financial depth between countries.

Empirical Result

Referring to Table 2, in the empirical model, there is no serial correlation either in the first and second-order with a probability value of 0.916 or in order two with a p-value of 0.062. Furthermore, the instrument's validity with the Sargan test found that the instrument is valid with a p-value of 0.140. Therefore, the GMM estimator is valid for an estimation method.

Table 2. Specification test

Specification test		Result
Serial correlation	AR (1)	0.916
	AR (2)	0.062
Sargan test	*chi-squared*	0.140

Table 3 indicates that the estimation results of one-step system GMM estimator, the results of each regressor can be interpreted as follows: (1) the level of financial openness as measured by the Chinn-Ito index (*de jure*) has a significant correlation (α = 1%) on income inequality with a coefficient value of 10.6170, so an increase of 1 unit of capital account liberalization will increase income inequality by 10.62 units , *ceteris paribus*; (2) the variable quality of institution has a positive and significant correlation at (α = 5%) with a coefficient value of 0.0711; (3) Financial depth has a negative and significant correlation (α = 1%) to income inequality with a coefficient of -0.0456, so an increase of 1 percent in financial depth correlates with a decrease in income inequality by -0.046 units, *ceteris paribus*; (4) The interaction of financial openness with institutional quality which also acts as a variable of interest is found to be significantly correlated with a coefficient value of -0.1816, meaning that every 1 unit increase in financial openness that accompanied by 1 unit increase in institutional quality correlates to a decrease in income inequality of -0.18 units, *ceteris paribus*; (5) the interaction variable of financial openness with financial has a positive and significant correlation with a coefficient of 0.0749. It means that an increase in the interaction between capital account liberalization and financial depth by 1 unit will also increase income inequality by 0.075 units, *ceteris paribus* .

Table 3. System GMM estimator result

Dependent variable: Income inequality (Gini)	
Gini (t-1)	0.4303***
	(0.0434)
Financial openness	10.6170***
	(1.5369)
Institutional quality	0.0711**
	(0.0235)
Financial depth	-0.0456***
	(0.0058)
Interaction of Financial openness and Institutional quality	-0.1816***
	(0.0272)
Interaction of Financial openness and Financial depth	0.0749***
	(0.0071)
Constant	2.2225
	(2.5518)
Wald-stat (7)	956884.87***
Observations	252
Observations per group	9
Instruments	16
Groups	28
Sargan-p-value	0.14
AR2-p-value	0.062

Notes: (i) respectively, the signs ***, ** and * describe the significance level at 1%, 5% and 10%; (ii) standard errors are in parentheses; (iii) estimation result of one-step GMM system.

Again, through the Wald stat value with a p-value of 956884.87 at a significance of 1%, it can be concluded that simultaneously all regressors significantly affect income inequality as the dependent variable. The number of instruments in the study that is smaller than the number of individuals in the observation has met the rule of thumb, referring to Roodman (2009), where too many instruments could lead to bias in the regression results.

Discussion

It is important to discuss the research findings, especially the variable of interests, namely the interaction of financial openness with institutional quality and the interaction of financial openness with financial depth. For rationalization of the relationship between variables, Furceri & Loungani (2015), for instance, stated that there are three main effects between capital account liberalization and income inequality, when referred to the various previous studies. The first channel is through the inter-effect of financial liberalization on risk-sharing. Theoretically,

capital account liberalization should increase the chance of international risk sharing and domestic consumption smoothing opportunities. However, in order to optimize these opportunities, it requires the quality of financial institutions that play a crucial role in determining how effectively liberalization of the capital account provides risk-sharing opportunities (Kose et al., 2009). In countries with strong financial institutions, capital account liberalization may reduce income inequality by providing consumption smoothing opportunities and reducing economic volatility. However, in countries with weak financial institutions and non-inclusive access to credit, capital account liberalization may have the opposite effect due to differences in the ability of financial access between parties who are in better initial conditions and those who are more difficult to get financial access (Furceri & Loungani, 2015).

The second channel is through the effect of liberalization on the tendency of the financial crisis to occur. On the one hand, the financial crisis can reduce income inequality due to the phenomenon of bankruptcy and a significant decrease in asset value, thereby eroding the total value of ownership of the rich. One the other hand, if a prolonged recession follows the financial crisis, it will threaten the poor's welfare.

The third channel is through increasing foreign direct investment in investment destination countries. Since capital and labor tend to be complementary (Cragg & Epelbaum, 1996), opening a capital account will increase the accumulation of domestic capital. Therefore, this condition labor productivity will be demanded to be better. As a result, the demand for skilled labor will be higher when compared to unskilled labor. Of course this phenomenon causes widening inequality of wages between skilled labor and unskilled labor. If the capital account liberalization can encourage the transfer of production abroad, then it can increase the profit-wage ratio and reduce labor income share (Harrison, 2002).

The empirical estimation results show that capital account liberalization, as measured by the *de jure* index, positively correlated to income inequality with a coefficient of 10.6170. Furthermore, institutional quality as the threshold variable which considered withstanding risks from the implementation of capital account liberalization policy has a positive coefficient of 0.0711. Countries in Europe have a reasonably good institutional quality, this can be seen from the average value of the institutional quality (see Table 2), and so this fact is the main attraction of research in European countries. Financial depth, which is the ratio of private credit to GDP negatively, correlates with income inequality of -0.0456. This means higher financial depth correlated with lower income inequality, this finding can be interpreted that financial depth act by expanding financial access throughout the community.

