

EURASIAN JOURNAL OF ECONOMICS AND FINANCE

<http://www.eurasianpublications.com>

FINANCE AND INEQUALITY – EVIDENCE FROM EAST ASIA

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Abstract

The economic debate about inequality has occupied a huge place in the scientific discourse of the last decades. Several factors have been identified as causes for the rising wealth and income inequality in various regions such as economic growth, capital return and intergenerational wealth. In this paper, East Asia is chosen as a regional focus for the analysis due to the region's specific characteristics and history regarding inequality. Until the end of the 1980s, the region experienced a period of so-called "growth with equity" where high economic growth rates were associated with decreasing poverty and inequality. In recent years, however, growth in East Asia has gone hand in hand with inequality. This shift from "growth with equity" to "growth with inequality" makes the region worth investigating. The paper focuses particularly on the size of the financial sector, analyzing its role and impact on the development of inequality. Therefore, the theoretical connection and the natural relationship between poverty, inequality, economic growth as well as the size of the financial sector are discussed. Indicators, proxies and measurements for these variables are identified, based on existing literature. The main analysis delivers an answer to the research question of whether and how financial development affects the inequality in a society. For the analysis, cross-country and panel data for the ASEAN+3 countries from 1960-2012 are used.

Keywords: Inequality, Financial Sector, Poverty, East Asia, Financial Intermediation, Financial Education, Financial Regulation

1. Introduction

The academic discourse on inequality has always been subject of investigations in economic literature from several theoretical and empirical perspectives. The recently observed rising inequality in the world has re-highlighted the debate about inequality. One of the most interesting aspects in this context is the relationship between finance and inequality. While the role of financial development regarding growth and poverty reduction is mostly agreed upon, the impact of finance on inequality is still a matter of discussion. This paper aims to add to this discussion by analyzing evidence from the East Asian region.¹

On the one hand, East Asia has withstood the trend of rising inequality until the end of the 1980s. The region was experiencing a period of so-called "growth with equity" where high economic growth rates were associated with decreasing poverty and inequality. In recent years, however, growth

¹In this paper, East Asia refers to ASEAN+3.

in East Asia has gone hand in hand with inequality. On the other hand, the financial sector in the region has been continuously growing in both depth and width. The traditionally bank-based East Asian financial systems are experiencing a shift toward higher participation of non-bank financial institutions. This shift is accompanied by an increasing size of financial assets and a rising importance of financial intermediaries. Against this background, East Asia provides an especially interesting case for investigation in the field.

Based on existing concepts in the literature, we are expecting four possible scenarios regarding the impact of finance on inequality: i) that financial development leads to more inequality ii) financial development decreases inequality iii) financial developments first leads to more and eventually to less inequality (inverted U-shape) iv) financial development first decreases and eventually increases inequality (normal U-shape).

The findings of our empirical study support the last hypothesis, a normal U-shaped relationship between financial development and inequality in East Asia. In this regard, we suggest financial education and balancing the trade-off between financial regulation and innovation as essential measures which can contribute to lessen or counter the eventual inequality-increasing effect.

The paper is structured as follows: The next section briefly reviews the pertaining theoretical concepts and relevant empirical studies on the relationship between financial development and inequality. In section 3, a closer look is taken at East Asia and its developments regarding economy, inequality and the financial sector, which make the region interesting for investigation. In section 4, the applied empirical framework is explained in detail. Section 5 presents our results, which are interpreted in section 6, before we close with our conclusion.

2. Literature Background

A substantial amount of research has been conducted on the relationship and interdependencies of financial development², economic growth, inequality and poverty. However, theory implications are contradictory and empirical studies yield different results. One reason for this ambiguity in research is the lack of data and the shortcomings of statistical methods regarding their interpretation and analysis (see Arestis and Demetriades, 1997). Another reason can be seen in the complexity of the relationship itself, as financial development may not only influence inequality and poverty directly, but also indirectly, for instance, via its effect on economic growth (Jalilian and Kirkpatrick, 2005). Figure 1 shows the direct and indirect mechanisms of financial development on poverty and inequality.

²Financial development refers to “[...] the factors, policies, and institutions that lead to effective financial intermediation and markets, and deep and broad access to capital and financial services” (Roubini and Bilodeau, 2008, p.3). Due to the complexity of financial development, its measurement still constitutes a challenge for research. Possible proxies for financial development can relate to financial depth, access, efficiency and stability regarding both financial institutions and markets (World Bank’s Global Financial Development Database, 2014).

