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HOW DOES URBAN CONCENTRATION AFFECT POVERTY IN DEVELOPING COUNTRIES?

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Abstract

The present paper addresses an important issue for developing countries namely the interaction between urban concentration (defined as agglomeration of population in large cities) and poverty. It provides the estimation results of a system of equations that includes poverty, urban concentration and growth as dependent and explanatory variables, distinguishes poverty in rural and urban areas and allows feedbacks. Overall, the results show that the relationship between urban concentration and poverty involves three opposite effects. This is a direct effect by which urban concentration increases poverty in both urban and rural areas. An indirect effect by which urban concentration reduces poverty in both areas: it fosters growth which translates in higher per capita income which, in turn, reduces poverty in both areas. Finally, there is a feedback effect by which higher gap between rural and urban poverty increases urban concentration. The net effect has been computed by solving the estimated system. It shows that national poverty would have been higher without urban concentration. However the marginal contribution of urban concentration is negative. The urban-rural poverty gap is lower with urban concentration but presents a U-shaped form. The reduction is higher for low levels of urban concentration and lower for high levels of urban concentration. The turning point is around 25% of urban concentration.

JEL Classification: R5, O4

Keywords: Urban concentration, Poverty, Growth

ملخص

تتناول هذه الورقة قضية هامة بالنسبة للبلدان النامية وهي التفاعل بين التركز الحضري (كما هو موضح من تكتل السكان في المدن الكبيرة) والفقر. توفرهذه الورقة نتائج تقدير نظام من المعادلات التي تشمل الفقر، و التركز الحضري والنمو كمتغيرات تابعة و تفسيرية ، وتميز الفقر في المناطق الريفية والحضرية . وعموما ، فقد بينت النتائج أن العلاقة بين التركز الحضري والفقر ينطوي على ثلاثة آثار عكسية . وهناك تأثير مباشر من خلال التركز الحضري الذي يزيد من الفقر في كل من المناطق الحضرية والريفية. هناك ايضا تأثير غير مباشر من التركز الحضري والذى يقلل الفقر في كل من المناطق : فهو يعزز النمو الذي يترجم إلى ارتفاع نصيب الفرد من الدخل والذى، بدوره ، يقلل من الفقر في كل المناطق . وأخيرا ، هناك تأثير ردود الفعل ووجود الفجوة أكبر بين الفقر في المناطق الريفية والحضرية والتى يزيد من التركز الحضري . تم احتساب الأثر الصافي. وان دل على شئ فإنه يدل على أن الفقر كان يمكن أن يكون أعلى من دون التركز الحضري . ولكن المساهمة الهامشية من التركز الحضري هى مساهمة سلبية . فجوة الفقر بين الريف والحضر أقل مع التركز الحضري ولكن يعرض نموذج على شكل حرف U . الحد من الفقر أعلى فى المستويات الاقل من التركز الحضري وأقل فى المستويات العالية من التركز الحضري . تتكون نقطة التحول حول 25 ٪ من التركز الحضري .

1. Introduction

Urban concentration (defined as agglomeration of population in large cities) and poverty are two prominent characteristics of many developing countries; including the MENA. Both represent serious challenges for the development process.[1] Moreover, these characteristics are interrelated. A good understanding of their determinants and of the nature of their relationship is important for taking decision that could enhance the development process. Therefore, the present paper seeks to investigate the issue for MENA countries in a comparative perspective with other developing countries (LDCs). Specifically, the paper investigates the relationship between urban concentration and poverty.

The exercise is not easy because the relationship between urban concentration and poverty is a complex one. On one hand, concentration, by offering jobs to rural people or fostering macroeconomic growth, could reduce poverty. On the other hand concentration of large population in cities might induce not only a widening of income inequality between regions of a country but also a worsening of the situation of people living in cities through the formation of slum and increase in crime and unrest. Moreover, the empirical literature suggests that such relationship is neither unidirectional (urban concentration and poverty affects each other) nor linear (the effects are different depending on the level of the two variables).

The related literature doesn't allow providing useful policy recommendations because it suffers from various shortcomings. Either it treats the various cannels of the relationship separately, ignores the possible non-linearity and feedback or doesn't pay enough attention to simultaneity and to the quality of instruments. The present paper will address these shortcomings by estimating a system of equations including poverty, urban concentration and growth as dependent and explanatory variables, distinguishing poverty in rural and urban areas, allowing for feedback and collecting primary data to construct valid instruments.

While there is a variety of papers dealing with urbanization and growth or with growth and poverty, the present paper is, to about knowledge, the first to investigate econometrically the interplay between urban concentration and poverty. Beside the academic novelty of this work, it could have important implications from a policy point of view. By identifying the relationship between urban concentration and poverty in MENA countries and the potential existence of a threshold above which further urban concentration becomes detrimental to poverty, we could determine countries where such a concentration is, or will become, an issue and that needs specific policies.

The rest of the paper is organized as follows. Section 2 discusses the relation to the literature. Section 3 is devoted to a descriptive analysis. Section 4 presents the methodology which is applied in the econometric analysis of Section 5 and the simulation analysis of Section 6. Section 7 concludes.

2. Relation to the Literature

This section motivates the methodology which will be used in the rest of the paper. It presents the main findings of the literature about the relationships between urban concentration and poverty. While observation suggests that urbanization is increasing and might induce an increase in poverty, the literature puts forward mechanisms that make such situation reversible.

