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DOES FINANCIAL DEVELOPMENT CONTRIBUTE TO INCOME INEQUALITY IN LATIN AMERICA?

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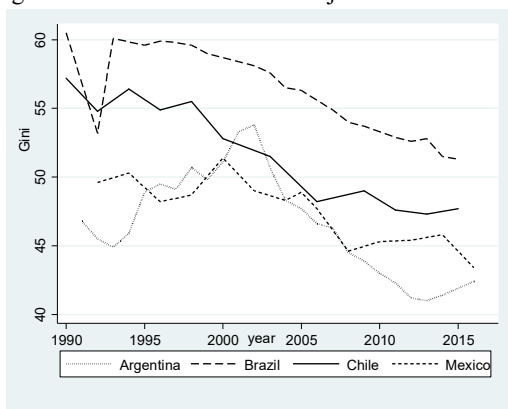
Abstract: Latin America has experienced a trend of substantial reduction in inequality over last few decades. We investigate the effects of rapid development of financial sector on inequality in the region. In particular, we estimate a panel with country fixed effects based on a newly compiled dataset. We found that financial deepening has exacerbated income inequality on the continent. The results suggest that there is no Kuznetz curve in Latin America. Along with education and GDP level the inflation rate is associated with reduction in income gap. While exports are neutral, tax revenues and FDI aggravate inequality.

Keywords: Income inequality, financial deepening, poverty, income distribution, financial development, Latin America

1. INTRODUCTION

Latin America is still a continent with high income inequalities deeply rooted in colonial heritage of extractive institutions (Acemoglu, Johnson and Robinson 2001) focused on export of agricultural products and raw materials. However, during recent decades most of the countries in the region experiences a substantial downward trend in income inequality (Gasparini and Lustig 2011), see Figure 1. Concurrently with this trend financial services have seen dramatic development along a number of dimensions. Thus, we asked what was the effects of changing financial landscape on income inequality?

Figure 1: Gini coefficients for major countries



The paper contributes to the existing literature by focusing narrowly on Latin America (most studies of the kind as done based on a large group of very diverse developing countries). We assemble a novel dataset from variety of sources covering the recent Great Recession and investigate

educational attainment in the context of financial deepening. We examine data for existence of Kuznetz curve. Finally, we address rather contrasting views found in literature on the role of financial deepening and FDI for income inequality.

Our results confirm beneficial effect of financial deepening and educational attainment on reduction of inequality in Latin America. We find no clear signs of Kuznetz curve and aggravating influence of and FDI on income distribution. Exports and tax revenues are not significant.

2. BRIEF LITERATURE REVIEW

Studies of the nexus of inequality and financial development report rather contrasting findings. Dabla-Noris (Dabla-Noris, et al. 2015) suggest that financial deepening is associated with worse inequality. Their explanation focuses on access to financial services. They suggest that small group of relatively wealthy individuals have much easier access to credit for variety of social and economic reasons. By the same token, Zhang and Naceur (Zhang and Ben 2019) conclude that financial liberalization seems to have adverse effects on income distribution.

In contrast, there a number of authors suggesting that financial deepening is associated with improvements in income gap. Papers report similar conclusion for a number of individual developing countries (Meyer Bittencourt 2006, Shahbaz and F. 2011) or datasets spanning many countries (Jauch and Watzka 2012). For example, Demirguc-Kunt and Levine (Demirguc-Kunt and Levine 2009) claim that financial technology favorably affects growth rate and therefore reduces poverty rates. This improves income gap.

