



Equity-financing, income inequality and capital accumulation[☆]



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ABSTRACT

The relationship between economic development and income inequality is not neutral vis-à-vis the role of the financial system in responding to the needs of different categories of agents. The literature on persistent inequality shows that taking account of the asymmetric impact of financial imperfections on wealthy and poor agents changes – the Kuznets (1955) relationship between economic development and income inequality. The present paper analyses the effect of equity-based financial intermediation on the evolution of the capital accumulation/income inequality relationship. It is interesting that income inequality disappears when the economy reaches an advanced stage of development, despite the existence of credit market imperfections.

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1. Introduction

In recent decades, income inequality in many developed countries has widened. For example in OECD countries inequality of income has increased since the mid-1980s such that the income of the richest 10% of people in 2005 was nearly nine times that of the poorest 10% (OECD, 2008). Analysis of the relationship between economic development and income inequality has been undertaken by economists since the seminal Kuznets (1955), which argues that an inverted U-shaped relationship exists between two variables: income inequality increases in a first stage, before decreasing once the economy reaches an advanced stage of development. More recent studies (e.g. Aghion and Bolton, 1997; Perotti, 1996; Persson and Tabellini, 1994) confirm the result in Kuznets (1955). However, another branch of the literature (known as the theory of persistent inequality, e.g. Banerjee and Newman, 1993; Piketty, 1997) shows that the relationship between economic development and income inequality diverges from the Kuznets curve when the asymmetric impact of financial imperfections on wealthy and poor agents is considered. In this scenario, poor dynasties face limited investment opportunities and the catching up of wealthy dynasties is not always possible, even at advanced stages of development. In the theoretical models of Galor and Zeira (1993) and Banerjee and Newman (1993), the poor are exposed to credit constraints and prevented from investing in higher education and more

productive activities. This results in dominance over the entrepreneurial class by wealthy dynasties and over the wage-earning class by poor dynasties. A reconciling result is obtained by Matsuyama (2000) within a theoretical framework focusing on the role of credit markets in the evolution of wealth distribution between the wealthy and the poor. The model shows that different scenarios are possible depending on the values of the parameters used. Under some configurations, the rich and the poor are permanently separated. Under others, inequality disappears in the long run and the Kuznets curve prevails.

Shin (2012) examines theoretically the relationship between income inequality and economic growth via a stochastic optimal growth model. The results show that a low income tax policy can be effective in generating rapid economic growth and low income inequality simultaneously, but only in the early stage of economic development. Yet, observing the recent widening of income inequality in many countries, we might conclude that the influence of policy makers on this trend through taxation and monetary policy is ineffective. As mentioned by the OECD (2008) the widening of income inequality could degenerate into social unrest fuelled by the confinement of political power in the hands of a few wealthy citizens. The recent Arab Spring revolutions, particularly in Tunisia and Egypt, exemplify this prediction, as inequality of income and of economic opportunity were among its triggering ingredients.¹ Yet, reducing income inequality is not only important from a social stability and justice perspective, but also from a pure economic growth enhancing angle. Galor and Moav (2004) show that income inequality raises economic growth when the main engine of economic development is capital accumulation. However, when credit

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¹ For Tunisia, which has invested in education and human capital accumulation since its independence in 1956, young graduates nevertheless face high levels of unemployment as a result of a non-inclusive economic development model.

constraints are binding, inequality dampens economic growth of those economies moving toward replacement of physical capital accumulation with human capital accumulation. In the first situation, inequality is beneficial because it is associated with channelling of resources toward owners of capital, who are characterized by higher marginal propensity to save. In the latter situation, credit constraints prevent investment in human capital, whereas equality enables it and promotes economic growth of countries endowed with high return to human capital relative to physical capital. Thus, the natural and legitimate question that follows is, *What are the policy options that reduce income inequality?* Clarke et al. (2013) argue that policy makers should know whether “finance” can be used as an instrument to reduce income inequality.

Clarke et al. (2006) and Beck et al. (2007) show that enhancing availability of credit to the private sector contributes to reduced income inequality. Hence, it is expected that policy makers who work on improving the functioning of financial markets, the enforceability of contracts, and broadly on the development of an inclusive financial system, will tend to reduce inequality of both opportunity and income in their countries² (Banerjee and Newman, 1993; Galor and Zeira, 1993). This is because ‘*the financial system influences who can start a business and who cannot, who can pay for education and who cannot, who can attempt to realize one’s economic aspirations and who cannot. Thus, finance can shape the gap between the rich and the poor and the degree to which that gap persists across generations.*’³ There are two types of institutional arrangements in financial systems: bank-based and market-based financial systems.⁴ To our knowledge, few studies analyse the impact of the degree of risk-sharing allowed by a financial system with regard to the evolution of income inequality. Bonfiglioli (2012) develops a theoretical model predicting an inverse-U relationship between stock market development and income inequality.⁵ The performed empirical tests confirm this inverse-U relationship and show that few countries have reached a sufficient level⁶ of stock market development such that an enhancement of risk sharing (resulting from greater investor protection) reduces inequality.

