

Finance and Income Inequality - panel BMA approach*

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Abstract

We investigate the impact of financial development on income inequality differentiating between depth, efficiency and access to financial markets and institutions. We apply panel Bayesian model averaging framework to address model uncertainty to reveal that financial development has complex influence on the income distribution within countries. The access to and efficiency of banking decrease income inequality. The size of the markets has no influence on overall income inequality, but contributes to the increasing top income shares. Moreover, unemployment along with investment into non-tangible assets increase income inequality while higher redistribution and physical capital investment imply lower levels of inequality.

Keywords: Income inequality, finance, Bayesian model averaging

JEL Codes: D31, E21

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1 Introduction

Finance captures the capacity of financial intermediaries and markets to screen investment opportunities, monitor the debtors who were provided funding, as well as pooling and management of risk. With inequality, we focus in the paper on the inequality in the distribution of income. Arguably, the literature discusses other concepts of inequality, e.g. intergenerational persistence of relative income differences or equality of opportunity (Demirgüç-Kunt and Levine, 2009).

Claessens and Perotti (2007) argue that although deeper financial systems generally provide better opportunities of access to finance, the relationship is not universal.

The average income inequality rose across Organisation for Co-operation and Development (OECD) by 1.4 percentage points (OECD, 2013).

2 Related literature

The research in the area of financial development and income inequality is well established. Demirgüç-Kunt and Levine (2009), Claessens and Perotti (2007), and more recently de Haan and Sturm (2017) provide extensive reviews of the topic. A similar theme emerges in all three papers. The implications from theoretical contributions provide conflicting predictions about the relationship and empirical results bring evidence for both positive and negative effect. Although majority of the papers point towards finance tightening the distribution of income this results is not universal with some papers suggesting the opposite while other stress potential non-linearities.

A key divide appears between the effect of financial development on extensive and intensive margin. The extensive margin captures the extend to which individuals, who had not been using financial services before, gain access. On the other hand, the intensive margin describes growing use of finance by the agents who had already been using it before (Demirgüç-Kunt and Levine, 2009). Financial development on the extensive margin might lead to more equal opportunities and outcomes. Access to credit by previously disadvantaged groups allows human capital accumulation (Galor and Zeira, 1993; Galor and Moav, 2004; Braun et al., 2019), formation and growth of new firms (Evans and Jovanovic, 1989; Banerjee and Newman, 1993), with more evenly distributed economic opportunities as a result¹.

¹Having similar economic opportunities might decrease the cross-generational inequality, by diminishing the effect of e.g. parental wealth. Depending on the innate abilities and talents of the individuals, however, it may increase the inequality of income within every generation at the same time.

On the contrary, intensive margin of financial development might disproportionately benefit the rich who may leverage financial services for their further benefit or to protect their existing rents. Greenwood and Jovanovic (1990) present a model where the finance is the key driver of inequality and the welfare gains accrued by the incumbents - primarily the rich - in the initial development stage. With time, more agents meet the fixed costs of joining the financial intermediaries and they enjoy higher returns. Consequently, the efficiency of resource allocation also increases, which enhances growth and reduces inequality. Perotti and Volpin (2007) present a framework based on political economy. Their argument depends on a lobby for lower investor protection to prevent entrance of the new competitors. The politicians require higher bribe from the lobbyist the greater is their accountability for policy decisions. Thus, with increasing accountability, investor protection strengthens and spurs market entry and competition. The authors examine their prediction in a cross-section and show that better investor protection correlates with larger entry rates and higher firm density in more financially intensive sectors².

Financial development may also have indirect effect on income inequality through economic growth. Townsend and Ueda (2006) model how finance interacts with production and allocation of credit. If increased use of finance increases the demand for low-relatively to the high-skilled workers, then it may have equalizing consequences for income distribution. Empirical evidence by Beck et al. (2010) show that bank deregulation and increased competition in loan provision in the United States (US) primarily benefited the workers with income below the median. Similarly, Delis et al. (2014) provide evidence of bank deregulation and liberalization tightening the income distribution, although this effect is only present in countries with high-quality institutions. They attribute the effect to the changes in labour market conditions and relatively higher wages and working hours of the low-skilled workers following the reforms.