Similarly, there is no consensus about the effect of education on income distribution. Since education implies higher skill premiums it could be associated with worse income gap (O'Neill 1995). However majority of studies does suggest that educational attainment tend to be associated with better inequality outcomes (De Gregorio and Lee 2002, Abdullah, et al. 2015, Mikek and Simmons 2019). As diverse educational achievements tend to be associated with different skill levels, dispersion of education outcomes, not just levels, is relevant. Therefore, a number of studies pay special attention to dispersion (De Gregorio and Lee 2002, Coady and Dizioli 2018) or education and some even include education Gini coefficients into their analysis (Dabla-Noris, et al. 2015). Tsounta and Ouseke (Tsounta and Ouseke 2014) conclude that educational attainment is one of major contributors to decreasing inequality in Latin America. The results of Dabla-Noris (Dabla-Noris, et al. 2015) and Mikek and Simmons (Mikek and Simmons 2019) seem to suggest the same conclusion. Along with these, Sylwester (Sylwester 2004) and De Gregorio and Lee (De Gregorio and Lee 2002) propose that countries could reduce the income gap by devoting more substantial resources to further develop human capital of their residents.

There is a wide shared view that poverty is harmful for income distribution outcomes. Ravallion (Ravallion 2001), Nijhawan and Dubas (Nijhawan and Dubas 2006) and others report rather robust conclusion that poverty through its effect on potential earning capacity. This is due to health (nutrition), access to infrastructure, and other barriers. In this way it considerably contributes to inequality.

Similarly, the relevance for inequality of both the level and growth of aggregate income enjoys a wide agreement in literature. As the level of output increases income gap is reported to be decreasing in wide variety of countries (Beck, Demirguc-Kunt and Levine 2007, Jauch and Watzka 2012, Gasparini and Lustig 2011, Tsounta and Ouseke 2014, Mikek and Carter 2017). Countries with higher GDP per capita are able to provide better access to infrastructure, education, health services etc. for the lower part of the income spectrum thereby closing the income disparities to some degree. Ever since the seminal paper of Kuznetz (Kuznetz 1955), researcher investigate if the inequality might follow the Kuznetz curve: increasing as income increase to a certain point and then start dropping as countries become ever richer in and inverted U curve pattern (Tsounta and Ouseke 2014, Jauch and Watzka 2012).

Growth of output, however, could have negative effects on income distribution (Dabla-Noris, et al. 2015) due to technological changes that favor skilled labor.

There is no agreement in existing studies about the effect of international trade on inequality. While some claim that it reduces income gap (Jaumotte, Lall and Papageorgiou 2013) others point out that it facilitates transfer of more advanced technologies and therefore exacerbates income gap through higher skill premium (Dabla-Noris, et al. 2015). Furthermore, there are at least two mechanism through which FDI affect income distribution. On one hand, FDI are vehicle for transferring more advance technologies and therefore worsen inequality through skill-biased technological development (Jaumotte, Lall and Papageorgiou 2013, Mikek and Carter 2017). In contrast, some consider effect of FDI on growth and find inequality reducing effect (Tsounta and Ouseke 2014).

Finally, many authors study and propose suggestions for public policies that would help reducing income gap (Tsounta and Ouseke 2014, Dabla-Noris, et al. 2015, Demirguc-Kunt and Levine 2009, De Gregorio and Lee 2002).

3. METHODOLOGY

Data span 1990 – 2017 and covers 16 major Latin American countries. Data from World Development Indicators (World Development Indicators 2019) were supplemented with International Financial Statistics (IFS 2019), FRED (FRED 2018), and Human Development Indicators (HDI 2019). We measure inequality as income based Gini coefficient and narrowly define financial development as financial deepening. We estimated a fixed effect panel with dummies for each country as follows:

$$\text{Gini}_{it} = b_0i + b_1\text{FD}_{it} + b_2\text{SCH}_{it} + b_3\text{PVRT}_{it} + b_4\text{GNIPC}_{it} + b_5\text{GNIPC}_{it}^2 + b_6\Delta\text{GDP} + b_7\text{Z}_{it} + u_{it}$$

where $i = 1, \dots, N=16$, for country and $t = 1, \dots, T=28$, for year.

u_{it} is the white noise error term and b_0i is as country specific constant, GNIPC is gross national income per capita, SCH stands for schooling, FD measures financial deepening, ΔGDP stands for growth rate, PVRT for the share of people in poverty, Z is a vector of other standard control variables (such as exports, inflation, etc.). Export is measured as a growth rate, FDI is a share of FDI in GDP and Tax shows a share of tax revenues in GDP.

