Financial Market Integration and Income Inequality*

Jae Wook Jung† and Kyunghun Kim‡§

February 2021

Abstract

Over the past decades, financial markets have been integrated across countries while income inequality has increased in most countries. This paper studies the effect of financial market integration on income inequality and investigates whether this effect varies with the degree of financial market development. We find empirical evidence that financial market integration and financial market development interact to change income inequality. Specifically, the effect of financial market integration on income inequality is nonlinear, and the degree of financial market development plays an important role. Opening financial market worsens income inequality in the countries holding the underdeveloped state of financial market, however, the effect of capital account openness on income inequality is statistically insignificant in the countries with developed financial market.

Keywords: financial market development, financial market integration, income inequality
JEL codes: F36, D63, O11, O16

---

* We thank Sungbae An, Yongsung Chang, Sun-Bin Kim, Dukgyoo Kim, and participants in the Economic Department seminar at University of Mannheim and KIEP Brownbag seminar for their helpful comments and suggestions. All remaining errors are entirely our own.

† Assistant Professor, Graduate School of International Studies, Sogang University, Email: jwjung1224@sogang.ac.kr

‡ Assistant Professor, School of Economics, Hongik University, Email: khkim@hongik.ac.kr; corresponding author

§ corresponding author

I. Introduction

Over the past decades, financial markets have become integrated across countries. Benefits of financial market integration include cheaper and alternative options of saving and borrowing for households and entrepreneurs. In the global financial market, asset choices for households widen so that individuals can manage their idiosyncratic income risk more effectively. On the other hand, financial market integration makes investors who hold foreign assets more vulnerable to global financial shocks. In the global financial crisis of 2007-8, financial market distress which initially arose in the U.S. had an enormous impact on the peripheral countries. This example shows that the strong shock propagation occurs via the integrated financial markets.

The existing literature shows that financial market integration has a sizable impact not only on business cycles in the short run but also on economic growth in the long run. However, there has been little attention on income distribution, specifically related to the financial market integration. In this paper, we fill the void in the literature by focusing on the following two stylized facts: income inequality has been exacerbated in most countries over the past two decades, and the financial market has been integrated across countries during the same period[1]. In particular, we answer three research questions to investigate the relationship between the two facts. First, how does financial market integration affect income inequality? Second, how does financial market integration and financial market development interact to change income inequality? Third, what components do theoretical model need to explain the interaction effect of financial market development and integration on income inequality?

Why does financial market development matter to understand the effect of financial market integration on economic systems? The standard neoclassical growth model of a small open economy treats financial market integration as a synchronization of the domestic interest rate with the world interest rate. Since interest rates in developing countries are mostly higher than the interest rate of the international bond market, financial market integration of emerging countries into the global financial market is considered as lowering an interest rate due to more accessible credit in economic theory. In this sense, financial market openness would have a similar effect of

[1] Azzimonti, de Francisco, and Quadrini (2014) document the comovements of financial market globalization and income inequality during recent decades with increasing public debt.

domestic financial market development on economies. Also, financial market integration allows more diverse financial securities that one can deal with so that the financial market would become more complete. More complete financial market is likely to decrease precautionary savings so that income inequality might be lower.

Nevertheless, there is a controversy in empirical studies on the relationship between financial market integration and income inequality, specifically, it is about whether the financial market integration and development have the same effect on economic systems and the distribution of income in the systems. Some empirical studies show that financial globalization is associated with an increase in income inequality while others find counter-evidences. At least, it is hard to tell that the effect of financial globalization on income inequality is linear.

How the effect of financial integration on income inequality can be different from the effect of financial market development? First, even the effect of financial market development on inequality is unclear due to different mechanisms of operating across borrowers and lenders. Following Demirgüç-Kunt and Levine (2009), separating margins of financial market development is useful to understand the different mechanisms. The intensive margin of financial market development rises because cheaper credit becomes available for people who have already participated in the financial market. Inequality gets worsen because of the intensive margin effect. On the other hand, financial market development allows newly available financial services for borrowers or lenders who have been excluded from financial market. The extensive margin effect enhances inequality.

Financial market openness also works on the extensive and intensive margins. Financial market integration allows households and firms that have already employed financial services to have diverse sources of insuring risks, while outsiders face more income risks without hedging tools if financial market participation structure is conservative. Especially diversification opportunities become more valuable as agents have different saving and investment motivations such as precautionary saving for idiosyncratic risk, permanent income hypothesis-base saving motive, or self-financing motive to avoid using expensive external finance. As conventional economic theory suggests, cheaper and more credit from the international market can enrich potential market participants who have not been employing financial services with a newly access to financial market.

We test hypotheses that the effect of financial market openness on inequality is conditional on the level of domestic financial market development when the financial market opens, and the

overall effect of financial integration on income inequality is nonlinear. Financial market integration creates the intensive and extensive margins of credit supply which may depend on the development level of financial market disproportionally.[2] This paper finds novel empirical evidence that financial market integration and financial market interact to change income inequality. Specifically, the effect of financial market integration on income inequality is nonlinear and depends on financial market development. Opening financial market worsens income inequality in the countries holding the underdeveloped state of financial market, however, the effect of capital account openness on income inequality is statistically insignificant in the countries with developed financial market.

The idea behind the hypotheses is that financial market openness does not guarantee more abundant credit in domestic credit market. In general, capital inflow from foreign markets to domestic market takes place. Capital outflow also occurs especially when domestic agents prefer foreign assets to domestic assets for some reasons. As domestic financial market is more developed and deeper, capital inflow tends to be larger while capital outflow tends to be smaller. Net capital inflow can be negative when domestic financial market is underdeveloped so it tends to exclude current participants in credit market and the cost of fund can rise even with integrated financial market. The effect may be more severe to marginal participants in the financial market.

The structure of the rest of this paper is as follows. The next section surveys the related literature. In Section III, we conduct an empirical study to find a relationship between inequality and financial market openness and perform robustness check tests to rebut possible claims on empirical specification. Section IV discusses the result and suggests economic intuitions for the results as theoretical implications. Section V concludes.

[2] See Demirgüç-Kunt and Levine (2009) for comprehensive review over disproportional effect of financial market development on inequality.

II. Literature Review

The relationship between inequality and economic growth is one of the oldest economic research questions in economic history but it still attracts the attention of economists. Kuznets (1955; 1963) pioneers the research on this uncovered question with economic data. Recently, Lundberg and Squire (2003) investigate the relationship between inequality and economic growth and find fundamental variables that influence both inequality and growth simultaneously. García-Peñalosa and Turnovsky (2006) emphasize that economic growth and income distribution are endogenously determined in the economic system. They develop an endogenous growth model *à la* Romer (1986) with the heterogeneity of agents that allows the distribution of income and other resources across agents. In their model income inequality stems from how each agent allocates their time resource between work and leisure for given their own relative wealth. Turnosky (2015) expands the canonical model with public investment decisions and provides an analytical tool to investigate the distributional consequences of macroeconomic policy and other exogenous shocks in a closed economy.

Economic literature that introduces heterogeneity of households in macroeconomic model also studies the source of inequality. The major difference of this literature to the former one is that ex-ante each economic agent is identical but still, the distribution of income and asset holding arises due to uninsurable idiosyncratic shocks. Huggett (1993) and Aiyagari (1994), following Bewley (1986) and Imrohoroğlu (1989) first study the general equilibrium models of wealth inequality based on uninsurable idiosyncratic risk. Krusell and Smith (1998) incorporate aggregate shocks in a heterogeneous agent general equilibrium model. Castañeda, Díaz-Giménez, and Ríos-Rull (1998) employ a neoclassical growth model with heterogeneous households to study the U.S. income distribution dynamics. Caselli and Ventura (2000) introduce consumer heterogeneity into representative consumer growth models to examine the distribution of consumptions, assets, and incomes.