A set of distinct papers explores the relationship between inequality and growth while stressing financial market imperfections driving the outcomes. Income inequality and growth may intersect through varying channels. Accumulation of savings, unobservable effort, and investment project size favour the prediction of growth inducing inequality. Negative impact of inequality on human capital accumulation, entrepreneurial activity provide argument for the opposing view. Van der Weide and Milanovic (2018) report how income inequality in the US has different implications for the future income

²In addition, they show that the most important factor of accountability is not the formal measure of democratic institutions, but *newspaper readership* which they interpret as broad awareness of policy choices and their outcomes.

growth of the rich and the poor. High inequality seems to hurt the prospects of the poor while the top of the distribution is unaffected. The rich thus disproportionately benefit from higher inequality as their subsequent income exhibit faster growth. The authors attribute this effect to the political channel the rich use to lobby in favour of the policies which support their economic interests. Preferences of the rich are ultimately more likely to determine public policy than the preferences of the majority (Gilens and Page, 2014). High inequality together with a credit constraint and rich driving the political process results in low government spending and lasting inequality.

The literature does not converge on the conclusions even in the empirical cross-country and panel data studies. The papers link higher levels of financial development with lower levels of inequality (Beck et al., 2007; Hamori and Hashiguchi, 2012; Gimet and Lagoarde-Segot, 2011; Kunieda et al., 2014)³. On the other hand, several other estimate a growth inducing effect of finance (Jaumotte et al., 2013; Jauch and Watzka, 2016; de Haan and Sturm, 2017). Finally, some authors claim there the relationship might be non-linear, conditional on a threshold value of financial development (Kim and Lin, 2011; Tan and Law, 2012) or institutional quality (Law and Singh, 2014; Delis et al., 2014).

Three papers are the closest to ours, each in a different respect. First, de Haan and Sturm (2017) examine different dimensions of finance on income inequality. Their results suggest that financial development, financial liberalization, and banking crises all increase pre-tax income inequality within countries. Additionally, they show that the effect of financial liberalization is conditional on democratic accountability. Higher accountability mitigates the impact of liberalization on inequality. On the contrary, the financial development, proxied by the credit to GDP ratio, has inequality increasing effect irrespective of the institutional background. Second, Naceur and Zhang (2016) take similar approach in considering multiple dimensions — the access, efficiency, and stability of the financial sector, although not examining the indicators simultaneously. Third, Furceri and Ostry (2019) apply Weighted-average Least Squares (WALS) to identify robust determinants of income inequality. Their approach mirrors ours in accounting for model uncertainty in the estimation. Their focus is more general rather than focused primarily on finance. We provide synthesis and extension to these papers in providing more detailed view on the link between finance in shaping income inequality and examining multiple measures of inequality while specifically identifying the determinants of top income shares along with the determinants of the overall income distribution⁴.

³For an extended list, we refer to de Haan and Sturm (2017).

⁴Captured by income Gini index

3 Data

Roine et al. (2009), Furceri and Ostry (2019) for the determinants of income inequality.

Nolan et al. (2019) bring a survey of the literature on determinants of inequality, summarizing the complexity of the inequality dynamics. They stress that many of the determinants are interlinked which implies difficulty in assigning precise effects to individual drivers of inequality. Additionally, they encourage complementary individual country case studies to support the finding of the general cross-country estimates.

Gwartney et al. (2017) provide an economic freedom index of the Fraser Institute.

Both theoretical and empirical studies leave out the issue of importing the financial services from abroad. We include financial globalization from KOF among our control variables.

4 Methodology

5 Results

The benefits of capital markets liberalization seem to be concentrated to the top of the income distribution. Top quintile of the distribution accrues nearly all of the income growth following the liberalization while the share of middle three quantiles decreases and the bottom remains unaffected (Das and Mohapatra, 2003).

Kroszner et al. (2007) show that financial crises have relative more severe impact on the sectors which depend more on external financing. The consequences of crises on firms relate to institutional environment and materialize through lower production capacity and competition.

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A Appendix