While our primary interest will be captured by the coefficient on financial deepening, we will also check for the existence of Kuznetz curve including the square of aggregate income. Given conflicting claims in the literature, it is not clear what to expect for the sign of b_1 coefficient. By the same token, studies report contrasting results for b_4 . This is no different for some of the control variables, such as export and FDI. However, we expect to see a

negative b_2 that would indicate the educational attainment contributes to reduction of inequality

4. RESULTS AND DISCUSSION

Overall, the results indicate satisfactory determination coefficients of about 0.6. Table 1 below reports the results of our initial estimates. The benchmark model is given in column (1) of Table 1.

The coefficient on educational attainment is negative and highly significant, suggesting a drop of about 2 percentage points in inequality associated with additional year in mean years of schooling (De Gregorio and Lee 2002, Mikek and Simmons 2019). Given that the region experienced an increase of a bit more than 3 years in mean years of schooling over the observed period, this is a substantial contribution to dropping Gini coefficients in the region.

Table 1 also shows that the level of output and its growth rate correlate with lower income gap, as was expected given the surveyed literature above (Ravallion 2001). Inflation rate affects income distribution in several ways. It seems that the one most prominent here is the redistribution of wealth from relatively rich (lenders) to relatively poor (borrowers) (Zhang and Ben 2019).

Overall, we found no evidence for existence of Kuznetz curve (Kuznetz 1955) as coefficients on squared output term are not significant. We notice a significant one in column 3, however, the coefficient there is absolutely miniscule (of order 10^{-8}).

Additionally, inclusion of poverty rate in column (3) reduces the effect of education which, however, remains substantial and significant

Table 1: Initial estimates (dependent variable Gini coefficient)

	(1)	(2)	(3)
FD		0.063** (0.000)	0.059** (0.000)
SCH	-2.027** (0.000)	-2.333** (0.000)	-0.774* (0.012)
PVRT			0.464** (0.000)
GNIPC	-0.001+ (0.086)	-0.001* (0.038)	0.001 (0.154)
GNIPC2	0.000 (0.620)	0.000 (0.658)	-0.000** (0.004)
Δ GDP	-0.132* (0.014)	-0.108* (0.039)	0.013 (0.766)
Inflat.	-0.001 (0.105)	-0.003** (0.002)	-0.003** (0.000)
_cons	71.301** (0.000)	72.309** (0.000)	49.201** (0.000)
N	297	297	297
R^2	0.430	0.462	0.627

p -val. in parentheses, + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

Nevertheless, the most important result in table 2 is the inclusion of financial deepening into the benchmark model. Results suggest that there is a significant effect of financial deepening on income distribution. In particular, an increase of the share of credit in GDP by a percentage point is associated with higher Gini coefficient by about 0.04-0.06 percentage points. As shown in table 2 below, this result is robust across all estimated models. Consistently, further financial deepening correlates with worse income gap.

There may be different explanations for the phenomena, however, most likely seems to suggest that the benefits of expansion in credit are concentrated in relatively small group (or groups) of people across Latin America (Dabla-Noris, et al. 2015). People from the bottom part of the income spectrum face variety of obstacles to be able to benefit from financial deepening. Low education levels (with low literacy), poor health and nutrition, limited access to financial and other infrastructure, lack of adequate collateral and necessary tacit knowledge, and administrative barriers all likely contribute to limited benefits of credit expansion for poor (Demirgiuc-Kunt and Levine 2009, Dabla-Noris, et al. 2015). These barriers don't limit only access to the financial services but also more broadly economic opportunities for less fortunate. Which additionally limits the likelihood of obtaining credit. Moreover, there are large discrepancies between rural and urban Latin America that are particularly pertinent to financial development and access to financial services.