Concentration of population in urban areas is a challenging question for all countries and especially developing ones. On one hand, theoretical analyses as well as empirical evidence suggest a positive relationship between urbanization and economic growth. For instance, a

[1] In what follows we will use the terms urban concentration and urbanization indifferently to talk about agglomeration of population is large cities.

recent World Bank report, devoted to economic geography, largely praised urbanization for enhancing countries´ income in the long-run (World Bank, 2009). The theoretical foundations for such effects stem from the benefits in terms of information spillovers, labor market pooling, access to intermediate inputs, and proximity of large markets (Fujita and Ogawa, 1982; Helsley and Strange, 1990; Becker and Henderson, 2000, and Abdel-Rahman and Fujita, 1990). These factors lead to higher productivity of firms and workers which results in higher overall economic growth. However, urbanization might also induce congestion, increase in poverty, environmental degradation which reduce productivity (Glaeser et al., 2008). Actually, the relationship between urbanization and economic growth is complex and depends on several factors such as the level of development; geographical concentration of economic activity, the degree of urbanization itself and the way it takes place and it is organized (Castells, 2011). Empirical evidence confirms that the relationship between urbanization and economic growth is not as straightforward as one might imagine. For instance, Bloom et al. (2008) found no evidence of a general causal effect of the share of urban population on economic growth which questions the well founding of growth policies based on the development of urbanization. In contrast, Brülhart and Sbergami (2009) found that the relationship between urbanization and economic growth might be non-linear. They suggest a critical level of per capita GDP (US $10.000 in 2006 prices) above which further urbanization becomes detrimental to growth. Others such as Davis and Henderson (2003) found a reverse causality between growth and urbanization i.e. growth drives urbanization.

Provided one takes the positive effect of urbanization on economic growth for granted, he/she expect urbanization to reduce poverty. Indeed, Dollar and Kraay (2002), among others, have shown that macroeconomic growth translates 1 for 1 in poor's income growth. Moreover, urbanization can offer rural workers job opportunities and, then, contribute to reducing regional income inequality. While these findings seem robust to different concepts of poverty, a set of other factors can inhibit such beneficial effects. First, some evidence shows that the link between growth and poverty is fragile. Lopez (2004), examining the impact of various policies on inequality, found that while improvements in education and infrastructure could lead to reducing income inequality, financial development, trade openness and decreases in the size of the government might have the reverse effect i.e. increase inequality. Their calculations suggest that, at least in the short run, the negative impact of these policies might offset the positive impact on inequality. Such fragility of the link between growth and poverty weakens the presumption of a positive relationship between urbanization and poverty. Moreover, concentration of population in urban areas can become highly problematic with the formation of slum and increase in crime and unrest. Cities are not always able to meet the challenges of absorbing large population flows, providing residents with an adequate level of public goods and managing other consequences of congestion.

So far we took urbanization are a predetermined variable. In reality it is not. It is the consequence of two major factors: intra-country migration and natural increase. The former seems to play the most important role and, hence, we will focus on it. Migration from rural to urban areas is the focus of a rich economic literature. Early contributions (e.g. Brueckner, 1990) saw such migration simply as the result of the differences in income and market opportunities between urban and rural areas. Others (Mijiyawa et al. 2011; Ades and Glaeser, 1995 and Davis and Henderson, 2003) emphasized political economy factors such as federalism and democratization. They argued that political institutions and policies may encourage over-concentration. The concerned cities are, in general, national capitals (e.g. Paris, Mexico City, Cairo) but non-capitals could also be concerned (e.g. São Paulo or Casablanca) because of other reasons such as access to ports, existence of local amenities, cost and availability of public goods etc.

To sum up, the literature so far suggests that urban concentration can affect growth and the latter might have an impact on poverty depending on, among others, education level, infrastructure, financial development and the size of the government. However, urban concentration is not exogenous and depends on the differences in income and market opportunities between urban and rural areas as well as federalism, democratization and infrastructure. Finally, the relationship between urbanization, growth and poverty depends on the level of some of these variables themselves. The final outcome is, therefore, an empirical question that the present paper seeks to investigate.

3. Descriptive Analysis

The evolution of urbanization stems mainly from two major factors: intra-country migration and natural increase. Although figures on internal migration are hardly available, one can deduce from the speed of urbanization that the former factor plays the most important role (Lucas, 2004). Following Brockerhoff (1995), migration from rural areas accounted for more than half of urban growth in Africa between 1960 and 1970 and of about 25% between 1980 and 1990. In Brazil, over 20 million rural people came to urban areas over the period 1950-1970. In India, migration from rural to urban areas counted for 30% (around 20.5 million) of urban growth during the 1990s.

Here we focus on urban concentration computed as the percentage of population in urban agglomerations of more than 1 million in total population. Figure 1 shows that it is already very high and steadily increasing in many parts of the developing world. It reached 35% in Latin America. Where it is still low (around 13% in Sub-Saharan Africa; SSA), it is increasing quickly. SSA is seen by the United Nations as the fastest urbanizing region of the world and will be predominantly urban by 2030 (Dudwick et al., 2011). In the Middle East and North Africa (MENA), urban concentration is presently around 20%; second after Latin America and above the levels in Asia. It is, however, stagnant since the early 1990s.

Inside the MENA, the picture is highly contrasted (Figure 2). The highest level of urban concentration is found in Syria (around 32%) and the lowest is found in Yemen and Algeria (just below 10%). The largest country in the Region, Egypt, shows an urban concentration level of around 20% but it is decreasing since the early 1990s. A similar decreasing trend appears in other countries of the Region.

In parallel to the evolution of urbanization, income inequality seems to be widening between regions of the same country and poverty of people living in cities seems to be worsening. A number of researches documents that poverty is becoming more and more an urban phenomenon especially in the developing world. Ravallion et al. (2007) showed that rural poverty across the world is higher than the urban but that the number of rural poor decreased while the number of urban poor increased between 1993 and 2002.

Here we focus on poverty as measured by the “Poverty headcount ratio at urban poverty line (% of urban population)” and the similar for rural areas published in the WDI of the World Bank. Due to data availability, we are not able to provide a consistent time comparison and we preferred taking the average over 1990-2010. Figure 3 shows that rural poverty is the highest in Latin America where the gap between rural and urban areas is also the largest. Sub-Saharan Africa ranks second in term of rural poverty with also a large gap between rural and urban areas. The MENA exhibits a much lower poverty levels as well as a lower gap between rural and urban areas.

Among MENA countries, poverty is the highest in Yemen and the lowest in Tunisia. However, both countries exhibit the largest gap between rural and urban areas. In Egypt, poverty is similar to the rest of the countries but it is the only one where urban poverty is

higher than rural. The gap between rural and urban poverty is also marked in Algeria and Morocco.