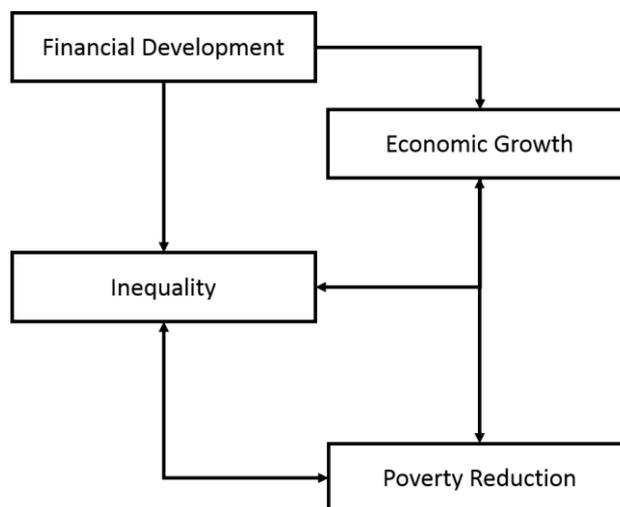


Figure 1. Financial Development, Economic Growth, Inequality and Poverty

Starting with the indirect impact of financial development on inequality through the economic growth channel, a positive link between financial development and economic growth is widely agreed upon (Goldsmith, 1969; McKinnon, 1973; Shaw, 1973; Bencivenga and Smith, 1991; King and Levine, 1993; Beck *et al.* 2004; Jalilian and Kirkpatrick, 2005). Possible causes for the positive impact of financial development on economic growth are allocation of savings and total factor productivity growth (Schumpeter, 1959) as well as capital allocation (King and Levine, 1993). Empirical studies by Beck *et al.* (2000) and Aghion *et al.* (2005) find support for the positive impact of financial intermediary development on growth by increasing total factor productivity. Zhou (2011) and Rousseau and Wachtel (2000), who examine the role of the stock market as a part of financial development in regard to economic growth, also find positive impacts of financial development on economic growth. However, Bose and Cothren's (1996) research on endogenous growth and asymmetric information in the credit market suggests that an advanced financial sector only leads to higher growth rates after a certain level of financial sophistication has been achieved. Considering the indirect mechanism through economic growth, the majority of economic discourse is convinced of the positive effect of growth on reducing poverty (see Dollar and Kraay, 2002). However, it is both disputed whether economic growth and inequality are positively or negatively influencing each other and whether their relationship follows a linear (Galor and Zeira, 1993; Birdsall *et al.* 1995) or non-linear path (Kuznets, 1955; Forbes, 2000; Barro, 2000; Banerjee and Duflo, 2003). Lundberg and Squire (2003, p.336), for example, find that equality has an adverse effect on growth, while "[g]rowth, on the other hand, has a statistically strong and adverse effect on inequality".³ Kuznets (1955) advocates the idea of a non-linear relationship between economic growth and inequality, resembling the shape of an inverted-U. Accordingly, income inequality first increases, abates and eventually declines with economic development (Greenwood and Jovanovic, 1990). His argument is based on both, the assumption that savings are concentrated in the upper-income groups and on labor shifts from low-productivity to high-productivity sectors.

Jalilian and Kirkpatrick (2005) take a closer look at financial development, economic growth and poverty, testing for a link between financial development and poverty. Their findings suggest that financial development has a positive impact on growth, especially at low income levels. Furthermore, the incomes of the poor benefit as much from growth as the incomes of the rich. They also find that "[...] up to a threshold level of economic development, financial sector growth contributes to poverty reduction through the growth-enhancing effect" (Jalilian and Kirkpatrick, 2005, p.636). However, Jalilian and Kirkpatrick (2005, p.652) also point out that "[f]or developing countries at a low level of

³Regarding the effect of inequality on economic growth, the literature provides 4 theoretical explanations: credit-market imperfections, political economy, social unrest and saving rates (see Barro, 2000, p.5-8).

income per capita, financial development is expected, *ceteris paribus*, to accentuate inequality, which in turn will reduce the poverty reduction impact that is associated with the growth enhancing effect of financial development.”

When it comes to the direct relationship between financial development and inequality, researchers are at odds as well. In this context, Clarke *et al.* (2006) identify three distinct hypotheses that are dominant in the literature: the “inequality-widening hypothesis”, the “inequality-narrowing hypothesis” carried by Galor and Zeira (1993) and Banerjee and Newman (1993) and the “inverted-U-hypothesis” by Greenwood and Jovanovic (1990).

The inequality-widening hypothesis assumes that the positive effects of financial development are limited to the rich who have the collateral to apply for loans, while the financial needs of the poor are neglected. A change in the lending behavior to include the poor with the development of the financial sector is not expected when following the inequality-widening hypothesis (Clarke *et al.* 2006). In line with this idea is the assumption that “[...] the poor rely on informal, family connections for capital [...]” (Claessens and Perotti, 2007, p.750) rather than on financial institutions so that improvements in the financial sector do not benefit them as much as the rich, who make use of the formal financial sector.

