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Financial Development and the Distribution of Income in MENA

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Abstract

One of the central concerns in Middle East and the North of Africa (MENA) has been the reduction of poverty and inequality so prevalent in the region. Theoretical predictions on the finance-inequality nexus are inconclusive and mixed. Greenwood and Jovanovic (1990) propose an inverted U-shaped relationship between finance and inequality, while a negative and linear relationship is predicted in some other theoretical models (e.g. Galor and Zeira 1993; Banerjee and Newman 1993). In this study, the relationship between financial development and distribution of income in Middle East and North of Africa is investigated. The study is done by using the GMM estimator based on Dynamic panel data model for 10 countries in MENA region during 2004-2008. The result of this estimation indicates that financial development significantly reduces income inequality in this region. Therefore, policies to improve financial development indicators in the region are suggested.

Keywords: Financial Development, Income Distribution, MENA Region, Generalized Method of Moment Estimator (GMM).

1- Introduction

Many political and economical experiments in the last century have been driven by the search for a system that would reduce inequality and poverty in Middle East and North of Africa (MENA). Most recent studies found an overall positive impact of financial development on poverty reduction; there were exceptions in the case of some Latin American and Asian economies. In the case of East Asia for example, Ahuja et al. (1997) found that despite

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growing economies, poverty in some member countries has increased in recent periods. Fishlow (1972, 1996) provided the same evidence in the case of some of the Latin American countries. Datt and Ravallion's (1992) decomposition also identifies periods in which inequality component has outweighed the growth component of poverty reduction in the case of Brazil. Jalilian (2005) concluded that financial development, by enhancing growth potentials of an economy leads to poverty reduction, if nothing else through the trickle-down mechanism. Baliamoune (2008) found that there is a long-run relationship between income and each financial development indicator, except credit to the private sector in North Africa.

Two contrasting schools of thoughts concerning the relationship between finance and inequality can be generally categorized according to their different assumption on the role of financial development in influencing the distribution of income.

The first school of theories suggests an inverted U-shaped relationship between finance and inequality. Greenwood and Jovanovic (1990) predicted that, along with the financial intermediary development, the evolution of income inequality follows an inverted U-shaped path: in the early stage of development when financial intermediaries are less developed, the economy grows slowly; in the intermediate stage of development, widening income inequality coincides with more rapid economic growth and more deepening financial development; by maturity, when an extensive financial structure is fully developed with income level raising and more agents gaining access to the ultimately become stable in the final stage of development.

The other theoretical model suggests a negative and linear relationship between financial development and income inequality. Galor and Zeira (1993) model the dynamic evolution of income distribution in an economy with indivisibility in human capital investment, where agents live for two periods, and generations are linked through the bequests. They found in the long run, there will be a polarization of wealth between high-income skilled laborers and low-income unskilled ones: the rich/educated families will converge to the high-income steady state, whereas the poor/uneducated ones will converge to the low-income steady state.

More recently, a study by Dollar and Kraay (2002) founds that change in financial development only effect the income growth of the poor by raising average growth. Honoban (2004) also founds that financial depth is

negatively associated with a headcount measure of poverty. On the base of Liang (2006), China's financial development significantly helps to reduce urban income inequality. Bacarreza and Rioja (2008) founds that the income of the poorest quintile has not been affected by expansion in the financial system and also find some evidence for the Greenwood and Jovanovic (1991) hypothesis that this positive effect only begins after a country crosses a certain economic development threshold.

In this paper, we focus on the experience of countries in Middle East and North of Africa. We test the effect of financial development on the distribution of income in 10 MENA's countries from 2004 to 2008. We use GMM dynamic panel estimators from Arellano and Bond (1991) and Blundell and Bond (1998) to confront potential econometric pitfalls like country specific effects, endogeneity and reverse causation. The paper proceeds as follows: section 2 describes the measures of financial development, and inequality. Section 3 discusses the hypotheses and methodology. Section 4 presents empirical results, and then section 5 concludes.

2- Data Description

This paper employs panel data for 10 countries over the period 2004-2008. All countries (MENA)[1] for which data are available over this period are included in this study. The United Nations Wider database, UNCTAD Handbook of Statistics on-line, and World Development Indicators 2009 is the source for all income distribution data. We measure the degree of financial development in a country using the Private Credit variable. This variable is defined as the amount of credit issued by financial intermediaries to the private sector. Private sector is the most commonly used measure of financial development in the literature (Levine, 2005). It accounts for credit issued by bank and non-bank financial institutions, but excludes credit issued by central banks and development banks. Since it measures credit issued by microfinance institutions which are quite important for lower income

1- Algeria, Bahrain, Egypt, Iran, Jordan, Morocco, Oman, Tunisia, United Arab Emirates, Yemen.

households. The data averages for Gini coefficient[1] and Financial Development variables are shown in table (1). On the base of table (1), the average of Gini Index in Iran is higher than the other countries in MENA. And United Arab Emirates is more equal than others.

