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Foreign Aid and Urbanization in Developing Countries

Kevin Sylwester*
Department of Economics, Southern Illinois University—Carbondale, U.S.A.

Abstract

This paper examines whether developing countries receiving more foreign aid also have higher rates of urbanization. After presenting a simple theoretical model, empirical work is conducted on a cross-section of countries during the 1990s. The paper finds that foreign aid is positively associated with subsequent urbanization even after controlling for income levels, population, and regional characteristics. If this association is given a causal interpretation, the results indicate that foreign aid enlarges urban areas.

Key words: foreign aid; urbanization

JEL classification: O18; O19

1. Introduction

Since World War II, rapid urbanization has occurred in many developing countries and this trend is expected to continue. Table 1 presents data from the World Bank's *2007 World Development Indicators* showing the average urban ratio in various years across different groups of countries. For low income countries (as defined by the World Bank), urban population relative to total population more than doubled from 1965 to 2005. Adding lower middle income and upper middle income countries diminishes the increase but only somewhat. Moreover, only 9 of 151 countries saw decreases in the urban ratio over these forty years whereas 32 had increases over thirty percentage points. Nine of these 32 countries are from sub-Saharan Africa. Not only has urbanization rapidly increased for many poor countries, but these increases occurred more quickly than what transpired in Europe in the 19th century (Puga, 1998). This trend is also predicted to continue in the future. According to the United Nations, the fraction of the population living in urban areas in poor countries is expected to reach 52% by 2020 (Ravallion, 2002). Piel (1997) predicts that by 2015, 23 of the 27 mega-cities in the world (over 10 million inhabitants) will be located in developing countries.

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*Correspondence to: Department of Economics, MC 4515, Southern Illinois University, Carbondale, IL 62901, U.S.A. E-mail: ksylwest@siu.edu. I would like to thank an anonymous referee for suggestions as to how to improve the manuscript as well as Giuseppe Iarossi for providing data.

The extent to which these numbers are relevant for development outcomes depends on the effects of rapid urbanization for poor countries. Some see the potential for positive effects stemming from a concentrated populace. Shukla and Stark (1990) examine agglomeration effects making manufacturing more productive. The concentration of people might also lower costs of providing public infrastructure since projects can focus on a few locales. Zhang (2002) develops a model where urbanization leads to lower fertility and greater investment in physical and human capital thereby increasing economic growth. Models of economic growth such as that in Romer (1990) include the presence of scale effects, making areas with more human capital (and so presumably larger areas) better able to increase income per capita levels. Other models containing positive spillovers (such as with human capital) or gains from specialization might also imply that greater urbanization provides net benefits to these countries.

Table 1. Average Urban to Total Population Percentages across Country Groups

Country Group[a]	1965	1975	1985	1995	2005
Low Income	15.54	20.14	24.18	27.75	31.41
Low and low-middle income	25.21	30.54	35.30	39.22	42.90
Low, low-middle, and high-middle income	29.89	35.83	40.98	45.07	48.42

Notes: Data from the World Bank's *2007 World Development Indicators*. [a] As defined by the World Bank in 2007.

However, these views could be more relevant for high income countries which not only have the resources to accommodate large concentrations of people but have experienced more gradual rates of urban growth. Lubell (1984) cites problems of rapid urbanization such as the inundation of city infrastructure and the prevalence of urban unemployment and poverty thereby leading to crime and political instability. By 2035, Ravallion (2002) predicts that over 50% of the poor in less developed countries (LDCs) will reside in urban areas. Linn (1982) reports that urbanization raises government costs as demand for government services increase. Henderson (2002) and Piel (1997) also describe problems that cities in LDCs face.

Finally, a third possibility arises that urbanization does not affect economic growth either because positive and negative effects offset each other or because all effects are small. Henderson (2003) does not find a causal relation from urbanization to productivity growth.

To the extent that net effects of rapid urbanization are negative, a worthwhile inquiry is to examine to what extent policy plays a role in such urbanization. Can policy changes slow the rate of increase in urban size so as to provide communities more time to accommodate these changes? Identifying such policies does not necessarily mean that these policies have pernicious effects on net and so should be discontinued, but it will help policy makers to better identify and perhaps mitigate unintended downsides to their policies. The goal of this paper is to examine one such factor, namely the extent to which foreign aid is associated with rates of urbanization in developing countries. This is not to say that foreign aid is hypothesized to be the

most important cause of urbanization; structural factors such as rising income are likely to play more important roles. Nevertheless, this does not imply that the prevalence of foreign aid cannot accelerate or retard the degree of urbanization.