The relationship between globalization and inequality has been recently highlighted in the economic literature as the world economy has been more integrated. Most literature that studies the effect of globalization on inequality focuses on the effect of goods market openness, i.e., international trade on inequality. There is a long line of literature studying the relationship between

trade and inequality[3]. Recent research focuses on mechanisms of international trade affecting income across industries, occupations, and locations as the impact of international trade on jobs has surged as one of the most controversial issues in politics over the recent decade. Even though international trade theorists have large literature that supports trade liberalization increases social welfare, but fear of unemployment is still the strongest reason for objection to trade. Davidson, Martin, and Matusz (1999), Helpman and Itskhoki (2010), Helpman, Itskhoki, and Redding (2010), and many papers introduce search and matching friction in the labor market to traditional international trade model that assumes frictionless adjustment in factor inputs and find a mechanism how trade changes sectoral productivity and demands for input, so that affects income distribution and unemployment.

A few recent studies examine the effect of both trade and financial openness on inequality. Jaumotte, Lall, and Papageorgiou (2013) find mostly insignificant effect of globalization in trade and finance on income inequality with a panel of 51 countries over a period from 1981 to 2003. They explain the insignificance comes from that trade and financial liberalization have offsetting effects: While technological progress and trade tend to decrease inequality, financial liberalization has the opposite effect, i.e., inequality worsened. Lim and McNelis (2016) suggest a model of small open economy with heterogeneous agents earning different incomes, which follows Turnovsky (2015), and production technology using traded and non-traded goods.[4] They argue that empirical evidence on the relationship between inequality and globalization is ambiguous because the relationship depends on the stage of economic development represented by the mixture of production sources between traded and non-traded goods in the model. In their model, more integration of goods and financial markets tend to improve inequality for economies that have attained a sufficient level of economic development and the nature of the production structure such as high capital-intensity and low imported intermediate goods content in production that may lead high income growth. Access to imported goods and foreign capital resources can enhance the marginal product of labor that decreases income inequality in the model. Kim et al. (2017) survey

[3] See Goldberg and Pavcnik (2007) for a comprehensive survey on the relationship between inequality and globalization in developing countries.

[4] Chen and Turnosky (2010) extend Romer-type endogenous growth models for a small open economy, but their main focus is to analyze how differently policies and structural changes influence on inequality compared to the outcomes in a closed economy rather than the relationship between openness and inequality.

the literature on inequality and globalization and use country-level panel data to show trade liberalization improves income distribution in South Korea while capital liberalization increases income share of top percentile so that inequality has deteriorated. Grossman and Helpman (2018) more rigorously investigate the link between trade and inequality with their novel model that extends endogenous growth model with firm and worker heterogeneity and positive assertive matching mechanism between heterogeneous firms and workers. Their model suggests a complicated interaction among international knowledge spillovers, trade in intermediate goods, and capital mobility across countries.

Some recent papers that find a nonlinear relationship between financial market integration, financial market development, and inequality have similar findings to our evidence in different assumptions and environments. Kunieda, Okada, and Shibata (2016) perform a panel study to argue that the effect of financial market development on inequality depends on the international integration of domestic financial markets with the global financial market. They argue that financial market development widens inequality if domestic financial market is categorized as an open economy, while inequality is reduced as financial market matures in a closed economy. Abiad, Oomes, and Ueda (2008) empirically find financial liberalization strengthens the efficiency of allocation in a financial market, more than financial market deepening so that inequality narrows as financial market opens. Kose, Prasad, and Taylor (2011) support a hypothesis that there are threshold levels of financial market development in terms of institutional quality where financial market openness improves income distribution. In particular, the financial market development reduces the costs of financial market openness such as a probability of financial crisis and increases its benefit like better source for consumption smoothing. Kim, Lin, and Suen (2011) also find a nonlinear relationship between financial development and income inequality. They separate financial market development from financial depth and argue that financial depth reduces income inequality only if the country exceeds a certain level of financial development.

Bumann and Lensink (2016) is one of the closest studies to our work. They empirically find that capital market liberalization tends to improve income inequality only if the level of financial depth as measured by the relative size of private credit supply in a market is sufficiently high. They also build a model with different scenarios of liberalizing banking sectors. In the model, banking sector liberalization enhances financial market efficiency that decreases inequality. The effect of financial liberalization on financial market efficiency, which is defined as the difference between

lending and deposit rates, is positive only if financial market is sufficiently deepened. Thus, overall the effect of banking sector liberalization on inequality is ambiguous but the effect conditional on financial depth is not.

III. Empirical Study

The panel data used comprise 174 countries for the period 1995-2017. We examine the impact of capital account openness on income inequality and investigate whether this effect varies with the degree of financial market development.

1. Variables and Data

The income inequality measure used in the analysis is the Gini coefficient. We collect the Standardized World Income Inequality Database (SWIID) from Solt (2016). There are two types of Gini coefficients: market income Gini coefficient and disposable income Gini Coefficient. The Gini coefficient based on disposable income is used in our baseline empirical model, and the market income base Gini coefficient is used for a robustness test.

Main explanatory variables are capital account openness and financial development measures. We use a *de-jure* financial openness measure from Fernández et al. (2016). This reflects a capital control indicator constructed based on IMF's AREAER (Annual Report on Exchange Arrangements and Exchange Restrictions). A *de-facto* financial integration measure used in the robustness check is constructed following Lane and Milesi-Ferretti (2001). This is a quantity based financial integration measure defined by the ratio of foreign assets and liabilities to GDP.

Variables measuring the financial development level are liquid liabilities in the baseline model, and private credit and stock market capitalization are used in the robustness test. Those are all expressed in terms of the percentage of GDP. Other control variables that might affect income inequality are trade integration, employment in the agriculture sector, the export ratio of high technology products, CPI inflation rate, primary school enrollment, and government expenditure on education. The description and source of variables are presented in Table 1.

[Insert Table 1]

2. Empirical Specification

The empirical model specification is given by Equation (1). The square term of GDP per capita, $GDPPC_{it}^2$, is included to test the Kuznets hypothesis. According to Kuznets (1955), the relationship between states of economic development and income inequality is nonlinear. Income inequality gets worsen at the early stages of economic development, but income inequality gets improved as an economy reaches its steady state. Kuznets hypothesis expects the inverse-U shape relationship of Gini coefficient and GDP per capita, which result in a positive estimate for $GDPPC_{it}$ and a negative estimated coefficient for $GDPPC_{it}^2$.

In addition to the Kuznets hypothesis, Piketty and Saez (2003) find that income inequality has worsened in most advanced countries since the 1970s. To capture Picketty and Saez (2003)'s finding, we include the cubic term of GDP per capita, $GDPPC_{it}^3$, as expecting to have a positive coefficient with a sufficient condition on other terms in our model specification.

$$GINI\_DISP_{it} = \alpha + \underbrace{\beta_1 GDPPC_{it} + \beta_2 GDPPC_{it}^2}_{Kuznets\ Hypothesis} + \underbrace{\beta_3 GDPPC_{it}^3}_{Piketty-Saez\ Hypothesis}$$
$$+ \beta_4 KA\_FS_{it} + \beta_5 LIQUID\_LIAB_{it} + \beta_6 KA\_FS_{it} \times LIQUID\_LIAB_{it}$$
$$+ X_{it}\gamma_{it} + \mu_t + \eta_i + \varepsilon_{it}$$

Equation (1)

The subscript *i* and *t* represent country *i* and year *t*, respectively. KA_FS denotes capital market restriction measure reflecting capital account openness taken from Fernández et al. (2016). $LIQUID\_LIAB$ denotes liquid liabilities representing the degree of financial market development. The interaction terms of the two variables, $KA\_FS \times LIQUID\_LIAB$ is also included. The coefficient of the interaction term is expected to be negative meaning that the impact of capital account openness on income equality is nonlinear, specifically opening capital market worsens income inequality at the low degree of financial development, but opening capital market improves income inequality at the high degree of financial development.