4. Methodology

The discussion in the previous section suggests that urban concentration might affect poverty directly and indirectly through the relationships "concentration-macroeconomic growth" and "macroeconomic growth-poverty". Both the direct and the indirect effects might be positive or negative depending on a number of factors. The proposed methodology seeks to disentangle the various channels through which urban concentration affect poverty. As the literature suggests that the impacts may also differ between rural and urban areas, the analysis will distinguish the impacts on the two areas. The objective is to provide recommendations in order to limit the potential negative effect of urban concentration on poverty in rural and urban areas.

4.1 The model

We suggest estimating simultaneously the following four equations system:

$$\ln\left(yr^{P}_{i,t}\right)=\alpha_0+\alpha_1\ln\left(y_{i,t}\right)+\alpha_2\ln\left(Concentration_{i,t}\right)+\nu_{i,t} \quad (1)$$

$$\ln\left(yu^{P}_{i,t}\right)=\eta_0+\eta_1\ln\left(y_{i,t}\right)+\eta_2\ln\left(Concentration_{i,t}\right)+\mu_{i,t} \quad (2)$$

$$\ln\left(y_{i,t}\right)-\ln\left(y_{i,t-1}\right)=\beta_0+\beta_1\ln\left(y_{i,t-1}\right)+\beta_2\ln\left(S_{Ki,t}\right)+\beta_3\ln\left(S_{H_{i,t}}\right)+\beta_4\ln\left(\delta+g^{*}+n_{i,t}\right)+\beta_5\ln\left(Concentration_{i,t}\right)+\varepsilon_{i,t} \quad (3)$$

$$\ln\left(Concentration_{i,t}\right)=\gamma_0+\gamma_1\left(yu^{P}_{i,t-1}-yr^{P}_{i,t-1}\right)+\gamma_2\ln\left(Concentration_{i,t-1}\right)+\xi_{i,t} \quad (4)$$

where

yr^{P}	is poverty headcount ratio at rural poverty line (% of rural population)
yu^{P}	is poverty headcount ratio at urban poverty line (% of urban population)
y	is average national real per capita income
Concentration	is an indicator of urban concentration
S_K	is the rate of savings in physical capital,
S_H	is the rate of saving in human capital,
g^{*}	is the rate of exogenous technical progress,
n	is the population growth rate,
δ	is the depreciation rate of physical capital
$\nu, \mu, \varepsilon, \xi$	are error terms

indices *i* and *t* refer to the country and time respectively.

Equations 1 to 4 are standards in the literature. The only novelty here is to estimate them simultaneously. Since one objective of the paper is to draw useful policy recommendations, we need disentangling the various channels through which urban concentration affect poverty. Hence, we must estimate the four equations simultaneously instead of one reduced from linking poverty and concentration.

Equations 1 and 2 are direct extensions of Dollar and Kraay (2002). The parameters α_1 and η_1 measure the elasticity of poverty, in rural and urban areas respectively, with respect to national income. Equation 3 is in the tradition of Barro (1991) and Mankiw et al. (1992). The lagged per capita income $y_{i,t-1}$ captures the possible conditional convergence of income. The variable S_K is the investment in physical capital which is expected to have a positive impact on the growth rate. The variable S_H is the rate of saving in human capital which should have a positive impact on growth. Equations 1 to 3 incorporate urban concentration in level. Given the above mentioned non-linearity of the relationship between urbanization and growth we have also included the square of urban concentration. However, this variable didn't prove significant and we disregarded it. One possible explanation is that we are focusing on developing countries and the threshold income level for above which nonlinearity emerges is not in our sample. Finally, Equation 4 is inspired by Brueckner (1990) and Deng et al. (2008) and relates urban concentration to the differences in poverty of urban and rural populations. A high difference in poverty should increase urban concentration.

4.2 Implementation

4.2.1 Data

The four equations system will be estimated using data for the largest available sample of developing countries and time coverage. As an indicator of urban concentration, we use the share of population in urban agglomerations of more than 1 million in total population. The rate of savings in physical capital and the rate of saving in human capital will be measured by the ratio of investment to GDP and the secondary school enrolment ratio respectively. Following Mankiw et al. (1992), it is assumed that $g^*+\delta$ is equal to 0.05. All these variables are readily available from the WDI of the World Bank.

4.2.2 Estimation

Traditional estimations of the equations consisted in running a simple OLS on the time average of the variables for each country; i.e. cross-section data. This has, however, the inconvenience of not using the information contained in the time dimension of the sample. To meet this shortcoming, one would ideally use the recent development in the Panel-Cointegration methodology which allows dealing with the growth and the cycle mixture in economic series. By controlling for the cycle component, the main determinants of the long-run components are accurately identified. While we could get enough time and country dimensions to justify the use of such a methodology, keys variables such as the indicator of human capital are impacted by the existence of missing observations through time. The Panel-Cointegration methodology cannot, therefore, be used here. To try grapping as much as possible of the information in the time dimension of the sample, we will use the alternative strategy consisting of 5 years averages of each variable.[2]

The equations are in general augmented with additional explanatory variables. The choice of such variables is not easy. For instance, Duarluf et al. (2005) showed that the number of regressors that can be potentially added to a growth regression approaches the number of countries available in the broadest samples. This plethora of potential regressors illustrates one of the fundamental problems with empirical growth research, namely, the absence of any consensus on which growth determinants should be included in a regression. A number of economists suggest that one focuses on a "core" set of explanatory variables that have been shown to be consistently associated with the studied phenomenon and evaluate the importance of the variable of interest (here urban concentration) conditional on the inclusion of the core set.

[2] When an observation is missing for a given year, the average is computed over the remaining years.

It remains that the equations don't directly control for a number of factors among which political economy has been found to play an important role. For instance, Davis and Henderson (2003) found that urban concentration is affected significantly by democratization, federalism, and whether a country was a former planned economy. However, taking explicitly account of all these factors is beyond the scope of this paper and might even induce confusion. The econometric approach adopted is expected to limit the inconvenience.