In contrast, the inequality-narrowing hypothesis implies that especially the poor benefit from financial development as they rely more on the possibility to borrow money than the rich, who already have assets to use, in spite of financial market constraints. The poor are most disadvantaged by financial market imperfections such as moral hazard and adverse selection and the reduction of these imperfections through financial development helps strengthen their position (Clarke *et al.* 2006; Claessens and Perotti, 2007). Beck *et al.* (2004) examine the relationship between financial development and poverty, applying a broad cross-country sample. Their findings support the idea of financial development reducing both income inequality and poverty by having a disproportionately positive effect on the incomes of the poor. Batuo *et al.* (2010) also find a linear negative relationship between financial development and inequality in their study on African countries in the years from 1980-2004. Rewilak (2013, p.1451) tests “[...] whether or not the incomes of the poor systematically grow with average income, and whether financial development enhances the incomes of the poorest quintile”, using pooled cross-country regression analyses. Rewilak (2013) concludes that while economic growth universally benefits the rich and poor, financial development does not necessarily alleviate poverty in all regions. In this respect, Rewilak (2013) draws special attention to South Asia and Latin America and the Caribbean as two opposing examples. While the findings display a positive effect of financial development on the income of the poorest quintile in South Asia, the opposite is the case for Latin America and the Caribbean. Weaker results suggest a harmful effect of finance on the income of the poor in Sub-Saharan Africa and a beneficial impact in Eastern Europe and Central Asia.

Greenwood and Jovanovic (1990) integrated the links between financial structure and economic growth and inequality into a single model, reminiscent of the Kuznets (1955) curve. Their inverted-U hypothesis also combines the inequality-widening hypothesis and the inequality-narrowing hypothesis, stating that financial development initially increases income inequality as only few people have access to the financial sector. However, as the costs of participation fall and more people enter the financial system, inequality decreases in the long run (Clarke *et al.* 2006). The initial restricted access to the financial system is due to the high transaction costs which result from the market failures at the beginning of financial development. Asset ownership and accumulated wealth influence the ability to enter the financial system while transaction costs are still high, favoring the rich over the poor and thereby raising inequality (Jalilian and Kirkpatrick, 2005). Clarke *et al.* (2006, p.595) have empirically tested “[...] the link between indicators of financial intermediary development and the Gini coefficient in a large cross-country sample for the period 1960-1995”, using cross-sectional samples to examine the long-term relationship, and a panel sample to look at the relationship in the short and medium-long run. Their findings support the inequality-narrowing hypothesis, and have some weak

support for the inverted U-shaped hypothesis, while finding no evidence for an inequality-widening effect.

The basis for Greenwood and Jovanovic's (1990) inverted-U hypothesis can be seen in the so-called critical mass theory. The critical mass theory is a concept originally taken from nuclear physics that describes the amount of radioactive material needed for an explosive chain reaction to occur (Schelling, 1978; Oliver and Marwell, 1985). The concept has been borrowed in other fields as well such as social and economic science (Schelling, 1978; Oliver and Marwell, 1985), innovation (Rogers, 2003) and technology (Markus, 1987). Schelling (1978, p.95) clarifies that critical mass theory essentially refers to "[...] some activity that is self-sustaining once the measure of that activity passes a certain minimum level". Put in the context of financial development and inequality, this can be interpreted in a manner supporting the inverted U-shape like it has been done by Greenwood and Jovanovic (1990). However, it can also be used for an opposing argumentation. In this case, it can be argued that inequality only increases after a critical level of financial development has been achieved, therefore forming a normal U-shape dynamic. Following this notion, the development of financial intermediaries initially either benefits rich and poor alike or even disproportionately benefits the poor, maintaining the existing level of inequality or effectively narrowing the inequality gap. Only after the financial system has become so sophisticated that it provides products and services that disproportionately interest and benefit the rich, does inequality widen again. For instance, while the availability of credit is likely to have positive effects on both rich and poor, financial instruments that exceed basic financial needs might be more interesting to the rich alone. Thus, we consider the normal U-shape dynamic also as one possible explanation for the relationship between finance and inequality.

3. Economic Growth, Inequality and Financial Development in East Asia

The unique experience of Asia regarding economic growth and poverty reduction in the last decades has achieved significant levels to the point that many researchers and policymakers are questioning whether East Asia can serve as a role model for other developing regions in the world. From the 1960s until the end of the 1980s, the transformation of East Asia was characterized by the so-called "growth with equity", which refers to economic growth with concurrent income equality (World Bank, 1993; for a critical report, see Jomo, 2006). Considering, in contrast, the recent trends in East Asia, one finds controversial developments.