X_{it} denote other control variables such as trade integration measure, employment in the agriculture sector, the export ratio of high technology products, CPI inflation rate, primary school

enrollment, and government expenditure on education. μ_t and η_i denote time fixed effects and country fixed effects, respectively. Summary statistics are reported in Table 2.

[Insert Table 2]

3. Main Results

In Section 3, we discuss the empirical result based on Equation (1). This empirical model includes the financial development measure (*LIQUID_LIAB*), financial openness index (KA_FS), and the interaction terms of those two variables. We also conduct a panel regression in which we use financial development measure, *LIQUID_LIAB*, to divide sample countries into four groups, and then examine how capital account openness affects income inequality in each country group.

The main empirical result based on Equation (1) is presented in Table 3. The result confirms the Kuznets hypothesis and Picketty and Saez (2003)'s finding with the inverse-S curve of the relationship between GDPs per capita and Gini coefficients. For instance, model (1) has $GINI_{it} = 0.006\ GDPPC_{it}^3 - 0.140\ GDPPC_{it}^2 + 1.119\ GDPPC_{it} + const.$, which has three real roots with a positive coefficient on the cubic term.[5]

[Insert Table 3]

The result also shows that financial development and capital account openness are associated with increased income inequality, but the estimated coefficient of interaction terms of those two variables turns out to be negative, which supports our research hypothesis. We can calculate a threshold point of the degree of financial market development to change the effect of financial market openness on income inequality when other things are fixed. For example, in model 94) solving $\beta_4 + \beta_6 LIQUID\_LIAB_{it} = 0$ gives the threshold of Liquid Liability/GDP = 124% which is around the 95th percentile of Liquid Liability/GDP. If other variables' effects are controlled, in

[5] The necessary condition of the Kuznets-Picketty-Saez hypothesis is $\beta_2^2 - 3\beta_1\beta_2 > 0$ and $\beta_3 > 0$.

a country with the Liquid Liability/GDP less than 124% financial market openness may increase the income inequality measure while in others the openness may reduce the Gini coefficient.

The size of estimates seems small, which are thousands or less, but it is important to notice that the estimates are statistically significant, and most dependent variables are measure in percentages. For example, the Gini coefficient in the country with 95th percentile of Liquid Liability/GDP(=113.4%) is higher than the Gini coefficient in the country with 5th percentile of Liquid Liability/GDP(=11.6%) by 0.027, which is relatively large compared to the mean of Gini coefficient as of 3.605.

As Table 4 shows, the main result stays consistent when we use the Gini coefficient evaluated in market values(*GINI_MKT*). The estimated coefficient of the interaction term becomes insignificant when quantity-based de-facto financial integration measure, KA_ED is used instead of KA_FS.

[Insert Table 4]

We also perform a panel regression over different groups by the degree of financial development. It alleviates a concern that financial market openness and financial market development may comove in the same direction. When we divide sample countries into four groups by the degree of financial development, we use the 5-year (1990~1994) averages of *LIQUID_LIAB*. Note that our sample period starts in 1995 so the financial market development used to divide sample countries is given information over the sample period. Countries in each group are presented in Table 5, and the basic statistics are reported in Table 6.

[Insert Table 5]

[Insert Table 6]

Table 7 shows that the impact of capital account openness on income inequality is positive and statistically significant only in the first quartile of the degree of financial development. In other

words, opening capital market worsens income inequality in the first quartile country group only.

[Insert Table 7]

The result from Table 7 is robust to the alternative Gini coefficient, which is *GINI_MKT* (Table 8). The empirical result from the different country groups divided by alternative financial development measure, *PRIV_CREDIT* is also consistent with the result from Table 7, though the significant coefficient of capital account is found in the 2nd quartile of the country group, not the first quartile. The country group sorted by *STOCK_CAPITAL* turns out to be insignificant in any of the 1st and 2nd quartile of country groups (Table 10). The result from Table 7 is also robust to the alternative capital account openness measure, *KA_ED* (Table 11).

[Insert Table 8]

[Insert Table 9]

[Insert Table 10]

[Insert Table 11]

4. Robustness Tests

We conduct two robustness tests. Specifically focusing on a panel regression with different groups divided by the degree of financial development. First, instrumental variables are introduced in the main model to address endogeneity problems since income inequality might be able to affect capital account openness and financial development. Second, we test whether our main result is

robust to different model specifications. A dynamic panel is taken into consideration.

4.1. Instrument Variable Regression

We use instrumental variables for potential endogeneity problems.[6] One of the concerns is that the dependent variable, the Gini coefficient may affect explanatory variables. IVs used are dummy variables for legal system origin, classified into English common law, French commercial code, German commercial code, Scandinavian commercial code, and socialist laws from La Porta et al. (1999). The IV regression result is presented in Table 12, which shows that the capital account openness worsens income inequality in the first and second quartile of country groups, which is consistent with the main result.

[Insert Table 12]

4.2. Alternative Model Specification

To test the robustness of model specification we introduce the dynamic panel model. In the dynamic panel model, the lagged dependent variable is included in the set of explanatory variables. The result shows that opening capital market worsens income inequality in the countries with low financial development, which is also consistent with the main result.

[Insert Table 13]

[6] A correlation between LIQUID_LIAB and KA_FS is about 0.2. Correlations between KA_FS and alternative measures of financial development such as PRIV_CREDIT and STOCK_CAPITAL are 0.31 and 0.16, respectively.

IV. Discussions

In previous sections, we find financial market development as a key conditional factor that interacts with financial market openness on income inequality. Our novel empirical evidence indicates that the effect of financial market integration on income inequality is nonlinear in general and depends on financial market development. As mentioned in the introduction, conventional economic model cannot account for the nonlinear and conditional effect of financial market openness on inequality because the theory considers financial market integration similar to financial market development. Some ingredients may help economic models to support the empirical evidence shown in previous sections.

First, participation in financial market and holdings of foreign assets should be different across households. Guiso, Jappelli, and Terlizzese (1996) use a households' finance survey of the Bank of Italy to show that higher income risk and more restrictive borrowing constraint decreases the holding of risky assets of households such as foreign assets. Sanelli (2018) also shows the share of foreign securities in financial asset portfolio composition increases as households' net wealth increases using the Survey on Household Income and Wealth by the Bank of Italy. The evidence suggests a possibility of heterogenous "home bias" in asset positions.[7] Limited participation in domestic financial market due to underdeveloped financial market and market inefficiency can be amplified as domestic financial market becomes integrated with global financial market due to information barriers or entry costs.[8] Theoretical literature may incorporate the mechanism of Greenwood and Jovanovic (1990) in economic model. They introduce financial intermediaries providing assets that pay higher expected rates of return on investment from more opportunity of pooling risk and acquiring important information but charging once-and-for-all lump-sum membership cost of joining "organizational capital" based on Townsend (1978; 1983).

Introducing heterogeneity in entrepreneurship, "the degree to which the opportunity to start or own a business affects the household's saving behavior"[9] among households can have a similar

[7] Black (1974), Stulz (1981), French and Poterba (1991), Coval and Moskowitz (1999), and Stockman and Dellas (1989) find home bias of asset investments and suggest several sources of the bias such as asymmetric information, barriers to international investment, and a tool of hedging nontraded goods consumption.

[8] Greenwood, Sanchez, Wang (2010) suggest information cost as a source of financial market inefficiency and limited participations of households.