In table 2 we present results of estimation beyond the initial ones. At the outset, note that financial development and educational attainment for all four estimated models remain highly significant with the same signs as in table 1 (inequality reducing schooling and inequality increasing financial deepening). Similarly, coefficients on inflation rate, output level and poverty rate across all estimated models remain significant and with consistent signs (as seen in Table 1).

Considering export in models (4) and (6), we find no statistically significant correlation between international trade (growth of export) and inequality in the region. The results are consistent with some previous studies (Dabla-Noris, et al. 2015).

Table 2: Beyond initial results (dependent variable: Gini coefficient)

	(4)	(5)	(6)	(7)
FD	0.058** (0.000)	0.044** (0.001)	0.044** (0.001)	0.058** (0.000)
SCH	-0.656* (0.031)	-0.737* (0.013)	-0.742* (0.012)	-0.715+ (0.075)
GNIPC	-0.001** (0.000)	-0.001** (0.000)	-0.001** (0.000)	-0.001** (0.001)
Inflat.	-0.003** (0.000)	-0.003** (0.000)	-0.003** (0.000)	-0.003** (0.000)
PVRT	0.417** (0.000)	0.422** (0.000)	0.421** (0.000)	0.519** (0.000)
Export	0.010 (0.580)		0.009 (0.621)	
FDI		0.296** (0.000)	0.295** (0.000)	
Tax				0.205+ (0.062)
_cons	53.493** (0.000)	54.764** (0.000)	54.688** (0.000)	51.308** (0.000)
N	297	297	297	214
R ²	0.615	0.637	0.637	0.602

p-val. in parentheses, + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

FDI estimates are given in columns (5) and (6). And increase of a percentage point in FDI, as a share in GDP, is consistently associated with an increase Gini coefficients in the region for about a third of a percentage point. Such results concur with findings of Cornia (Cornia 2012) and te Velde (te Velde 2003). Such coefficients indicate that FDI in rapidly growing Latin America have most likely been skill-biased favoring those with high skills at the expense of those with low skills (Dabla-Noris, et al. 2015). This calls for further developing of public policy programs that will stimulate accumulation of human capital in the region. An example of such program is Mexico's Progresa/Oportunidades/Prospera, for which Lustig, Lopez-Calva, and Ortiz-Juarez (Lustig, Lopez-Calva and Ortiz-Juarez 2013) suggest to have contributed as much as staggering 18% to the reduction Gini coefficient.

Our results are in stark contrast with claims of Tsounta and Ouseke (Tsounta and Ouseke 2014) that it was FDI that considerably contributed to reduction of income inequality across Latin America. However, we suspect that a richer model that the one they employed may have rendered different results.

Finally, the literature (Tsounta and Ouseke 2014, Dabla-Noris, et al. 2015, Mikek and Carter 2017) regularly includes tax revenues, here measured as a share of GDP, as an indicator of redistributive policies by the governments. Higher taxes are most likely collected from those that can actually pay them on the upper part of the income distribution. Thus, they lower the incomes of wealthy. In this way they

diminish income disparities. Additionally (but by no means guaranteed), the government may use some of these funds to finance social programs that are most likely to benefit those from the lower part of the income spectrum. Two examples of such programs are Progresa/Oportunidades/Prospera in Mexico and Bolsa Familia and Beneficio de Prestacao Continuada in Brazil (Ferreira, et al. 2011). The results seem to suggest that tax revenues actually increase income inequality indicating relatively low redistributive effect. This corresponds to findings of Ferreira et al. (Ferreira, et al. 2011) suggest that the program for Brazil was not effective as the prices of food items grew over the period of the program.

5. CONCLUSIONS

We studied effects of financial deepening on income inequality and found that:

1. Financial deepening exacerbated the inequality in Latin America over the investigated period. This is likely due to easier access to financial services for a small share of population.
2. In contrast, educational attainment, that increased on average by about 3 years over the studied period, was the major contributor to improving Gini coefficients.
3. There is no clear evidence of the Kuznetz curve for the continent.
4. FDI and tax revenues worsen inequality while exports are not statistically significant.

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