On the one hand, economic growth and poverty reduction in the last few decades have happened faster than in any other region in the world. On the other hand, the region faces a rising inequality phenomenon now and can no longer profit from the "growth with equity" of earlier decades. Figure 2, for instance, shows that the Gini-coefficient as indicator of inequality has worsened in the recent years despite the steady increase of GDP per capita. In this context, Feng (2011, p.5) emphasizes that "[t]he great East Asian reversal from growth with equity to growth with inequality has become an increasingly pressing social and political concern in the regional societies as well as in the rest of the world." Despite achievements regarding poverty reduction in Asia (see Figure 3), the rising inequality phenomenon has hampered the positive effect of economic growth on the alleviation of poverty. For instance, if the inequality remained unchanged, the poverty head count rate at the \$1.25-a-day poverty line would have been 4.9% instead of the actual 13.1% in 2008 in China and 6.1% instead of the actual 16.3% in 2011 in Indonesia (Zhuang *et al.* 2014). Moreover, inequality can lead to social and political unrest and even slow the economic growth process itself.

Possible explanations for "growth with equity" and the observed shift to "growth with inequality" differ among scholars and economists (see Feng, 2011; World Bank, 1993; Jomo, 2006; Zhuang *et al.* 2014; Yin and Hamori, 2014). On the one hand, the improvement and expansion of education and public health, which increased labor productivity and enhanced income, technological progress, globalization and financial liberalization as well as market oriented reforms with a focus on export are

seen as drivers of growth. On the other hand, while pushing growth, these factors had tremendous effects on distribution, leading to greater disparities in favor of “[...] capital over labor, skilled over unskilled workers, and urban and coastal areas over rural and inland regions” (Zhuang *et al.* 2014, p.3). However, the focus of our analysis is on the impact of financial development on inequality in the region.

Looking at the development of the financial system in East Asia, one finds that the region enjoys larger financial sectors compared to other regions with similar income levels. However, the heterogeneity of the region is mirrored in its financial systems. For instance, Asian emerging markets show a bank lending ratio of 105% of GDP in 2012 which is higher than the common bank-lending ratios in the emerging markets in other regions, but lower than the ratio of the Asian advanced economies which constituted 194% in the same year. Furthermore, the financial systems of the majority of East Asian countries are dominated by banks rather than equity and bond markets. A notable characteristic of East Asian banks has been their higher focus on the intermediary function of resource allocation among depositors and borrowers, while pursuing inter-bank and investment banking activities to a lesser degree (Walsh, 2014). Since the Asian financial crisis of 1997/8, the financial system has broadened, showing improvements in reach as well as efficiency and stability (Ghosh, 2006). Nevertheless, limited access of poor segments of society and SMEs to formal credit is still hampering sustainable growth, poverty reduction and development in the developing countries (Park, 2011). Furthermore, a shift from the traditional bank businesses to more lucrative, as well as complicated, alternative financial activities has started to take place in most of the region’s countries. With the banks now operating in new, unfamiliar territories, new risks arise. Moreover, as a consequence of financial globalization and innovation, an efficient regulation and supervision of financial institutions becomes more difficult for local authorities to uphold. Financial innovation may contribute to the creation of resilient financial markets, but, at the same time, it also leads to changes regarding financial intermediation and market functioning. The fact that the degree of financial globalization and innovation in the East Asian banking and financial system is much lower than it is the case in the Western hemisphere has made the region more resilient in the last financial crisis. However, the trend of financial globalization and sophistication is picking up in East Asia as well, encouraged by foreign investors, global networks, the rise of information, communication and technology and the creation of new financial products and services (Park, 2011). Figure 4 shows the overall increasing size of the financial sector in East Asia based on the proxy of domestic credit to private sector (% of GDP), using specific country examples.

Against the background of these developments regarding both rising inequality and growing financial sector, the region provides an interesting case for the analysis of the effect of financial development on inequality.

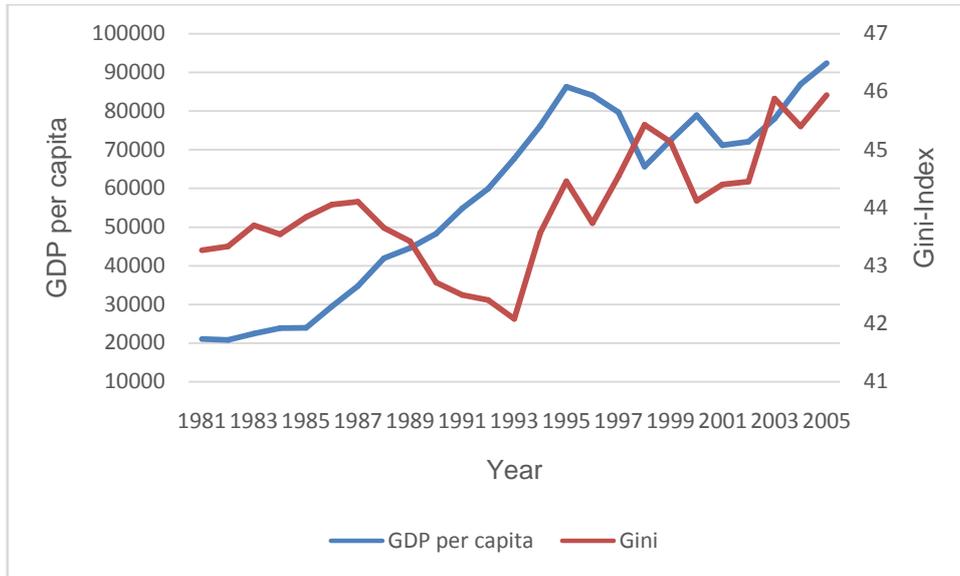


Figure 2. GDP per capita and Gini-Index for East Asia (World Bank, 2015)