[9] Quadrini (1999), p.1.

result of heterogeneous home bias of international asset position across agents. Quadrini (1999; 2000) emphasize entrepreneurship for wealth concentration and different motivation of saving while financial constraint exists. Idiosyncratic process of entrepreneurial productivity shock allows different saving motivations for households by different entrepreneurial productivity. In Quadrini (2000) and Buera and Shin (2017) which extend Lucas (1978) span of control model, agents face an idiosyncratic entrepreneurial productivity shock and hold individual assets that can be used as interest-earning assets or collaterals for production capital rental. Suppose one agent expects positive entrepreneurial productivity shock in the future but holds small assets so that faces a borrowing constraint. Then the would-be entrepreneur will save more than others who may want to remain as labor workers to smooth their income stream. The would-be entrepreneur is still a labor worker but she has a strong incentive to save more to overcome financial constraints as well as pooling entrepreneurial risk than other workers who have low entrepreneurial ability and want to save only for consumption smoothing.[10] Probably normal workers who want to remain as workers save little as possible because saving only transfers today's consumption to tomorrow. Financial market integration introduces several assets into the market but they are different in risks and returns. Then, households who have large assets that can be used as internal financing for production have more incentive to hold foreign assets because foreign assets that have the rate of returns moving differently from domestic assets' returns are better assets for pooling domestic aggregate risks. Normal workers, would-be entrepreneurs, and entrepreneurs who have sufficient assets have different motives of saving and demands for foreign asset holdings. Buera and Shin (2017) show that capital outflows occur in transition periods of structural reform due to the self-financing motive of entrepreneurs and would-be entrepreneurs.[11]

Another component that can be added into conventional models to support the different effects of financial market integration over inequality conditional on financial market development is financial market quality or financial depth of domestic market. Broner and Ventura (2016) shed light on the importance of domestic financial market depth in the globalization period. The

[10] Song, Storesletten, and Zilibotti (2011) show an evidence that potential entrepreneurs who face financial restriction save more in China because of underdeveloped financial market.

[11] Buera and Shin (2017) originally answer the allocation puzzle (Gourinchas and Jeanne 2013; Prasad, Rajan, Subramanian 2007) on the reason of capital net outflows from fast-growing countries with dynamics of TFP from saving and investment lags.

probability of "capital flight" from domestic markets depends on domestic financial depth. They argue that "globalization not only adds new foreign sources of financing that are cheap but risky, also subtracts domestic source of financing that were expensive but safe." That happens because financial integration occurs two-ways: opening to not only foreign investors but also domestic investors. Since the preference over risks is different between domestic and foreign investors, opening financial market may result in net capital inflow or net capital outflow depending on domestic financial market quality and development level. In this setting, large domestic saving or financial market depth fosters foreign capital inflows. Broner and Ventura (2016) emphasize that financial market openness actually benefits emerging economies only if the countries hold relatively better institutions, more developed domestic financial markets, and high initial income per capita. Mendoza et al. (2007) also support the role of developed domestic financial market. They build a multi-country model where countries differ in the degree of asset market incompleteness and conclude that globalization can widen the distribution of wealth if financial market liberalization does not result in financial development.[12]

V. Conclusions

This paper studies the effect of financial market integration on income inequality within a country that opens the financial market. We find novel empirical evidence that financial market integration and financial market development interact to change income inequality. Specifically, the effect of financial market integration on income inequality is nonlinear and depends on financial market development level. When financial market is underdeveloped, income inequality gets worse as financial market opens. Opening financial market, however, may have an ambiguous effect on income inequality in countries with developed financial market. We also suggest some important structures for conventional economic model to account for our empirical finding as theoretical implications. Based on these implications, extensions of conventional small open economy model with financial constraints need to include suggested components such as

[12] Arteta, Eichengreen, and Wyplosz (2001), Edwards (2001), Bekaert, Harvey, and Lundblad (2005), Alfaro, Kalemli-Ozcan, and Volosovych (2008), Papaioannou (2009), and Kose, Prasad, and Taylor (2011) support the argument of Broner and Ventura (2016). Balmaceda, Fischer, and Ramirez (2014) also point out that the imperfect competition in financial markets in developing countries makes the markets unfair, i.e., less credit penetration as markets open. Liberalization can kick out domestic wealth entrepreneurs from the credit market if the market structure is insufficiently competitive.

heterogeneous holding of foreign assets across income and asset levels and entrepreneurial shocks to understand the interaction of financial market openness and domestic market development on the distribution of income in a country. Our finding also echoes that studying an economic mechanism in which economic growth, financial market outcomes, and inequality are endogenously determined as García-Peñalosa and Turnovsky (2006) emphasize, and Grossman and Helpman (2018) reiterate recently.

References

Abiad, Abdul, Nienke Oomes, and Kenichi Ueda. 2008. "The Quality Effect: Does Financial Liberalization Improve the Allocation of Capital?" Journal of Development Economics, 87(2): 270 – 282.

Aiyagari, S. Rao. 1994. "Uninsured Idiosyncratic Risk and Aggregate Saving." Quarterly Journal of Economics, 109(3): pp. 659–684.

Alfaro, Laura, Sebnem Kalemli-Ozcan, and Vadym Volosovych. 2008. "Why Doesn't Capital Flow from Rich to Poor Countries? An Empirical Investigation." Review of Economics and Statistics, 90: 347–368.

Arteta, Carlos, Barry Eichengreen, and Charles Wyplosz. 2001. "When Does Capital Account Liberalization Help More than It Hurts?" National Bureau of Economic Research Working Paper 8414.

Azzimonti, Marina, Eva de Francisco, and Vincenzo Quadrini. 2014. "Financial Globalization, Inequality, and the Rising Public Debt." American Economic Review, 104(8): 2267-2302.

Balmaceda, Felipe, Ronald D. Fischer, and Felipe Ramirez. 2014. "Financial Liberalization, Market Structure and Credit Penetration." Journal of Financial Intermediation, 23(1): 47 – 75.

Bekaert, Geert, Campbell R. Harvey, and Christian Lundblad. 2005. "Does Financial Liberalization Spur Growth?" Journal of Financial Economics, 77(1): 3 – 55.

Bewley, Truman. 1986. "Stationary Monetary Equilibrium with a Continuum of Independently Fluctuating Consumers." Contributions to Mathematical Economics in Honor of Gerard Debreu, 79.

Black, Fischer. 1974. "International Capital Market Equilibrium with Investment Barriers." Journal of Financial Economics, 1(4): 337 – 352.

Broner, Fernando and Jaume Ventura. 2016. "Rethinking the Effects of Financial Globalization." Quarterly Journal of Economics, 131(3): 1497–1542.

Buera, Francisco J. and Yongseok Shin. 2017. "Productivity Growth and Capital Flows: The Dynamics of Reforms." American Economic Journal: Macroeconomics, 9(3): 147–85.

Bumann, Silke and Robert Lensink. 2016. "Capital Account Liberalization and In- come Inequality." Journal of International Money and Finance, 61: 143 – 162.

Caselli, Francesco and Jaume Ventura. 2000. "A Representative Consumer Theory of Distribution."

American Economic Review, 90(4): 909–926.

Castañeda, Ana, Javier Díaz-Giménez, and José-Victor Ríos-Rull. 1998. "Exploring the Income Distribution Business Cycle Dynamics." Journal of Monetary Economics, 42(1): 93 – 130.

Chen, Yu-chin and Stephen J. Turnovsky. 2010. "Growth and Inequality in a Small Open Economy." Journal of Macroeconomics, 32(2): 497 – 514.

Coval, Joshua D. and Tobias J. Moskowitz. 1999. "Home Bias at Home: Local Equity Preference in Domestic Portfolios." The Journal of Finance, 54(6): 2045–2073.

Davidson, Carl, Lawrence Martin, and Steven Matusz. 1999. "Trade and Search Generated Unemployment." Journal of International Economics, 48(2): 271 – 299.