Table 1: Average Gini coefficient and Financial Development in MENA, 2004-2008

Country	Average Private Credit by Deposit Money Banks / GDP	Average Gini Index
Iran	0.3715	0.4229
Algeria	0.1307	0.3609
Bahrain	0.4161	0.3593
Egypt	0.4659	0.3499
Jordan	0.8234	0.3884
morocco	0.5895	0.4000
Oman	0.2971	0.3285
Tunisia	0.2443	0.4000
United Arab Emirates	0.5039	0.3221
Yemen	0.0646	0.3610

Sources: The United Nations Wider database, WDI 2009, Financial Structure Dataset (2009)

As shown in Fig (1), the average of Financial Development in Jordan is higher than other countries for the period under consideration.

1- The numerator is the area between the Lorenz curve of the distribution and the uniform (perfect) distribution line. The Gini coefficient range from 0 (perfect equality) to 1 (extreme inequality). Hence, higher values mean more inequality.

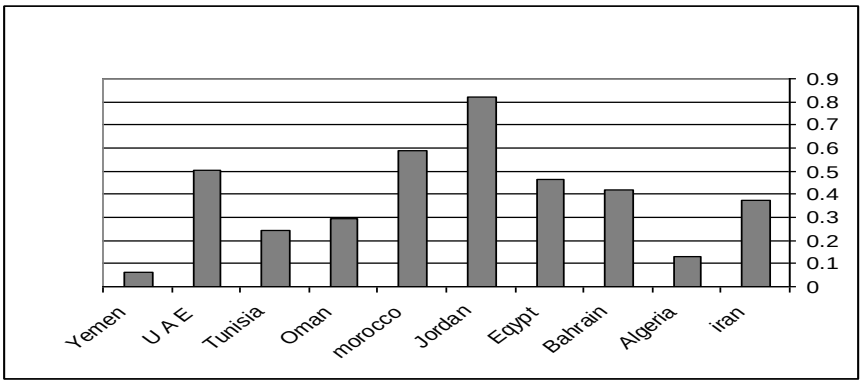

Fig.1. Average Private Credit by Deposit Money Banks / GDP in MENA, 2004-2008

Source: Financial Structure Dataset (2009)

3- Hypothesis and Methodology

We follow the basic regression specification from the growth literature and the one were suggested by Bacarreza and Rioja (2008);

$$y_{i,t} - y_{i.t-1} = (1-\alpha)\, y_{i.t-1} + \beta_1 FD_{i,t} + \lambda\ X_{i,t} + \eta_i + \varepsilon_{i,t} \qquad (1)$$

$$y_{i,t} - y_{i.t-1} = (1-\alpha)\, y_{i.t-1} + \beta_1 FD_{i,t} + \beta_2\ FD^{\,2}_{i,t} + \lambda\ X_{i,t} + \eta_i + \varepsilon_{i,t} \qquad (2)$$

This is the typical representation for dynamic panel estimation. Note that all variable are expressed in logarithm. In this model, $y_{i,t} - y_{i.t-1}$ is the growth rate of the Gini coefficient in country i and year t. The first explanatory variable is the lagged value of the dependent variable, $y_{i.t-1}$, which introduces a dynamic specification. The level of financial development, $FD_{i,t}$, is the key explanatory variable that we are interested in. The hypothesis to be tested is whether β_1 is positive and significantly different from zero. The vector $X_{i,t}$ includes a number of control variables. We are guided by the control variables used in Bacarreza and Rioja (2008). These variables are: growth rate of GDP per capita (as in Dollar and Kraay, 2002), the average number of years of schooling in the population (a proxy for the stock of human capital in the population), and the openness of the economy (computed as export plus import as a share of GDP). Finally,

η_i captures unobserved country-specific effects and $\varepsilon_{i,t}$ is a zero-mean error term that allows for heterogeneous variance structure across cross-section units, but assumes no cross-correlations.

Similarly in the second model, to test the Greenwood-Jovanovic hypothesis of an inverted U-shaped relationship between Financial Development (FD) and inequality, we introduce a squared of the FD variable ($FD_{i,t}^2$) into the estimation.

In empirical investigation, generalized method of moment (GMM) techniques is used. This methodology proposed by Arellano and Bond (1991) and then further developed by Blundell and Bond (1998), is employed here to control for endogeneity in our estimations[1]. This method has a number of advantages. For instance, Beck *et al*. (2000) argue that the GMM panel estimator is good in exploiting the time-series variation in the data, accounting for unobserved individual specific effects, and therefore providing better control for endogeneity of all the explanatory variables. Following Beck *et al*. (2000), we use the GMM estimator to investigate the financial development- income distribution in MENA region.