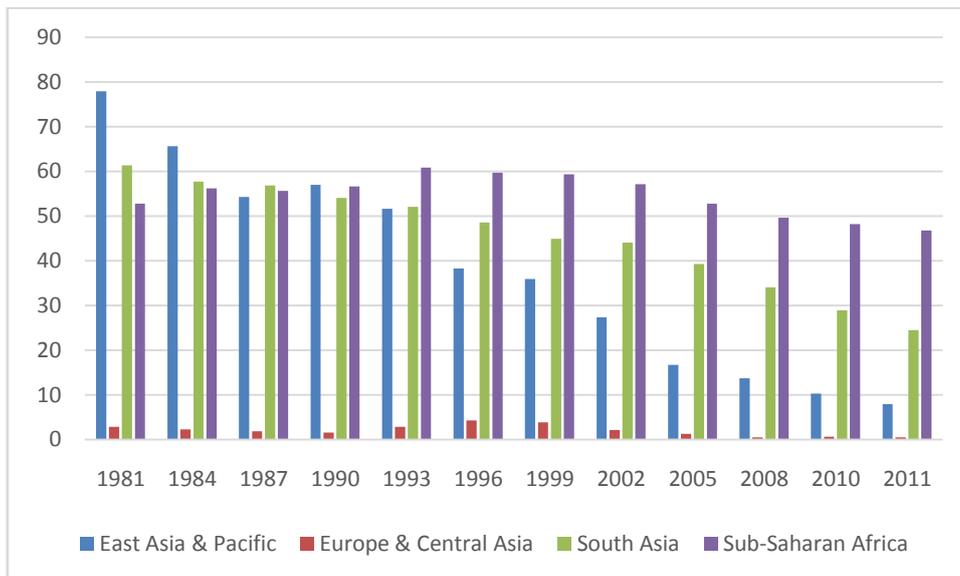


Figure 3. Poverty Headcount Ratio at \$1.25 a day (PPP) (% of population) (World Bank, 2015)

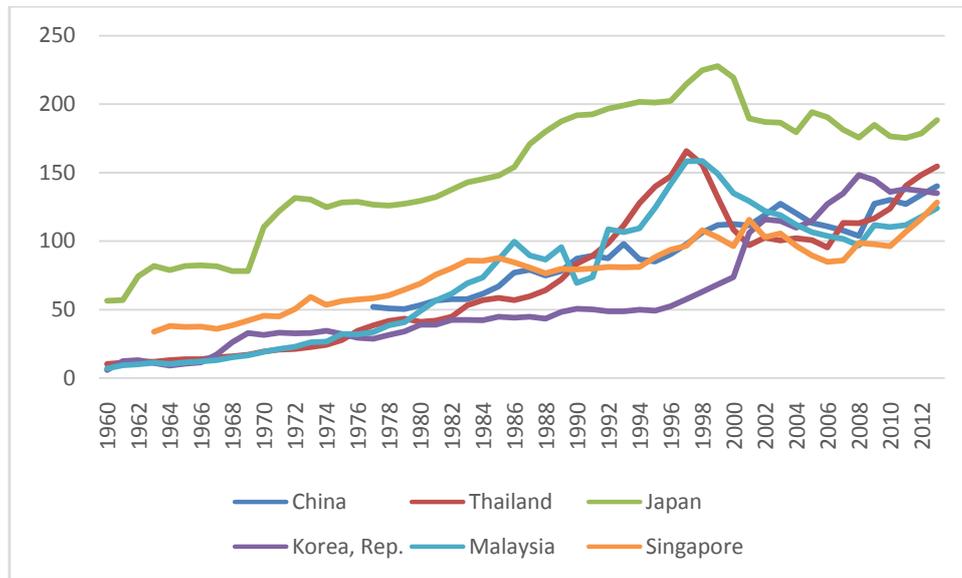


Figure 4. Domestic Credit to Private Sector (% of GDP) (World Bank, 2015)

4. Empirical Framework

In order to explore the relationship between financial development and inequality, we use panel data of the East Asian region from 1960 to 2012 with both a time series and cross section dimension. All of the data sets generated were unbalanced panels. A list of the countries included in the regression as well as the sources of the data and the definitions of the variables is given in Table 1. For our analysis, we are mainly interested in testing the impact of financial development measured by the ratio of the domestic credit provided by the financial sector to GDP (following Beck *et al.* 2007) on the Gini index as an indicator for inequality. The use of the ratio of credit to GDP tends to be a better indicator for the financial development since other commonly used indicators such as M2 as a share of GDP include the liabilities of central banks as well as credit to governments and state owned enterprises, which make them less able to reflect the main functions of the financial sector (see Clarke *et al.* 2006; Wang, 2012). In contrast, higher levels of private credit indicate higher levels of financial services and can therefore serve as a proxy for financial intermediary development (Jalilian and Kirkpatrick, 2005; Levine *et al.* 2000).⁴