Demirgüç-Kunt, Asli and Ross Levine. 2009. "Finance and Inequality: Theory and Evidence." Annual Review of Financial Economics, 1(1): 287–318.

Edwards, Sebastian. 2001. "Capital Mobility and Economic Performance: Are Emerging Economies Different?" National Bureau of Economic Research Working Paper 8076.

Fernández, Andrés, Michael W. Klein, Alessandro Rebucci, Martin Schindler, and Martín Uribe. 2016. "Capital Control Measures: A New Dataset." IMF Economic Review, 64(3): 548-574.

French, Kenneth R. and James M. Poterba. 1991. "Investor Diversification and International Equity Markets." American Economic Review, 81(2): 222–226.

García-Peñalosa, Cecilia and Stephen J. Turnovsky. 2006. "Growth and Income Inequality: A Canonical Model." Economic Theory, 28(1): 25–49.

Goldberg, Pinelopi Koujianou and Nina Pavcnik. 2007. "Distributional Effects of Globalization in Developing Countries." Journal of Economic Literature, 45(1): 39–82.

Gourinchas, Pierre-Olivier and Olivier Jeanne. 2013. "Capital Flows to Developing Countries: The Allocation Puzzle." Review of Economic Studies, 80(4 (285)): 1484– 1515.

Greenwood, Jeremy and Boyan Jovanovic. 1990. "Financial Development, Growth, and the Distribution of Income." Journal of Political Economy, 98(5, Part 1): 1076–1107.

Greenwood, Jeremy, Juan M. Sanchez, and Cheng Wang. 2010. "Financing Development: The Role of Information Costs." American Economic Review, 100(4): 1875–91.

Grossman, Gene M. and Elhanan Helpman. 2018. "Growth, Trade, and Inequality." Econometrica, 86(1): 37–83.

Guiso, Luigi, Tullio Jappelli, and Daniele Terlizzese. 1996. "Income Risk, Borrowing Constraints, and Portfolio Choice." The American Economic Review, 86(1): 158–172.

Helpman, Elhanan and Oleg Itskhoki. 2010. “Labour Market Rigidities, Trade and Unemployment.” Review of Economic Studies, 77(3): 1100–1137.

Helpman, Elhanan, Oleg Itskhoki, and Stephen Redding. 2010. “Inequality and Unemployment in a Global Economy.” Econometrica, 78(4): 1239–1283.

Huggett, Mark. 1993. “The Risk-free Rate in Heterogeneous-agent Incomplete-insurance Economies.” Journal of Economic Dynamics and Control, 17(5–6): 953 – 969.

Imrohoroğlu, Ayşe, 1989. “Cost of Business Cycles with Indivisibilities and Liquidity Constraints.” Journal of Political Economy, 97(6): 1364–1383.

Jaumotte, Florence, Subir Lall, and Chris Papageorgiou. 2013. “Rising Income Inequality: Technology, or Trade and Financial Globalization?” IMF Economic Review, 61(2): 271–309.

Kim, Dong-Hyeon, Shu-Chin Lin, and Yu-Bo Suen. 2011. “Nonlinearity be- tween Trade Openness and Economic Development.” Review of Development Economics, 15(2): 279–292.

Kim, Young gui, Sihoon Nahm, Hyeyoon Keum, and Nak Nyeon Kim. 2017. “A Study on the Effects of Economic Openness on Korea’s Income Distribution.” KIEP Policy Analysis, 17-22, Korea Institute for International Economic Policy.

Kose, M. Ayhan, Eswar S. Prasad, and Ashley D. Taylor. 2011. “Thresholds in the process of international financial integration.” Journal of International Money and Finance, 30(1): 147 – 179.

Krusell, Per and Anthony A. Smith Jr. 1998. “Income and Wealth Heterogeneity in the Macroeconomy.” Journal of Political Economy, 106(5): 867–896.

Kunieda, Takuma, Keisuke Okada, and Akihisa Shibata. 2016. “Collateral Constraints and the Current Account: Theory and Evidence.” Economic Inquiry, 54(1): 633– 651.

Kuznets, Simon. 1955. “Economic Growth and Income Inequality.” American Economic Review, 45(1): 1–28.

_____. 1963. “Quantitative Aspects of the Economic Growth of Nations: VIII. Distribution of Income by Size.” Economic Development and Cultural Change, 11(2): 1– 80.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny. 1999. “The Quality of Government.” Journal of Law, Economics, and Organization, 15(1): 222-279.

Lane, Philip R. and Gian Maria Milesi-Ferretti. 2001. “The External Wealth of Nations: Measures of Foreign Assets and Liabilities for Industrial and Developing Countries.” Journal of

International Economics, 55(2): 263 – 294.

Lim, G.C. and Paul D. McNelis. 2016. “Income Growth and Inequality: The Threshold Effects of Trade and Financial Openness.” Economic Modelling, 58: 403 – 412.

Lucas, Robert E. Jr. 1978. “On the Size Distribution of Business Firms.” The Bell Journal of Economics, 9(2): 508–523.

Lundberg, Mattias, and Lyn Squire. 2003. “The Simultaneous Evolution of Growth and Inequality.” The Economic Journal, 113(487): 326–344.

Mendoza, Enrique G., Vincenzo Quadrini, José-Victor Ríos-Rull, Giancarlo Corsetti, and Memet Yorukoglu. 2007. “On the Welfare Implications of Financial Globalization without Financial Development [with Comments].” NBER International Seminar on Macroeconomics, 283–322.

Papaioannou, Theo, Helen Yanacopulos, and Zuhre Aksoy. 2009. “Global Justice: From Theory to Development Action.” Journal of International Development, 21(6): 805– 818.

Piketty, Thomas and Emmanuel Saez. 2003. “Income Inequality in the United States, 1913-1998.” Quarterly Journal of Economics, 118(1): 1–39.

Prasad, Eswar S., Raghuram G. Rajan, and Arvind Subramanian. 2007. “Foreign Capital and Economic Growth.” Brookings Papers on Economic Activity, 38(1): 153–230.

Quadrini, Vincenzo. 1999. “The Importance of Entrepreneurship for Wealth Concentration and Mobility.” The Review of Income and Wealth, 45: 1-19.

_____. 2000. “Entrepreneurship, Saving, and Social Mobility.” Review of Economic Dynamics, 3(1): 1 – 40.

Romer, Paul M. 1986. “Increasing Returns and Long-Run Growth.” Journal of Political Economy, 94(5): 1002–1037.

Sanelli, Alessandra. 2018. “Financial Income and Wealth Taxation in Italy: Efficiency and Equity Issues.” Presentation Material at the OECD Conference on Wealth Inequalities: Measurement and Policies.

Solt, Frederick. 2016. “The Standardized World Income Inequality Database.” Social Science Quarterly 97(5):1267-1281.

Song, Zheng, Kjetil Storesletten, and Fabrizio Zilibotti. 2011. “Growing Like China.” American Economic Review, 101(1): 196–233.

Stockman, Alan C. and Harris Dellas. 1989. “International Portfolio Nondiversification and

Exchange Rate Variability." Journal of International Economics, 26(3): 271 – 289.

Stulz, René M. 1981. "On the Effects of Barriers to International Investment." The Journal of Finance, 36(4): 923–934.

Townsend, Robert M. 1978. "Intermediation with Costly Bilateral Exchange." The Re- view of Economic Studies, 45(3): 417–425.

_____. 1983. "Theories of Intermediated Structures." Carnegie-Rochester Conference Series on Public Policy, 18: 221 – 272.

Turnovsky, Stephen J. 2015. "Economic Growth and Inequality: The Role of Public Investment." Journal of Economic Dynamics and Control, 61: 204 – 221.