Employing a GMM procedure eliminates the inconsistencies by taking first differences in the dynamic model and incrementing all the right-hand side variables(Caselli, et al. (1996)). In the first-differenced equations using lagged levels under the assumption that the time-varying disturbances in the original levels equations are not serially correlated. In the empirical work on cross-country growth, two kinds of GMM panel estimator namely first-differenced and system-GMM are employed. Arrelano & Bound (1991) proposed first-differenced GMM estimator and used lags of dependent variables as instrumental variables. But Blundell and Bound (1998) and Bound et al. (1995) showed that the lags of the level are weak instrument when the regression equation is in difference. To solve the problem, Blundell & Bound (1998) proposed GMM-system estimator which combines in a system the regression in differences with the regression in levels.

1- The literature on the GMM estimator is enormous and continually expanding. Useful recent summary of GMM estimation and some further discussion can be found in e.g., Green (2000, Chapter 11) and Wooldridge (2002, Chapter 8 and Chapter 14).

The consistency of GMM estimator depends on the assumptions about the validity of the instrument and error term. Therefore, we use two kinds of tests: instruments validity test and no-serial correlation in error term test. To test instrument validity, we use Sargan test. The null hypothesis of the Sargan test is as follows:

H_0: Over – identifying restrictions are valid.

For the first and second order serial correlation of the differenced residuals, we use m_j statistic where j is the order of autocorrelation. This statistic has an asymptotically normal distribution N (0, 1).

4- Empirical results

Based on the methodology of the GMM system estimator, empirical results of the relationship between financial development and distribution of income in Middle East and North of Africa are reported in table 2. We test the specification of equations with the Sargan test for instrument validity, and then with the serial correlation test for the second order serial correlation. The test results suggest that our instruments are valid, and there exists no evidence of second serial correlation.

First, we test the hypothesis that suggests a negative and linear relationship between finance and inequality (e.g., Galor and Zeira 1993; Banerjee and Newman 1993). We find that financial development significantly reduces income inequality in MENA region. The coefficients of FD are negative and significant at 1 per cent level in two regressions. According to the results in regression model 1, a 1 per cent rise in financial development (FD) is found to be associated with 0.13 per cent decline in MENA region Gini coefficient, indicating that financial development contributes to the improvement of income distribution in MENA region.

Table 2: The results of estimations (sample 2004-2008)

	Regression 1	Regression 2
C	-2.194* (-5.089)	-2.089* (-5.42)
$Y_{i, t-1}$	-0.961* (-6.052)	-0.905* (-6.16)
INFL	0.069 * (15.96)	0.069 * (11.81)
MEAN	0.323** (2.386)	0.198** (4.96)
OPEN	-0.132** (-2.38)	-0.074 (-1.37)
GDP	-0.055* (-4.75)	-0.051* (-3.22)
FD	-0.131* (-4.81)	-0.131* (-4.81)
FD^2	-	-0.004 (-1.04)
Hansen J test p-value AR(2) test p-value	10.28 0.24	11 0.19
N.O.	50	

Notes: All variable are expressed in logarithm. Y: Gini coefficient; FD: financial development Level; OPEN: computed as export plus import as a share of GDP; MEAN: the average Number of years of schooling in the population; INFL: the inflation rate; GDP: growth rate of GDP per capita.

* Significant at the 1% level

** Significant at the 5% level

*** Significant at the 10% level

T-statistics values are presented in parentheses

In both regressions, empirical results show that an increase of openness help to lower income inequality. The growth rate of GDP per capita is negatively and significantly correlated with MENA Gini coefficient. Moreover, the inflation and average of schooling years (as a proxy for human capital) have positive and significant effect on income inequality. On the base of theory, we expected that the effect of the inflation on Gini coefficient is positive. But, we suspected the positive sign for average of schooling years too. Because for developing countries, the average of

schooling years is not very high and the distribution of education is not equal. For example, the average of schooling years between rural and urban area is not equal, therefore the average of income is not equal too. More gaps between averages of schooling years are the more widen income gap.

Our estimation results provide strong support to the linear hypothesis suggested by Galor and Zeira (1993) and Banerjee and Newman (1993), but not to the inverted U-shaped hypothesis of Greenwood-Jovanovic (1990). This result is also consistent with the finding in Liang (2006).

5- Conclusion

In this paper we investigated the impact of Financial Development (FD) on distribution of income in MENA region for which the necessary data were available for the period 2004-2008. We found that financial development significantly contributes to the reduction of MENA region income inequality. Our estimation results provide strong support to the linear hypothesis, but not to the Greenwood-Jovanovic hypothesis of an inverted U-shaped relationship between financial development and inequality. Therefore, policies to improve financial development indicators in the region are suggested.

Moreover, empirical results showed that an increase of openness and growth rate of GDP per capita helped to lower income inequality while inflation and average of year schooling increased income inequality.

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