Estimation using traditional methods such as OLS, fixed or random effects methods may, however, results in inconsistent parameter estimates because also of simultaneity issues. For instance, Davis and Henderson (2003) found a reverse relationship between growth and urbanization i.e. growth drives urbanization. The causal relationship between poverty and the average incomes is also possibly bi-directional. To address these problems, we use the simultaneous equations system-GMM estimation method (Arellano and Bond, 1991 and Blundell and Bond, 1998). The method uses lagged values of regressors as instruments for right-hand-side variables and also introduces lagged endogenous (left-hand-side) variables as regressors. Here, we also use the geographical characteristics of the country, which are truly exogenous, as additional instruments. The latter include the share of the country's surface occupied by plains, hills, mountains etc. As shown by Greene (2003), the inclusion of the lagged dependent variables among instruments in GMM-system estimation takes account of country fixed effects (dummies). This way, a large part of the political economy variables discussed above is controlled for. To gauge the validity of our estimates we use the test of overidentifying restrictions.

5. Estimation Results

Table 1 presents the results of the estimation using the three different methods discussed in Section 4 (OLS, Fixed effects and GMM). The period of observation is 1980-2009 and all variables are 5-year averages. The names of the 65 countries in the sample are given in Appendix A.

The fixed effects test recommends disregarding the OLS results. With the fixed effects results, the overall quality of the fit is good for the growth equation and very good for the others. When significant, the coefficients have a sign in accordance with the findings of the literature. With this method, however, equations are estimated separately and, hence, the interactions between the dependent variables are not adequately taken into account. Given that the overidentifying restrictions test supports the GMM results and that with the fixed effects we are not sure that there is no endogeneity issue, we will focus on the GMM-system results. With this method, all the coefficients are significant (except population and human capital in the growth equation) with signs in accordance with the findings of the literature. A higher national income is associated with lower poverty in both urban and rural areas. The levels of coefficient don't seem statistically different between the two areas. Higher urbanization is, in contrast, associated with higher poverty in both areas and the levels of the corresponding coefficient don't seem statistically different between the two areas. The coefficient of the lagged dependent variable in the urban concentration equation indicates a high degree of persistence over time which is not surprising. In a similar vein to Brueckner (1990), urban concentration depends on the poverty gap between rural and urban areas. Our results show that urban concentration is higher the higher is rural poverty as compared to urban poverty. In the growth equation, the coefficients of the initial GDP per capita and of the ratio of investment to GDP are significant with the expected sign. The coefficient of the variable of interest (i.e. urban concentration) is significant and positive suggesting that higher urban concentration induces higher growth.

Overall, the results confirm that the relationship between urban concentration and poverty is not straightforward. It involves three opposite effects. A direct effect by which urban concentration increases poverty in both urban and rural areas. An indirect effect by which urban concentration reduces poverty in both areas: it fosters growth which translates in higher per capita income which, in turn, reduces poverty in both areas. Finally, there is a feedback effect by which higher gap between rural and urban poverty increases urban concentration. The net effect of urban concentration on rural and urban poverty depends, therefore, on the levels of the variables at play and can only be approached via simulations.

6. Simulation Results

The analysis in the previous section shows that the relationship between urban concentration and poverty is not straightforward and involves mainly three opposite effects: A direct, an indirect and a feedback effect. As a result, the net effect of urban concentration on rural and urban poverty can only be approached via simulations. To this end, this section presents simulations' results of the various effects. We simulate the impacts using Equations 1 to 4 together with the estimated coefficients and the exogenous variables. We start by focusing on the impact at the national level and, then, we examine the impact on the gap between rural and urban areas.

Figure 5 plots the net impact of urban concentration at the national level against the level of urban concentration in the sample (average over 2005-2009). More precisely, the y-axis gives the ratio of the simulated national poverty rate under the assumption of no urban concentration (i.e. setting the urban concentration variable at zero) over the simulated national poverty rate with the observed level of urban concentration. This gives us what would have represented the national poverty rate if there was no urban concentration in term of the rate under the observed urban concentration. For instance, a figure equals to 2 means that the rate without urban concentration would have been twice higher. The Figure shows that all values on the y-axis are above one meaning that irrespective of the level of urban concentration national poverty is lower with than without urban concentration. For illustration, we drew trend lines. With a linear trend the R^2 is high; 81%. With an exponential trend the R^2 is much higher; 99%. The latter suggests that while national poverty is lower with urban concentration than without it, the difference is decreasing as the level of urban concentration increases. For instance, at the level of urban concentration 10% the national poverty rate would have been four times higher if this urban concentration was removed. In contrast, at the level of urban concentration 34% the national poverty rate would have been only two times higher if this urban concentration was removed. While urban concentration contributes to national poverty reduction, its marginal contribution is negative. It should be emphasized that such a relation is drawn based on the observation in our sample which focuses on developing countries. The latter have levels of urban concentration potentially very different from the ones in developed countries. Moreover, as an indicator of urban concentration, we use the share of population in urban agglomerations of more than 1 million in total population not the traditional measure of urbanization; that is the share of urban population in total. Hence, one cannot exclude that urban concentration can induce higher poverty with levels observed in developed countries but this is not the focus of this paper.

An important issue often subject to debate when dealing with urbanization and poverty concerns disparities between rural and urban areas. Metropolitan areas (Amman, Cairo, Casablanca, and Tunis) and coastal regions (Aqaba, Alexandria, and Tangier) are considered as capturing most of the gains from growth. Peripheral geographic areas, particularly rural, seem to lag behind. The resulting regional polarization might pose important problems in terms of social cohesion, political stability and even growth. Expressed in terms of this paper's framework this issue becomes about whether urban concentration reinforces the gap between urban and rural poverty in developing countries. To this end, Figure 6 plots the

difference of the net effect of urban concentration on poverty in urban and rural area against of level of urban concentration in the sample. More precisely, the y-axis gives the difference between the simulated rural-urban poverty gap using the observed level of urban concentration (call it Δu) and a similar gap under the assumption of no urban concentration (call it Δnu). The difference is taken in percentage of Δun; that is (Δu – Δnu) / Δnu * 100. A negative figure means that urban concentration reduces the gap between urban and rural areas. The evolution shows how the difference in the gaps evolves as one moves from one level of urban concentration to the next higher level. Interestingly, the Figure suggests that, taken all effects into account, urban concentration reduces the poverty gap between urban and rural areas. As before, we drew trend lines for illustration. With a linear trend the R^2 is very low; 3%. With a polynomial (see the figure) trend the R^2 is low but much higher; 12%. When the outliers are removed the result remains basically unchanged. Focusing on the polynomial trend suggests that the reduction in the poverty gap is higher for low levels of urban concentration and lower for high levels of urban concentration. The turning point is around 25% of urban concentration. Hence, in our sample urban concentration seems in general reducing the urban-rural poverty gap. However, the same caveats as above hold and one cannot exclude that urbanization can be become gap increasing with levels observed in developed countries.