A. Figures and Tables

Table 1. Variable Definition and Data Source

Variables	Definition	Soucrce
Dependent Variables		
GINI_DISP	Gini coefficient, disposable (natural logarithm of Gini)	Solt (2016)
GINI_MKT	Gini coefficient, market (natural logarithm of Gini)	Solt (2016)
Explanatory Variables		
GDPPC	GDP: per capita, PPP (constant 2011 international $, natural logarithm of GDPPC)	World Development Indicators, World Bank
KA_FS	Capital Market Restriction Measure	Fernández et al. (2016)
KA_ED	Gross portfolio (equity and debt) assets and liabilities to GDP (%)	Global Financial Development Database, World Bank
LIQUID_LIAB	Liquid liabilities to GDP (%)	Global Financial Development Database, World Bank
PRIV_CREDIT	Private credit by deposit money banks and other financial institutions to GDP (%)	Global Financial Development Database, World Bank
STOCK_CAPITAL	Stock market capitalization to GDP (%)	Global Financial Development Database, World Bank
Other Control Variables		
TI	Exports and imports of goods and services (% of GDP)	World Development Indicators, World Bank
EMPL_AGG	Employment in agriculture (% of total employment)	World Development Indicators, World Bank
HTECH_EXP	High-technology exports (% of manufactured exports)	World Development Indicators, World Bank
CPI	Inflation, consumer prices (annual %)	World Development Indicators, World Bank
SCHOOL	School enrollment, primary (% gross)	World Development Indicators, World Bank
GOVT	Government expenditure on education, total (% of GDP)	World Development Indicators, World Bank

Table 2. Summary Statistics

	N	Mean	SD	Min	Max	P1	P5	P25	P50	P75	P95	P99
Dependent Variables												
GINI_DISP	4,949	3.605	0.236	2.912	4.111	3.077	3.178	3.447	3.619	3.791	3.947	4.057
GINI_MKT	4,949	3.801	0.152	3.049	4.227	3.350	3.532	3.716	3.811	3.894	4.029	4.167
Explanatory Variables												
GDPPC	4,878	8.959	1.251	5.511	11.815	6.440	6.912	7.946	9.025	9.954	10.816	11.433
KA_FS	1,898	0.632	0.340	0	1	0	0.05	0.3	0.775	0.95	1	1
KA_ED	1,231	88.566	118.456	0.077	987.555	0.400	2.086	12.587	36.732	123.994	334.244	554.930
LIQUID_LIAB	7,747	46.051	37.978	0.0001	399.114	6.695	11.601	21.600	35.927	58.363	113.369	197.273
PRIV_CREDIT	7,811	36.811	35.055	0.00002	262.458	1.475	3.942	12.969	24.713	49.672	109.38	170.122
STOCK_CAPITAL	2,649	48.708	80.477	0.010	1086.34	0.390	1.895	11.822	27.983	61.828	143.312	255.616
Other Control Variables												
TI	8,240	78.059	51.061	0	531.737	11.087	22.093	45.017	68.020	99.302	157.920	305.931
EMPL_AGG	4,883	29.648	24.573	0.1	91.9	0.3	1.5	7.4	23.2	48.5	74.3	85.7
HTECH_EXP	3,556	9.746	12.201	0	83.640	0.003	0.100	1.655	5.312	13.322	35.347	58.946
CPI	7,487	33.346	477.432	-35.837	24411	-3.104	-0.222	2.367	5.572	11.430	44.736	282.380
SCHOOL	6,879	96.792	23.132	2.831	221.992	23.367	44.943	92.525	101.323	108.425	124.099	143.384
GOVT	3,476	4.431	1.937	0	44.334	1.160	1.794	3.155	4.313	5.458	7.395	10.097

Table 3. Panel Regression with Time and Country Fixed Effects

Dependent Variable	*GINI_DISP*					
	(1)	(2)	(3)	(4)	(5)	(6)
GDPPC	1.119482***	1.549557***	1.634294***	2.151241***	1.635036**	5.335873***
	(0.251)	(0.253)	(0.454)	(0.783)	(0.762)	(1.019)
GDPPC²	-0.140339***	-0.188911***	-0.189777***	-0.271766***	-0.207385**	-0.613697***
	(0.029)	(0.029)	(0.051)	(0.086)	(0.084)	(0.110)
GDPPC³	0.005669***	0.007663***	0.007384***	0.010993***	0.008349***	0.023147***
	(0.001)	(0.001)	(0.002)	(0.003)	(0.003)	(0.004)
KA_FS			0.028706***	0.040674***	0.035341***	0.044947***
			(0.010)	(0.014)	(0.013)	(0.011)
LIQUID_LIAB			0.000265**	0.000632***		
			(0.000)	(0.000)		
KA_FS×LIQUID_LIAB			-0.000037	-0.000328**		
			(0.000)	(0.000)		
PRIV_CREDIT					0.000760***	
					(0.000)	
KA_FS×PRIV_CREDIT					-0.000298**	
					(0.000)	
STOCK_CAPITAL						0.000731***
						(0.000)
KA_FS×STOCK_CAPITAL						-0.000783***
						(0.000)
TI				0.000131	0.000182*	0.000148
				(0.000)	(0.000)	(0.000)
EMPL_AGG				-0.001606***	-0.001383***	-0.001829***
				(0.000)	(0.000)	(0.000)
HTECH_EXP				0.000591***	0.000339*	0.000480**
				(0.000)	(0.000)	(0.000)
CPI				0.000248*	0.000207	0.000278
				(0.000)	(0.000)	(0.000)
SCHOOL				0.000974***	0.001046***	0.001124***
				(0.000)	(0.000)	(0.000)
GOVT				-0.007147***	-0.008274***	-0.006469***
				(0.002)	(0.002)	(0.002)
Time Fixed Effect	X	O	O	O	O	O
Country Fixed Effect	O	O	O	O	O	O
Observations	2,934	2,934	1,649	1,039	1,038	945
Country Groups	174	174	94	86	86	80
R-squared	0.024	0.061	0.070	0.168	0.218	0.210

Note: Standard errors are reported in parentheses. *, **, and *** indicate significance at the 10, 5, and 1-percent levels, respectively.

Table 4. Panel Regression with Alternative Gini Coefficient and Financial Openness

	Dependent Variable: GINI_MKT & Capital Account Openness(KA): KA_FS			*Dependent Variable: GINI_DISP & Capital Account Openness(KA): KA_ED*		
	(1)	(2)	(3)	(4)	(5)	(6)
GDPPC	2.652829***	2.455122***	5.825007***	-0.60675043	-0.52486149	7.79403077***
	(0.712)	(0.699)	(0.943)	(1.325)	(1.289)	(1.640)
GDPPC²	-0.325118***	-0.299679***	-0.669997***	0.04524455	0.04186788	-0.84268769***
	(0.078)	(0.077)	(0.102)	(0.146)	(0.142)	(0.177)
GDPPC³	0.012795***	0.011705***	0.025206***	-0.00122718	-0.00130126	0.02986154***
	(0.003)	(0.003)	(0.004)	(0.005)	(0.005)	(0.006)
KA	0.040627***	0.049649***	0.056138***	0.00004763	-0.00002677	0.00011352***
	(0.013)	(0.012)	(0.010)	(0.000)	(0.000)	(0.000)
LIQUID_LIAB	0.000943***			0.00037425**		
	(0.000)			(0.000)		
KA ×LIQUID_LIAB	-0.000263*			0.00000014		
	(0.000)			(0.000)		
PRIV_CREDIT		0.000856***			0.00018545**	
		(0.000)			(0.000)	
KA ×PRIV_CREDIT		-0.000435***			0.00000097***	
		(0.000)			(0.000)	
STOCK_CAPITAL			0.000723***			0.00016658*
			(0.000)			(0.000)
KA ×STOCK_CAPITAL			-0.000929***			-0.00000002
			(0.000)			(0.000)
TI	0.000351***	0.000372***	0.000392***	0.00041345***	0.00046741***	0.00044946***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
EMPL_AGG	-0.001619***	-0.001382***	-0.001687***	-0.00292636***	-0.00276976***	-0.00316284***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
HTECH_EXP	0.000302	0.000101	0.000331*	-0.00009555	-0.00035613	0.00015964
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CPI	0.000143	0.000131	0.000187	0.00004061	-0.00008803	-0.00038139
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SCHOOL	0.000655***	0.000780***	0.000953***	-0.00011831	-0.00002664	-0.00008478
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GOVT	-0.003195*	-0.003321**	-0.001943	-0.01125856***	-0.01092912***	-0.01164090***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	1,039	1,038	945	777	784	679
Country Groups	86	86	80	73	73	64
R-squared	0.207	0.242	0.249	0.219	0.251	0.292

Note: Time and country fixed effects are included. Standard errors are reported in parentheses. *, **, and *** indicate significance at the 10, 5, and 1-percent levels, respectively.