⁴Informal credit is a factor also worth mentioning in the context of East Asia. Ghate (1992), for instance, addressed the relationship between formal and informal finance in Asia, finding informal finance to play an important role in the region's developing countries. In a study on China, Allen *et al.* (2005) argue that alternative finance channels could be suitable substitutes for formal finance. In a more recent study also based on evidence from China, Ayyagari *et al.* (2010) emphasize, however, that, despite advantageous impacts on small firms, informal finance cannot replace formal finance regarding its positive impact on overall growth. While exceeding the scope of this paper, taking a closer look at the impact of informal finance on inequality in the region could be interesting for further research.

Table 1. Variable Definitions, Sources and List of Countries

| Variable | | Definition | Source |
|------------------------------|---|---|---|
| Dependent variable: | | | |
| GIN | Gini Coefficient | Household Income Inequality | EHI Dataset (2008) World Bank (2015) |
| Independent variable: | | | |
| FD | Domestic credit provided by financial sector (% of GDP) | Domestic credit provided by the financial sector includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net. | World Bank (2015) |
| PCGDP | Log (GDP per capita) | GDP per capita is gross domestic product divided by mid-year population. | World Bank (2015) |
| School | School enrollment, secondary (gross) | The ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. | World Bank (2015) |
| Fert | Log (fertility rate) | The number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with prevailing age-specific fertility rates. | World Bank (2015) |
| Inflation | Inflation, consumer prices (annual %) | Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used. | World Bank (2015) |
| Global | Globalization Index | Overall index of globalization (KOF Index of Globalization 2012) | ETH Zürich (2012) |
| LifeEx | Log (life expectancy) | The number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to remain the same throughout its life. | World Bank (2015) |
| Countries: | | | |
| ASEAN+3 | | Brunei, Cambodia, Indonesia, Lao, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam, China, South Korea, Japan | |

Our panel regression model is expressed as follows:

$$GIN_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 FD_{it}^2 + \beta_3 PCGDP_{it} + \beta_4 PCGDP_{it}^2 + \beta_5 School_{it} + \beta_6 Fert_{it} + \beta_7 Inflation_{it} + \beta_8 Global_{it} + \beta_9 LifeEx_{it} + \alpha_i + \varepsilon_{it}$$

where t stands for time and i represents country, GIN refers to the Gini coefficient as a measure of inequality, FD is the logarithm of our indicator for financial development. Since the impact of finance on inequality may represent an inverted U-shape or its counterpart, a normal U-shape as mentioned in the previous section, we added a square term of FD_{it} , namely FD_{it}^2 . This implies if the reversed U-type dynamic is observed for Asia, β_1 should be positive and β_2 should be negative. In this case, the impact of finance on the Gini is positive (higher inequality) in the short term and with increasing financial development negative (lower inequality). On the other hand, in the case of observing a normal U-

shape relationship, β_1 should be negative and β_2 should be positive. Accordingly, a certain degree of finance decreases inequality, but once a certain threshold of financial development has been reached, further development leads to more inequality.

Further control variables in our model are $PCGDP_{it}$ for the logarithm of GDP per capita and $PCGDP^2_{it}$, its squared term, as an indicator for Kuznets' (1955) reverse U-hypothesis on growth and inequality. $School_{it}$ represents the logarithm of the secondary school enrollment ratio as a proxy for human capital. $Fert_{it}$ stands for the logarithm of the fertility rate as indicator for the health services and health care system of a country. $Inflation_{it}$ represents the inflation rate as a proxy for the macroeconomic policies. $Global_{it}$ stands for the overall index of globalization. $LifeEx_{it}$ represents the life expectancy as a proxy for social development. α_i stands for country specific fixed effects and ϵ_{it} is the error term.

Table 2 provides the summary statistics of the variables and Table 3 shows the correlation coefficient matrix. According to the structure of our panel data and the results of the Hausman test, fixed effect models should be a proper choice for our analysis. Due to the high correlation between financial sector development and GDP per capita, a multicollinearity between the two variables is possible. To avoid this effect, we estimate, beside the above mentioned equation, two further models, one time, omitting GDP^2_{it} and, another time, omitting both GDP_{it} and GDP^2_{it} .