7. Conclusion

Urban concentration and poverty are two prominent characteristics of many developing countries and present serious challenges for the development process. Their inter-relationship is very complex which prevented so far the relevant literature from providing useful policy recommendations. This literature treats either the various cannels of the relationship separately, ignores the possible non-linearity and feedback or doesn't pay enough attention to simultaneity and to the quality of instruments. A good understanding of the determinants and of the nature of the relationship between urban concentration and poverty is important for taking decision that could enhance the development process.

The present paper addresses this issue by estimating a system of equations including poverty, urban concentration and growth as dependent and explanatory variables, distinguishing poverty in rural and urban areas, allowing for feedback and collecting primary data to construct valid instruments. The estimation results show that a higher national per capita income is associated with lower poverty in both urban and rural areas. Higher urban concentration is, in contrast, associated with higher poverty in both areas but it is associated with higher growth of national per capita income. In turn, urban concentration depends on the gap between rural and urban areas in term of poverty. It is higher the higher is rural poverty as compared to urban poverty.

Overall, the results confirm that the relationship between urban concentration and poverty is not straightforward. It involves three opposite effects. A direct effect by which urban concentration increases poverty in both urban and rural areas. An indirect effect by which urban concentration reduces poverty in both areas: it fosters growth which translates in higher per capita income which, in turn, reduces poverty in both areas. Finally, there is a feedback effect by which higher gap between rural and urban poverty increases urban concentration.

These findings show that the net effect of urban concentration on rural and urban poverty depends on the levels of the variables at play and can only be approached via simulations. Based on the estimated system and the exogenous variables, the simulation results show that national poverty is higher without urban concentration than with it. However its marginal contribution is negative. The urban-rural poverty gap is lower with urban concentration but presents a U-shaped form. The reduction is higher for low levels of urban concentration and

lower for high levels of urban concentration. The turning point is around 25% of urban concentration.

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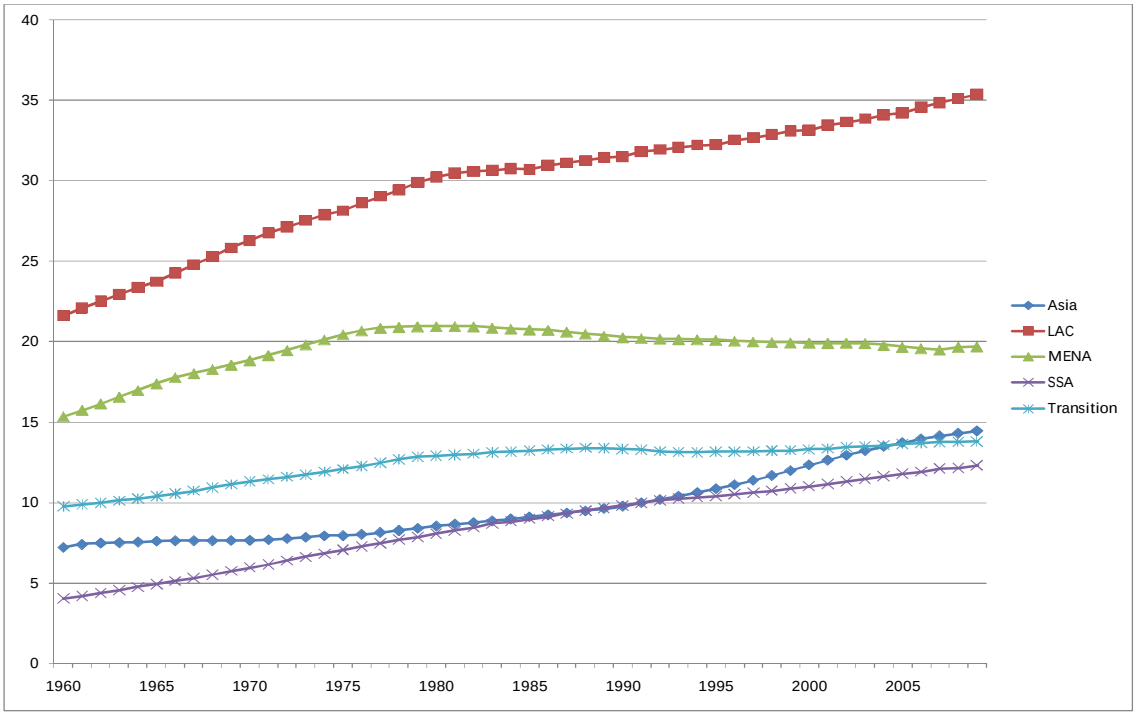
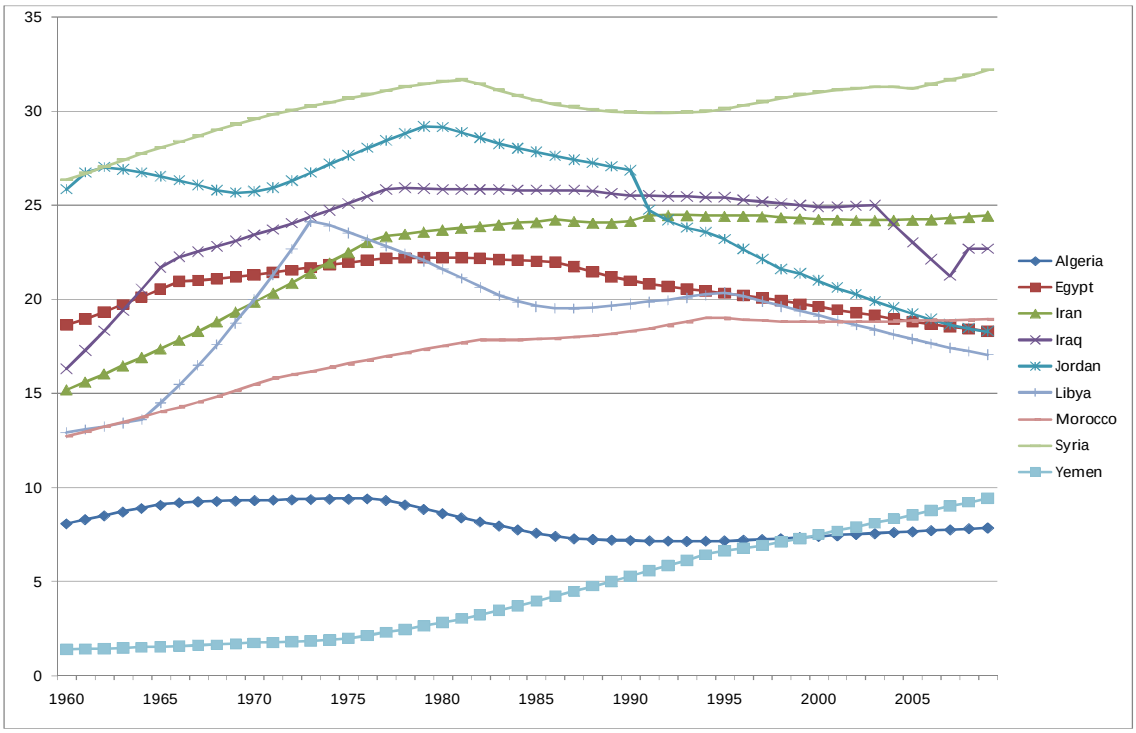
Figure 1: Urban Concentration around the World