Table 5. Country Group by Liquid Liability

1st quartile (0~25%)	2nd quartile (25~50%)	3rd quartile (50~75%)	4th quartile (75~100%)
Argentina	Bangladesh	Albania	Antigua and Barbuda
Azerbaijan	Benin	Algeria	Austria
Burkina Faso	Bhutan	Armenia	Bahrain
Burundi	Bolivia	Aruba	Barbados
Cambodia	Botswana	Australia	Belgium
Cameroon	Brazil	Bahamas, The	Bulgaria
Central African Republic	Chile	Belarus	Canada
Chad	Colombia	Belize	China
Congo, Dem. Rep.	Comoros	Cabo Verde	Cyprus
Congo, Rep.	Costa Rica	Denmark	Czech Republic
Croatia	Cote d'Ivoire	Dominica	Djibouti
Dominican Republic	El Salvador	Ethiopia	Egypt, Arab Rep.
Ecuador	Gambia, The	Fiji	Germany
Equatorial Guinea	Honduras	Finland	Grenada
Gabon	Kenya	France	Hong Kong SAR, China
Ghana	Korea, Rep.	Greece	Israel
Guatemala	Latvia	Guyana	Italy
Guinea	Lesotho	Haiti	Japan
Guinea-Bissau	Maldives	Hungary	Jordan
Kazakhstan	Mauritania	Iceland	Kuwait
Lao PDR	Mexico	India	Lebanon
Lithuania	Moldova	Indonesia	Luxembourg
Madagascar	Myanmar	Iran, Islamic Rep.	Macao SAR, China
Malawi	Namibia	Ireland	Malaysia
Mali	Nepal	Jamaica	Malta
Mongolia	Oman	Macedonia, FYR	Mauritius
Mozambique	Papua New Guinea	Morocco	Netherlands
Nicaragua	Paraguay	Norway	New Zealand
Niger	Poland	Pakistan	Portugal
Nigeria	Romania	Panama	Singapore
Peru	Samoa	Philippines	Spain
Russian Federation	Slovenia	Saudi Arabia	St. Kitts and Nevis
Rwanda	Solomon Islands	Seychelles	St. Lucia

Senegal	Sri Lanka	South Africa	St. Vincent and the Grenadines
Sierra Leone	Sudan	Sweden	Suriname
Tanzania	Swaziland	Syrian Arab Republic	Switzerland
Turkey	Togo	Trinidad and Tobago	Thailand
Uganda	Tonga	Tunisia	United Kingdom
Ukraine	Venezuela, RB	United Arab Emirates	United States
Vietnam	Zimbabwe	Uruguay	Vanuatu
Zambia		Yemen, Rep.	

Note: Country groups are divided into four based on average of liquid liabilities (% of GDP) in 1990 ~ 1994.

Table 6. Averages of Variables by Quartile Country Groups

	25th	50th	75th	100th
LIQUID_LIAB	20.782 (11.491)	29.901 (12.379)	46.322 (19.852)	86.072 (51.133)
Dependent Variables				
GINI_DISP	3.675 (0.176)	3.729 (0.220)	3.549 (0.269)	3.515 (0.208)
GINI_MKT	3.785 (0.158)	3.836 (0.169)	3.815 (0.151)	3.796 (0.104)
Explanatory Variables				
GDPPC	8.063 (1.106)	8.554 (0.946)	9.369 (1.048)	9.956 (0.849)
KA_FS	0.597 (0.340)	0.527 (0.324)	0.595 (0.356)	0.769 (0.285)
KA_ED	15.691 (12.011)	24.907 (20.859)	113.645 (142.152)	149.358 (127.431)
PRIV_CREDIT	14.607 (12.557)	24.184 (24.184)	40.369 (32.097)	69.488 (42.381)
STOCK_CAPITAL	16.069 (14.879)	29.401 (68.103)	44.083 (43.210)	77.857 (111.277)

Note: Standard deviations are reported in parentheses.

Table 7. Panel Regression by Country Group

Dependent Variable	*GINI_DISP*			
	(1) 25th	(2) 50th	(3) 75th	(4) 100th
GDPPC	-0.0334	0.1297	-0.0779	-0.0483
	(0.064)	(0.087)	(0.092)	(0.048)
KA_FS	0.0657*	0.0090	-0.0386**	0.0056
	(0.031)	(0.055)	(0.017)	(0.019)
TI	-0.0005	0.0004	-0.0002	0.0002
	(0.000)	(0.001)	(0.000)	(0.000)
EMPL_AGG	-0.0011	-0.0012	-0.0019	0.0074***
	(0.001)	(0.003)	(0.003)	(0.002)
HTECH_EXP	0.0000	0.0012***	0.0012	0.0002
	(0.001)	(0.000)	(0.001)	(0.000)
CPI	0.0003	-0.0011	0.0008	-0.0004**
	(0.000)	(0.001)	(0.001)	(0.000)
SCHOOL	0.0009	0.0019**	-0.0001	-0.0023**
	(0.001)	(0.001)	(0.001)	(0.001)
GOVT	-0.0090	-0.0115**	0.0156	-0.0042
	(0.006)	(0.005)	(0.011)	(0.004)
Observations	154	238	284	335
Country Groups	16	20	24	24
R-squared	0.685	0.375	0.271	0.341

Note: Year and country fixed-effects are included. Robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10, 5, and 1-percent levels, respectively.

Table 8. Panel Regression with Alternative Gini Coefficient

Dependent Variable	*GINI_MKT*			
	(1) 25th	(2) 50th	(3) 75th	(4) 100th
GDPPC	-0.0290	0.0779	-0.0592	-0.1059**
	(0.058)	(0.073)	(0.063)	(0.050)
KA_FS	0.0640**	0.0046	-0.0190	0.0042
	(0.025)	(0.046)	(0.025)	(0.023)
TI	-0.0004	0.0003	0.0006*	0.0004**
	(0.000)	(0.001)	(0.000)	(0.000)
EMPL_AGG	-0.0012**	-0.0010	-0.0038	0.0064***
	(0.001)	(0.003)	(0.002)	(0.002)
HTECH_EXP	-0.0002	0.0010***	0.0003	0.0006
	(0.001)	(0.000)	(0.001)	(0.000)
CPI	0.0003	-0.0018*	-0.0008	-0.0003*
	(0.000)	(0.001)	(0.001)	(0.000)
SCHOOL	0.0005	0.0015*	0.0001	-0.0010
	(0.001)	(0.001)	(0.001)	(0.001)
GOVT	-0.0049	-0.0056	0.0246**	-0.0027
	(0.005)	(0.005)	(0.011)	(0.003)
Observations	154	238	284	335
Country Groups	16	20	24	24
R-squared	0.661	0.311	0.465	0.427

Note: Year and country fixed-effects are included. Robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10, 5, and 1-percent levels, respectively.