After estimating each variable of interest, the next discussion leads to the interactions between interest variables. Multiplication between variables is carried out in accordance with research needs to determine the impact of the interaction between variables towards the dependent variable. First, we use the multiplication of institutional quality and capital account liberalization to understand the role of institutional quality as conditioning variable upon the implementation of capital account liberalization towards income inequality. Second, we use the multiplication of financial depth and capital account liberalization to understand the role of financial depth as conditioning variable upon the implementation of capital account liberalization towards income inequality. The interaction of capital account liberalization and institutional quality resulted in a negative correlation with coefficient of -0.1816. This finding is in accordance with the research hypothesis that institutional quality is an important factor that needs to be considered before policymakers decide to open the tap of international capital flows or during the implementation of capital account liberalization. This finding is in accordance with Furceri & Loungani (2015) that capital account liberalization can provide opportunities for risk-sharing & consumption smoothing; however, this opportunity can only be obtained when the state has good financial institution quality, because poor quality institutions cannot provide this opportunity for the whole community, but only for people with better initial conditions.

Furthermore, Zehri & Abid (2019) stated that financial liberalization in countries with low quality institutions would lead to misallocation of credit, thereby strengthening the importance of considering institutional quality for policy makers. de Haan et al. (2018) using a fixed effect panel model and samples from 121 countries in the period 1975-2015 estimated the impact of financial liberalization, and they concluded that financial liberalization increases income inequality depending on the level of economic development (financial development) and the quality of political institutions.

Financial depth is a proxy for financial accessibility. Arestis (2004) stated that financial liberalization can provide better financial access. As such, financial depth becomes a precondition or

threshold variable so that financial liberalization can reduce income inequality. Bumann & Lensink (2016), using data from 106 countries during 1973-2008, found that capital account liberalization can provide benefits, in the form of reducing income inequality only if the financial depth in the country has exceeds 25% as threshold variable.

In their theoretical model, Bumann & Lensink (2016) assumed that countries with high financial depth have high loan demand elasticity to credit interest rates. The financial liberalization policy that increases banking efficiency by narrowing the difference between loan interest rates and saving interest rates, will increase loan demand. To restore equilibrium of the financial market, the deposit interest rate will increase. An increase in deposit interest rate will increase the income of those who save their money in the banks (savers), who often have income below investors. This condition will reduce income inequality between those who saves with those who invests. On the other hand, in countries with low financial depth, the elasticity of demand for loan on credit interest rates is also lower. The increase in banking efficiency, which causes a decrease in borrowing costs, only impacts increasing loan demand. In the second scenario, financial markets need to cut deposit rates, which will reduce the income of savers. This condition implies capital account liberalization tends to provide no impact if not aggravating income inequality.

Referring to the estimation results in Table 3, it is known that financial depth is negatively correlated with income inequality, so that a 1 percent increase in financial depth is correlated with a decrease in income inequality by -0.046 units, ceteris paribus. However, the estimation results from the interaction between capital account liberalization and financial depth show the opposite result. It provided evidence that there is a positive correlation of 0.0749. It can be interpreted that financial depth by itself can be associated with a decrease in income inequality; however, financial depth as a threshold variable has not been able to reduce income inequality, either by encouraging income distribution brought by capital account liberalization or to reduce risks from the implementation of capital account liberalization policies. So that what happens is just the opposite, financial liberalization continues to increase income inequality. This result is in line with the work of Li & Su (2020) where instead of expanding access to finance for the poor, financial liberalization only benefits the rich.

5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

This study contributes to the extension of the previous research literature by including two threshold variables: quality of institutions and financial depth. It also proves that financial openness positively correlates with income inequality as measured by using the gross Gini index (before taxes and subsidies). Furthermore, the interaction between institutional quality and financial openness proves that institutional quality is an essential factor for optimizing the absorption of the benefits of capital account liberalization where the quality of institutions prevents the widening of income inequality caused by the implementation of capital account liberalization policies. On the contrary, financial depth (private credit to GDP ratio) is negatively correlated with income inequality. However, the interaction between capital account liberalization and financial depth towards income inequality yields positive correlation. These can be interpreted such as while more financial depth directly correlated with less income inequality, it does not perform as conditioning variable to prevent the adverse effects of capital account liberalization towards income inequality nor enabling capital account openness to distribute the income.

This finding confirms the first channel of the relationship between capital account liberalization and income inequality as described by Furceri & Loungani (2015). A good institutional quality will ensure financial access for society's lower classes (Rajan & Zingales, 2003). Furthermore, good institutional quality will improve income distribution regulations that will equalize people's income (Delis, Hasan, & Kazakis, 2014). The characteristic of European countries with high financial depth can be used as a main consideration in countries or regions of countries with similar characteristics. Furthermore, for developing or lower income groups this paper gives an insight for considering the improvement of institutional quality especially for countries that has been aggressively liberalizing their capital account to boost their economic growth or to decrease their income inequality. Thus, attention needs to be paid to improve the quality of institutions in order to obtain the expected impact of capital account liberalization implementation while preventing the inherent risks it has.

This paper has several limitations. First, the variable of capital account liberalization in this paper is proxied by the Chinn-Ito Index which is de

jure index and only considers the restrictions on capital flows without including the amount of capital flow itself, whether it is FDI or portfolio investment. Second, this paper uses the Gini Index obtained from the SWIID Database, which is an improvement of the WIID carried out by Solt (2020), where according to Jenkins (2015), this database is susceptible to measurement bias due to the use of an imputation model in the data compilation process. Third, this paper although using the gross Gini index (before taxes and subsidies), is not able to diversify the amount of income share of each income group, so this study is unable to see how the impact of the regressors on each level of income.

Further research can enhance this research by using data that shows differentiation between income levels to understand the impact of capital account liberalization towards whole income groups. Due to the limitation of de jure variable, further research may also include de facto variable in the model as there is a possibility that countries with less financial restriction do not really have a significant inter-country capital flow.

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