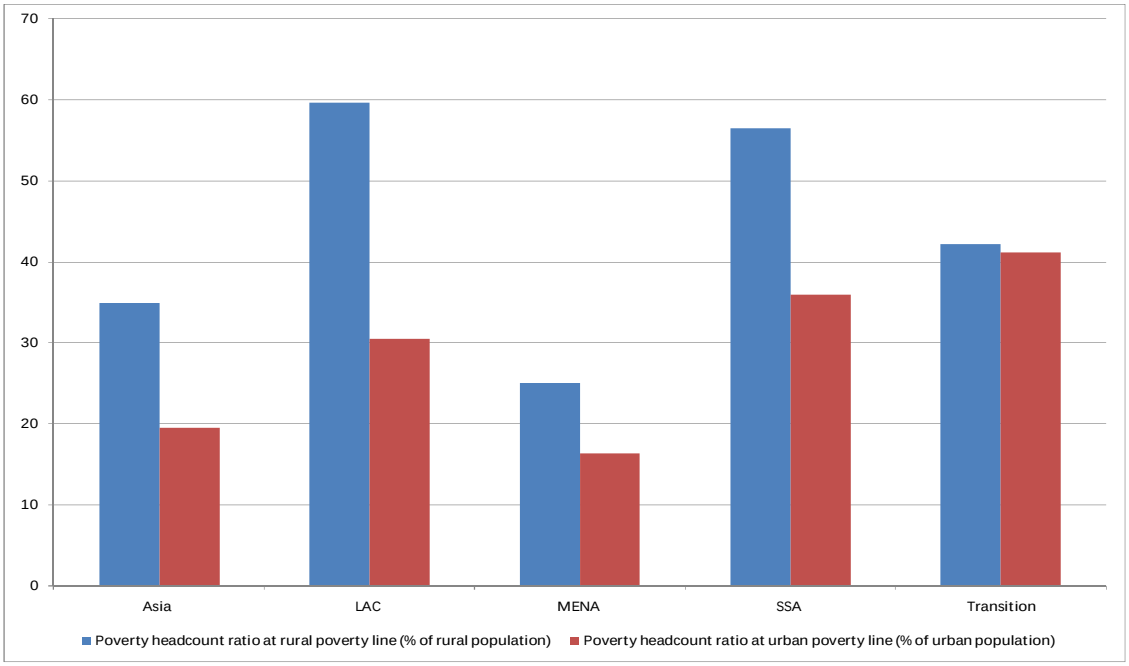
Source: WDI

Figure 2: Urban Concentration in MENA Countries



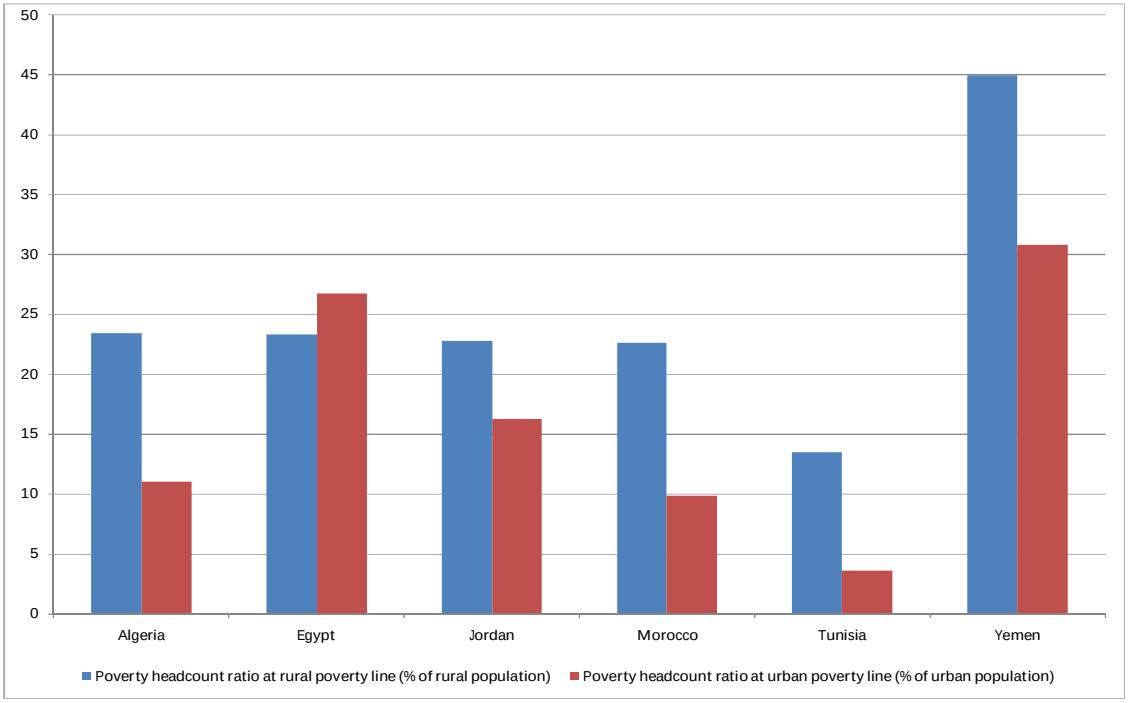
Source: WDI.