Table 9. Panel Regression by Alternative Financial Development: *PRIV_CREDIT*

Dependent Variable	*GINI_DISP*			
	(1) 25th	(2) 50th	(3) 75th	(4) 100th
GDPPC	-0.0886	0.0783	-0.1343	-0.0564
	(0.083)	(0.096)	(0.114)	(0.065)
KA_FS	0.0295	0.0681***	-0.0234	0.0203
	(0.059)	(0.018)	(0.033)	(0.029)
TI	-0.0012	0.0011**	-0.0008	0.0003
	(0.001)	(0.000)	(0.000)	(0.000)
EMPL_AGG	-0.0016*	-0.0029**	0.0075	0.0025
	(0.001)	(0.001)	(0.010)	(0.003)
HTECH_EXP	0.0016**	-0.0015	0.0017*	0.0001
	(0.001)	(0.001)	(0.001)	(0.000)
CPI	0.0004	0.0004	-0.0001	-0.0006
	(0.001)	(0.000)	(0.003)	(0.001)
SCHOOL	0.0007	0.0012*	0.0012	-0.0002
	(0.001)	(0.001)	(0.002)	(0.001)
GOVT	-0.0074	-0.0053	0.0095	-0.0060
	(0.006)	(0.006)	(0.015)	(0.004)
Observations	118	211	213	469
Country Groups	12	23	18	31
R-squared	0.550	0.553	0.231	0.160

Note: Year and country fixed-effects are included. Robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10, 5, and 1-percent levels, respectively.

Table 10. Panel Regression by Alternative Financial Development: *STOCK_CAPITAL*

Dependent Variable	*GINI_DISP*			
	(1) 25th	(2) 50th	(3) 75th	(4) 100th
GDPPC	-0.0372	-0.1062	0.0303	-0.2212**
	(0.058)	(0.081)	(0.058)	(0.078)
KA_FS	0.0463	0.0560	0.0356	-0.0089
	(0.043)	(0.040)	(0.024)	(0.023)
TI	-0.0002	-0.0003	0.0014**	0.0002
	(0.001)	(0.001)	(0.000)	(0.000)
EMPL_AGG	-0.0041***	-0.0023*	0.0029	0.0039
	(0.001)	(0.001)	(0.003)	(0.003)
HTECH_EXP	0.0011***	-0.0023	-0.0002	-0.0008
	(0.000)	(0.002)	(0.001)	(0.001)
CPI	-0.0001	0.0010	0.0013	-0.0001
	(0.000)	(0.001)	(0.001)	(0.002)
SCHOOL	0.0020	0.0017**	0.0006	-0.0012
	(0.001)	(0.001)	(0.001)	(0.001)
GOVT	-0.0027	-0.0086	-0.0105*	-0.0017
	(0.008)	(0.008)	(0.006)	(0.006)
Observations	175	188	213	221
Country Groups	16	15	16	14
R-squared	0.452	0.438	0.543	0.400

Note: Year and country fixed-effects are included. Robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10, 5, and 1-percent levels, respectively.

Table 11. Panel Regression by Alternative Capital Account Openness: *KA_ED*

Dependent Variable	*GINI_DISP*			
	(1) 25th	(2) 50th	(3) 75th	(4) 100th
GDPPC	-0.2724	-0.1758	-0.1580**	-0.0375
	(0.161)	(0.137)	(0.066)	(0.057)
KA_ED	0.0016*	0.0003	0.0000	0.0001
	(0.001)	(0.001)	(0.000)	(0.000)
TI	0.0005	0.0010*	-0.0004	0.0002
	(0.001)	(0.001)	(0.000)	(0.000)
EMPL_AGG	-0.0022**	0.0016	-0.0095*	0.0057*
	(0.001)	(0.004)	(0.005)	(0.003)
HTECH_EXP	0.0003	0.0003	0.0015**	0.0006
	(0.000)	(0.001)	(0.001)	(0.000)
CPI	-0.0004	-0.0001	0.0005	-0.0036***
	(0.001)	(0.002)	(0.000)	(0.001)
SCHOOL	-0.0031**	0.0009*	-0.0000	-0.0016
	(0.001)	(0.000)	(0.001)	(0.001)
GOVT	-0.0095	-0.0069**	-0.0061	-0.0086**
	(0.008)	(0.003)	(0.009)	(0.004)
Observations	114	123	179	253
Country Groups	13	16	18	23
R-squared	0.690	0.546	0.416	0.320

Note: Two-year lagged *KA_ED*, year and country fixed-effects are included. Robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10, 5, and 1-percent levels, respectively.

Table 12. IV Regression

Dependent Variable	*GINI_DISP*			
	(1) 25th	(2) 50th	(3) 75th	(4) 100th
GDPPC	0.0211	-0.3633***	0.1776	-0.2897***
	(0.041)	(0.036)	(0.111)	(0.021)
KA_FS	0.9820***	0.9804***	-1.4751***	-0.0862
	(0.211)	(0.162)	(0.318)	(0.056)
TI	-0.0008	-0.0087***	0.0019***	-0.0022***
	(0.001)	(0.001)	(0.000)	(0.000)
EMPL_AGG	-0.0001	-0.0125***	-0.0156***	0.0034***
	(0.002)	(0.002)	(0.002)	(0.001)
HTECH_EXP	0.0066	-0.0059***	-0.0044***	0.0053***
	(0.005)	(0.002)	(0.001)	(0.001)
CPI	0.0024**	0.0094***	-0.0083*	-0.0008
	(0.001)	(0.002)	(0.005)	(0.001)
SCHOOL	-0.0039*	-0.0039**	-0.0081**	0.0019
	(0.002)	(0.002)	(0.004)	(0.001)
GOVT	0.0659**	-0.0030	-0.1806***	0.0437***
	(0.031)	(0.010)	(0.023)	(0.006)
Observations	154	238	284	335

Note: Year fixed-effects are included. Instrument variables are dummy variables for legal system origin, classified into English common law, French commercial code, German commercial code, Scandinavian commercial code, and socialist laws from La Porta et al. (1999). Robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10, 5, and 1-percent levels, respectively.

Table 13. Dynamic Panel

Dependent Variable	*GINI_DISP*			
	(1) 25th	(2) 50th	(3) 75th	(4) 100th
L.GINI_DISP	0.8749***	0.9404***	0.8878***	0.8736***
	(0.035)	(0.036)	(0.029)	(0.029)
GDPPC	0.0041	-0.0066	-0.0524***	-0.0199
	(0.014)	(0.010)	(0.019)	(0.014)
KA_FS	0.0183***	-0.0088	0.0233**	-0.0006
	(0.007)	(0.005)	(0.010)	(0.005)
TI	0.0000	0.0000	-0.0001**	-0.0000
	(0.000)	(0.000)	(0.000)	(0.000)
EMPL_AGG	0.0001	-0.0004	-0.0004	0.0001
	(0.000)	(0.000)	(0.000)	(0.001)
HTECH_EXP	-0.0000	0.0004**	-0.0000	0.0003***
	(0.000)	(0.000)	(0.000)	(0.000)
CPI	-0.0000	0.0000	-0.0001	-0.0006*
	(0.000)	(0.000)	(0.000)	(0.000)
SCHOOL	0.0001	0.0000	-0.0002	-0.0001
	(0.000)	(0.000)	(0.000)	(0.000)
GOVT	-0.0002	-0.0034***	0.0009	-0.0006
	(0.001)	(0.001)	(0.002)	(0.001)
Observations	106	189	232	279

Note: Year fixed-effects are included. Instrument variables are dummy variables for legal system origin, classified into English common law, French commercial code, German commercial code, Scandinavian commercial code, and socialist laws from La Porta et al. (1999). Robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10, 5, and 1-percent levels, respectively.