Table 2. Summary Statistics

| Variables | Obs | Mean | Std. Dev. | Min | Max |
|------------------|-----|----------|-----------|-----------|----------|
| GIN | 320 | 41.68831 | 5.515257 | 30.43 | 51.95565 |
| FD | 516 | 74.06847 | 70.29766 | 4.456221 | 366.533 |
| PCGDP | 569 | 6159.329 | 10662.29 | 56.63365 | 55182.48 |
| School | 406 | 58.15556 | 26.74277 | 3.70531 | 107.8462 |
| Fert | 701 | 3.684869 | 1.761522 | 1.076 | 7.148 |
| Inflation | 551 | 10.80313 | 52.03382 | -6.044706 | 1136.254 |
| Global | 545 | 42.83609 | 19.04763 | 13.57724 | 88.82262 |
| LifeEx | 702 | 65.17274 | 10.52135 | 19.50493 | 83.33195 |

Table 3. Correlation Coefficient Matrix

| | GIN | FD | PCGDP | School | Fert | Inflation | Global | LifeEx |
|------------------|--------|--------|---------|---------|--------|-----------|--------|--------|
| GIN | 1.0000 | | | | | | | |
| FD | -0.449 | 1.0000 | | | | | | |
| PCGDP | -0.367 | 0.8536 | 1.0000 | | | | | |
| School | -0.583 | 0.6125 | 0.6597 | 1.0000 | | | | |
| Fert | 0.5972 | -0.64 | -0.5929 | -0.7002 | 1.0000 | | | |
| Inflation | 0.2774 | -0.442 | -0.3729 | -0.3037 | 0.4119 | 1.0000 | | |
| Global | -0.311 | 0.5173 | 0.4081 | 0.5052 | -0.552 | -0.4064 | 1.0000 | |
| LifeEx | -0.653 | 0.8480 | 0.7572 | 0.7947 | -0.857 | -0.5032 | 0.6962 | 1.0000 |

5. Results

Our regression results are reported in Table 4.

Table 4. Relationship between Financial Development and Inequality

| Variables | 1 | 2 | 3 |
|-------------------------------|------------|------------|------------|
| Constant | -0.3047 | -0.3802 | 0.1534 |
| | -(0.34) | -(0.41) | (0.17) |
| FD | -0.1210* | -0.2049*** | -0.1584*** |
| | -(1.95) | -(3.39) | -(2.76) |
| FD² | 0.0140* | 0.0253*** | 0.0194*** |
| | (1.75) | (3.26) | (2.65) |
| PCGDP | -0.1819*** | -0.0249** | ... |
| | -(4.41) | -(2.18) | ... |
| PCGDP² | 0.0098*** | ... | ... |
| | (3.95) | ... | ... |
| School | -0.1009*** | -0.167*** | -0.1631*** |
| | -(2.90) | -(5.27) | -(5.10) |
| Fert | 0.1422*** | 0.1354*** | 0.1591*** |
| | (3.54) | (3.25) | (3.85) |
| Inflation | -0.0004 | -0.0005 | -0.0005 |
| | -(0.76) | -(0.94) | -(0.96) |
| Global | 0.0211 | 0.0423 | 0.0267 |
| | (0.50) | (0.97) | (0.61) |
| LifeEx | 1.2506*** | 1.2054*** | 1.0194*** |
| | (5.19) | (4.83) | (4.26) |
| Num of Obs | 205 | 205 | 212 |
| Adjusted R² | 0.4193 | 0.3705 | 0.3447 |
| Method | FE | FE | FE |

Notes: *,** and ***denote the significance at the 10%, 5% and 1% level respectively. Heteroskedasticity robust t-statistics are in parentheses.

The observed estimations show that the impact of finance on inequality can be explained through a U-shaped dynamic since the FD_{it} coefficient is negative and the FD_{it}^2 coefficient is positive on a 10% significance level in model 1 and on a 1% significance level in model 2 and model 3. The other control variables have the expected signs and are statistically significant with exception of globalization index and inflation. Moreover, we find that a higher life expectancy rate is usually associated with a higher Gini coefficient and that this impact is statistically significant. Furthermore, we obtained a statistically significant influence of economic growth on inequality. In model 2, a higher GDP leads to a decrease of inequality while, in model 1, the effect of GDP tends to have the same U-form dynamic as is the case with financial development.

6. Interpretation of Results

The empirically observed U-form dynamic of financial development on inequality in East Asia suggests that financial development first helps reduce inequality, but once a certain degree of financial development is achieved, inequality rises.⁵ This U-shape can be explained by the characteristics of financial sector development.

At the beginning of financial development stand the introduction of basic financial instruments and the provision of credit opportunities. While rich people can realize investment projects with their available resources and wealth even in the absence of a developed financial market, poor people cannot do the same. Less wealthy segments of society therefore rely more on the introduction of such basic financial instruments and thus, can benefit more from the financial system in the beginning. Increasingly developed financial services on the other hand can benefit the wealthy, well informed and well connected more than the weaker members of the economy. Wealthy people can make use of the new, sophisticated financial products to hedge against potential fluctuations on the markets, against risky future expectations, higher inflation rates and currency depreciation. In contrast, the lack of wealth usually makes it impossible for poor people to profit from such products. Moreover, in the case of East Asia and its bank-dominated financial system, the recent shift of bank activities from the conventional banking to investment banking may contribute to the interpretation of the above results. While both activities of conventional as well as investment banking benefit all segments of the economy, one might expect a tendency of conventional banking disproportionately benefitting the poor and investment banking disproportionately benefitting the wealthy.