Figure 3: Rural and Urban Poverty around the World (Average 1990-2010)



Source: WDI

Figure 4: Rural and Urban poverty in MENA countries (Average 1990-2010)



Source: WDI

Figure 5: Net Impact of Urban Concentration on Poverty (National level)

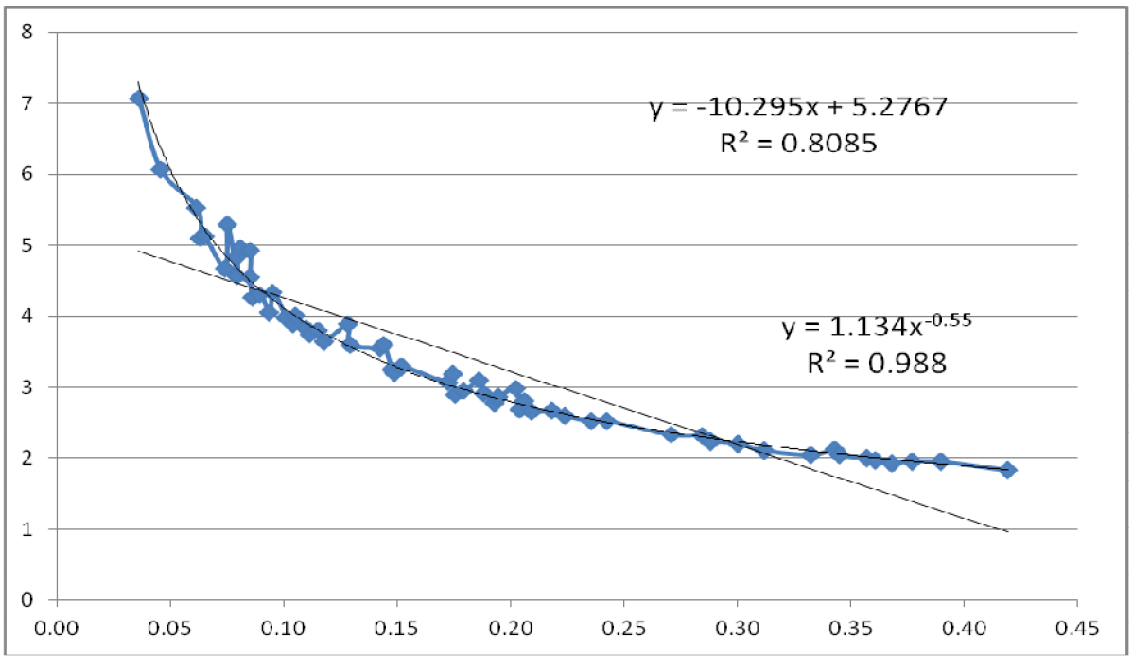
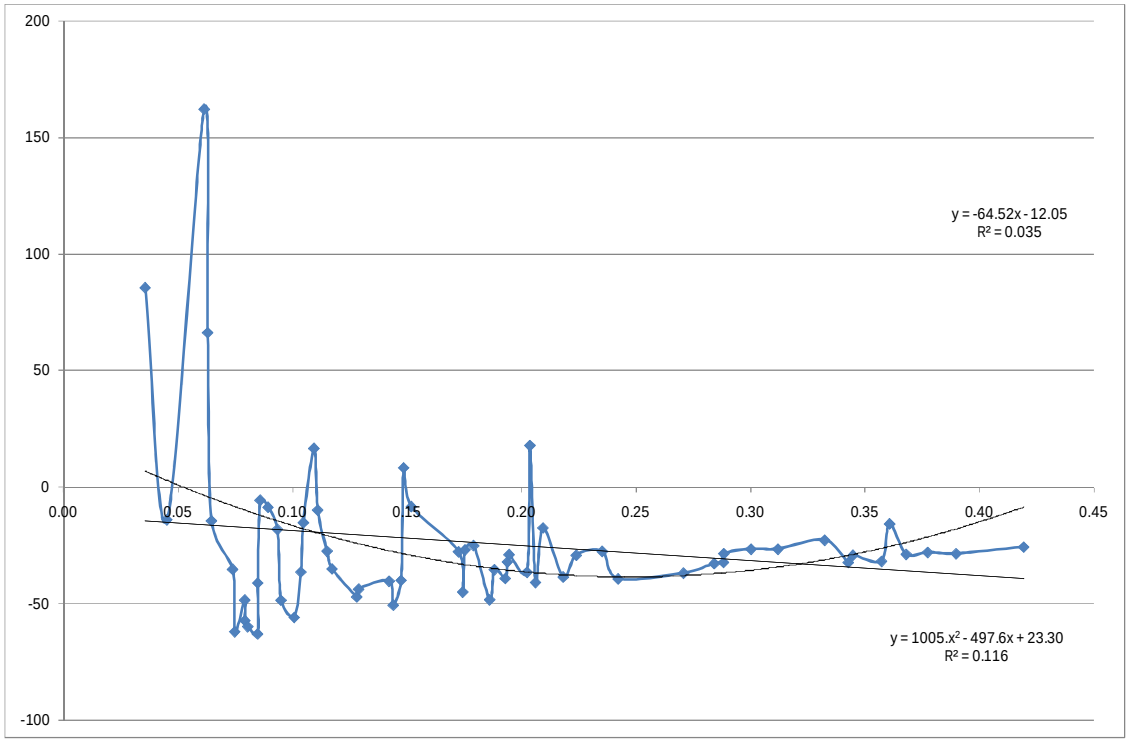


Figure 6: Net impact of Urban Concentration on Poverty Gap (Rural minus urban)