We develop a theoretical model to analyse the effect of an equity-based financial system on the relationship between capital accumulation and income inequality. In particular, the financial intermediaries that we consider finance investment projects on the basis of equity contracts. On the liability side, the collected deposits are remunerated contingent on the bank’s aggregate return, which is certain under the assumption of complete risk sharing.⁷ On the asset side, financial intermediaries behave as investment companies. In practice, the features of the financial intermediation we consider are typical of the business model of an Islamic bank. Indeed, under Islamic banking, assets and liabilities are expected to be integrated such that borrowers share their profits and losses with the bank, which in turn shares profits and losses with the depositors (Beng and Ming-Hua, 2009; Bourkhis and Nabi, 2013). One advocate of the Islamic banking business model is Chapra (1985), who argues that the entrepreneur and the financier should share equitably any gains and losses. From this perspective, our paper

also relates to another branch of the literature analysing the dominance of debt contracts over equity contracts. A large body of literature shows that debt dominates equity contracts in the presence of information problems and costly monitoring. For example in Townsend (1979) and Gale and Hellwig (1985), debt is optimal because it minimizes monitoring costs. This result is shown when monitoring under equity occurs systematically (deterministic monitoring). Al-Suwailem (2005) considers a random auditing strategy which reduces the higher monitoring cost of the equity contract. This author shows that equity Pareto-dominates debt contracts for a determined range of the financier’s opportunity cost. Ahmed (2000) develops a model analysing the incentive to an entrepreneur to under-report profit in the case where the entrepreneur agreed to share it with a bank at a set ratio. This author proposes an incentive-compatible profit-sharing contract that reduces the moral hazard problem. The suggested incentive mechanism is based on a reward/punishment mechanism involving collateral and random audit. Ul Haque and Mirakhor (1986) develop an IS-LM-like model with profit-sharing contracts and show that the economy behaves as an economy with debt contracts when information is perfect and the environment is certain. However, in the presence of uncertainty, it is shown that the level of investment may increase under certain conditions. The reason for this is that profit-sharing contracts allow greater utilization of capital and higher profitability. Khan (1987) develops a model to delve into the effect of substituting the interest rate with profit sharing in the market for loanable funds. This author points out that contracts based on the sharing of profits and losses finance the more profitable projects. However, Khan also shows that using profit sharing as an instrument of monetary policy would be inefficient.

Our theoretical framework starts from a modified version of the Aghion and Bolton (1997) model. We not only consider equity contracts instead of debt contracts, but also integrate two new features: costly enforcement of financial contracts and unconstrained size of the investment projects. The first extension, which is costly enforcement of credit contracts, is important to consider when analysing access to finance. In Columbia, for example Bond et al. (2008) show that entrepreneurs are subject to severe enforcement problems which constrain expansion of their investments. Enhancing the functioning of credit markets would be beneficial mainly to modestly wealthy households with promising business opportunities. In our model, costly contract enforcement adds to the moral hazard problem (between financial intermediaries and borrowers), constituting a reflection of credit market imperfection. The second extension, which consists of enabling wealthy agents to enlarge their projects beyond the minimum fixed investment, is important to consider when tackling the issue of income inequality. Indeed, ‘*two firms facing the exact same technological options may end up choosing very different methods of production. In particular, one person may start a large or more technologically advanced firm because he has money and another may start a small and backward one because he does not.*’⁸ By considering the equity contract rather than the debt contract, we analyse whether the effect of credit market imperfections on income inequality evolves in the same manner. To this end, we consider that all agents have the same entrepreneurial abilities and are potentially entrepreneurs. They initially belong to one of two dynasties: the poor and the wealthy. Despite credit market imperfections, we show that the poor dynasty has the possibility of catching-up with the wealthy dynasty, causing income inequality to disappear once the poor dynasty accumulates a sufficient level of wealth. The arguments behind this outcome are particular to the equity finance-based economy, because collateral constraints are loosened from the beginning of the process, and the excessive borrowing of the wealthy dynasties is discouraged beyond a particular threshold of wealth accumulation. In particular, borrowing from the financial intermediaries under the equity contract exposes wealthy agents to higher sharing ratios, which increases the cost of

² Galor and Zeira (1993) and Banerjee and Newman (1993) predict a linear negative relationship between financial development and income inequality. Greenwood and Jovanovic (1990) predict a Kuznet’s curve between financial development and income inequality. Only at later stages of financial development are the barriers to financial access for the poor gradually released and the income gaps with the rich lowered.

³ Demirgüç-Kunt and Levine (2009, p. 2).

⁴ Germany, Japan, and France are examples of developed countries endowed with bank-based financial systems, whereas the financial systems of the United States and United Kingdom are market-based systems.

⁵ In Bonfiglioli (2012), income inequality arises from differences in entrepreneurial ability rather than differences in initial wealth and credit-market imperfections, as is generally the case in the literature (Banerjee and Newman 1993, Galor and Zeira 1993).

⁶ The downward part of the inverse-U curve begins for a size of the stock market relative to overall external finance (defined by the ratio of stock market capitalization over credit to the private sector) ranging from 1.34 to 1.53.

⁷ Therefore, our financial intermediaries have some commonality with credit unions in the United States, which distribute surplus income to their members in the form of dividends.

⁸ Banerjee and Duflo (2005, p. 509).

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