Furthermore, as has been shown in our model, poverty and inequality have a highly negative correlation with education. Due to the increasing complexity of the newly introduced financial products and services in the last decades, poor, less-educated people might suffer huge challenges when it comes to understanding those products and services. This difficulty in understanding can in turn lead to misallocation of their resources or to missing hedging opportunities.

Moreover, lacking sufficient regulation and supervision, overly high levels of financial globalization, imperfectly driven financial liberalization and too rapid a pace of financial development and innovation can lead to greater income disparities, limited financial access, macroeconomic volatility and in consequence to financial crises. Such crises hit economically weak segments of society more than the wealthy, especially in absence of adequate social safety nets and weaker government aid due to the crises (Balakrishnan *et al.* 2013; Claessens and Perotti, 2007; Easterly *et al.* 2001).

The Global Financial Crisis of 2007/8 and the Asian Financial Crisis of 1997 serve as examples, displaying this connection. In the case of South Korea, the Asian Financial Crisis hit the working people much harder than those with financial resources, who could benefit from credit-scarce market conditions. The related increase in economic inequality becomes apparent in the increase in Korea's Gini coefficient from 0.258 before the crisis to 0.298 in 1999 (Kao, 2014). Moreover, the uneven impact of the Global Financial Crisis on the rich and poor is portrayed by the example of Spain where the poorest 10% lost 13% of their incomes per year while the richest 10% only faced a loss of 1.5% due to the crisis (OECD, 2015).

⁵It shall be stressed that inequality and poverty are two distinct matters which can be differently affected by financial sector development. Our results suggest that more finance can first reduce, but ultimately lead to more inequality. They do not suggest that more finance also leads to more poverty. This distinction can be shortly illustrated as follows: In the course of financial development, prices for financial products decrease, making these products beneficial for less wealthy segments of society, who could not afford them before. However, the decrease in prices also, disproportionately, benefits the rich, who have already been able to use these products, in other words, while financial development benefits the rich and poor, the poor-rich utility ratio of the financial sector decreases over time, favoring the rich over the poor.

7. Conclusion

Rising inequality in many regions in the world in recent decades represents a serious challenge for policymakers. This is particularly the case for East Asia. Regarding the relationship between finance and inequality, our empirical analysis shows that financial development can lead to less inequality. However, the evidence also shows that after the financial sector has reached a critical level of development, inequality may rise. It is notable here that the findings further suggest that the initial inequality-decreasing effect of financial development is stronger than the eventual inequality-increasing effect, making financial development still desirable from the perspective of inequality reduction. The question remains what can be done to remedy the inequality-enhancing effect that sets in, once a certain level of financial development is reached. In regard to this question, this paper stresses two possible courses of action: balancing financial regulation and innovation, and financial education.

Regulation in this context is not meant to imply that wealthy people should be hindered from making use of advanced financial products. The negative effects such restrictions could have on growth via capital flight might in fact aggravate inequality, considering the link between economic growth and inequality mentioned in section 2. Instead, financial regulation here refers to measures that encourage the construction of financial products in a way that makes them accessible and beneficial for vast segments of society. For instance, rather than increasing the complexity of products, the transparency of their mechanisms should be ensured. Regulation could also contribute to protecting the financial market from being swamped with products whose complexity exceeds even the understanding of their inventors like those who played a part in the Subprime Crisis in 2007/8. In other words, it is essential for financial regulation to manage the trade-off between encouraging necessary financial innovations such as constructing and developing new financial instruments, technologies and services like securitization and derivatives, which is essential for developing countries, and discouraging risky innovation (see Park, 2011).

Financial education is another pillar for the amelioration of the finance-inequality dilemma. Without the awareness and the ability of confident assessment of financial products, people remain hesitant to use even those financial products which perfectly fit their needs. Likewise, incorrect assessment of financial products can encourage people to choose unfitting products with potentially detrimental consequences. Therefore, broadening and deepening people's knowledge of financial products and mechanisms in general is a prerequisite for the benefits of financial development becoming more inclusive. The OECD (2014) has already taken up the issue of financial education, both measuring financial literacy in youth and suggesting possible ways of implementing financial education in school education.

Refusing mono-causal explanations as incompatible with the complexity of the subject, our results do not imply that finance is the only relevant reason for the observed increasing inequality. At the same time, our findings may not only be exclusive for East Asia and could hold true for other regions as well. Further empirical investigations in this field are necessary.

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