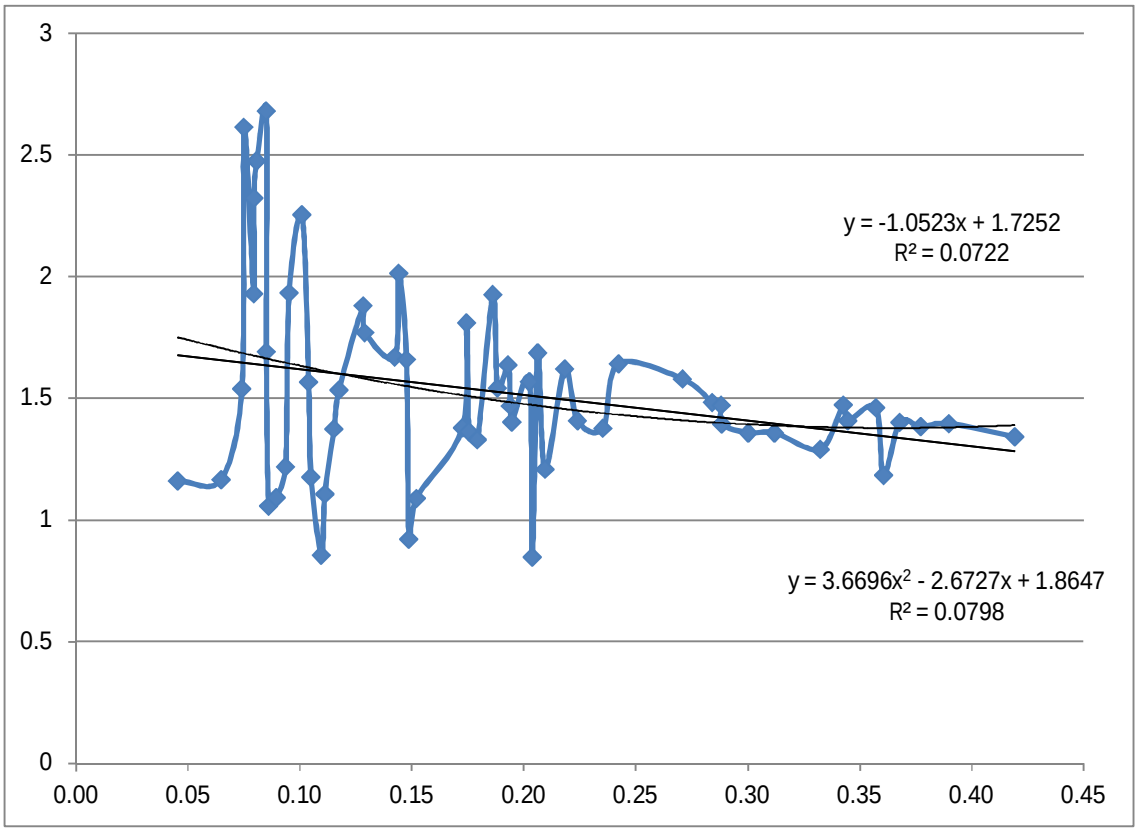


Table 1: Estimation Results

Variable	OLS	Fixed Effects	GMM-System
		Urban Poverty	
National per capita income	-0.244	-0.618	-0.519
	-2.881	**-1.967**	**-7.521**
Urban concentration	0.317	-0.627	0.740
	2.618	**-0.990**	**10.208**
Number of observations	92	92	78
Number of countries	58	58	48
Adjusted R^2	0.05	0.84	0.07
Fixed effects test-Pvalue		0.00	
		Rural Poverty	
National per capita income	-0.239	-0.643	-0.359
	-2.843	**-3.075**	**-7.391**
Urban concentration	0.277	-0.335	0.572
	2.859	**-1.180**	**7.933**
Number of observations	95	95	78
Number of countries	52	52	48
Adjusted R^2	0.04	0.93	0.06
Fixed effects test-Pvalue		0.0	
		Urban concentration	
Difference: Rural Poverty - Urban Poverty	-0.001	0.001	0.004
	-1.288	**1.437**	**4.371**
Urban concentration, t-1	0.981	0.902	0.977
	93.889	**10.340**	**107.889**
Number of observations	89	89	78
Number of countries	49	49	48
Adjusted R^2	0.99	0.99	0.99
Fixed effects test-Pvalue		0.00	
		National Growth	
Initial per capita income	-0.012	-0.067	-0.012
	-3.422	**-3.335**	**-3.293**
Investment ratio	0.038	0.042	0.064
	4.525	**3.104**	**5.588**
Human Capital	0.014	0.019	0.012
	2.137	**1.336**	**1.474**
Population growth	-0.204	-0.670	0.037
	-3.004	**-4.771**	**0.280**
Urban concentration	0.001	0.082	0.011
	0.268	**2.691**	**1.940**
Number of observations	295	295	78
Number of countries	65	65	48
Adjusted R^2	0.15	0.30	0.22
Fixed effects test-Pvalue		0.00	
Test of over-identifying restrictions-Pvalue			0.11

Notes: Standard Errors computed from heteroscedastic-consistent.

Appendix A: List of Countries in the Sample

Afghanistan	Mali
Algeria	Mexico
Angola	Morocco
Argentina	Mozambique
Armenia	Myanmar
Azerbaijan	Nicaragua
Bangladesh	Niger
Belarus	Nigeria
Bolivia	Pakistan
Brazil	Panama
Bulgaria	Paraguay
Burkina Faso	Peru
Cambodia	Philippines
Cameroon	Senegal
Chile	Sudan
China	Syrian Arab Republic
Colombia	Tanzania
Congo, Dem. Rep.	Thailand
Congo, Rep.	Togo
Costa Rica	Uganda
Cote d'Ivoire	Ukraine
Dominican Republic	Uzbekistan
Ecuador	Vietnam
Egypt, Arab Rep.	Yemen, Rep.
El Salvador	Zambia
Ethiopia	
Georgia	
Ghana	
Guatemala	
Guinea	
Haiti	
Honduras	
India	
Indonesia	
Iran, Islamic Rep.	
Iraq	
Jordan	
Kazakhstan	
Kenya	
Lebanon	
Liberia	
Libya	
Madagascar	
Malaysia	