Examining the effects of foreign aid on recipient countries is not new. Much work has examined how aid influences economic growth and investment, albeit with mixed findings. Mallick and Moore (2005) find that World Bank lending increases economic growth. Burnside and Dollar (2000) and World Bank (1998) argue that foreign aid can increase economic growth in the recipient country provided political and institutional conditions are favorable. However, Easterly et al. (2004), Roodman (2004), and Lu and Ram (2001), among others, challenge the robustness of the Burnside and Dollar (2000) findings. Snyder (1996) reports a negative association between private investment and foreign aid, yet Snyder (1993) finds a positive correlation between aid and growth of income per capita once country size is taken into account. Islam (1992) provides some support that foreign aid raised growth in Bangladesh. Giles (1994) finds evidence that foreign aid increased growth in Cameroon whereas Mbuku (1994) reports no association between the two. Boone (1996) does not find that aid increases investment or benefits the poor in either democracies or dictatorships. Mosley et al. (1987) also fail to find a positive association between aid and growth. Casella and Eichengreen (1996) develop a model where timely aid leads to greater stabilization but late arriving aid can destabilize an economy and delay economic reform.

In addition to examining effects on growth and investment, research has also considered how foreign aid influences other outcomes. Chao and Yu (1999) examine the welfare gains of linking aid to environmental clean up. Blackorby et al. (1999) tie aid to population control. Nyoni (1998) reports that foreign aid did not raise the real exchange rate in Tanzania as argued in earlier papers. Gaytan-Fregoso and Lahiri (2000) analyze under what conditions foreign aid might decrease or increase immigration from the recipient to the donor country. Djajic et al. (1999) examine circumstances as to when aid can raise welfare in both the donor and recipient countries.

However, I am aware of only one paper that considers a link between foreign aid and urbanization. Moomaw and Shatter (1996) report that foreign aid is positively associated with the fraction of the population living in urban areas, at least in some of their empirical specifications. But even with a positive association, questions of causation arise. Do countries receiving large amounts of aid urbanize at a faster rate or are countries rapidly urbanizing in greater need and so receive larger amounts of aid? Likewise, if aid can be more easily distributed in places with many people, then donors might be more likely to give aid to countries with large urban populations. Another concern is that, as reported above, urbanization has been increasing over time and is predicted to increase in the future as well. This suggests that many countries are on an "urbanization transition path," moving from a low urban to a high urban setting. Given this transition, it is perhaps more appropriate to study changes along this path rather than a level of urbanization at some moment as in Moomaw and Shatter (1996). An analogy is to empirical tests of neoclassical

growth models where one only examines income levels if one assumes that countries are at their respective steady states. Otherwise, one focuses on growth rates along the transition path to steady state. Given these concerns, this paper examines the relationship between foreign aid and subsequent changes in the fraction of the population living in urban areas. By looking at subsequent changes, I hope this mitigates the potential for reverse causation to skew the results.

The paper is organized as follows. Section 2 constructs a simple theoretical model showing how aid can lead to greater urbanization. Section 3 then describes an empirical model. Section 4 presents the results. A conclusion follows.

2. The Model

In the model presented below, agents decide whether to live in a rural or an urban community. The level of government provisions directed to the urban community influences this decision. The degree of government support is not exogenous but is determined by a leader optimizing his private welfare.

Consider a mass of M agents. These agents decide whether to live in a rural or urban community. (For simplicity, I assume there to be only one urban community.) I normalize the return to living in a rural community to be $\delta > 0$. Let $H(N,u)$ denote the return to living in an urban community, where $N \leq M$ is the mass of urban agents and u denotes the aid to the urban community. $H(\cdot,\cdot)$ is increasing with u but is decreasing with N. In effect, I consider cases where increased overcrowding and congestion outweigh any positive benefits from having more people live in close proximity to one another. In equilibrium, N will adjust given some u so that $H(N,u) = \delta$ and there is no further incentive to migrate from one community to the other. I only consider cases where N is strictly less than M so that urbanization is not absolute.

The leader of this country receives an exogenous amount of foreign aid, A, from the international community. He consumes amount c of this aid and allocates amount u towards benefiting agents in the urban community where: $A = c + u$. He maximizes:

$$\ln(A-u) + f(u,N) \tag{1}$$

subject to $0 \leq u \leq A$.

The first term in (1) denotes the leader's return from his personal consumption of this aid since $c = A - u$. The second term denotes the leader's return to using this aid to fund public services in the urban community. The leader benefits from distributing aid to the populace because funding services quells domestic unrest or causes the leadership to be viewed more favorably. (A more benevolent leader might also be more genuinely concerned with societal welfare in addition to his own.) Thus, $f(\cdot,\cdot)$ is increasing with u, but I also assume $f_{uu} < 0$ so that given any N allocating aid to the urban community is subject to diminishing returns. The function $f(\cdot,\cdot)$ is decreasing with N since a more populous urban community is subject to

greater political unrest which provides disutility to the leader. Implicit in this model is an urban bias since the leader does not put weight on the rural community, perhaps because no political unrest originates there. For an overview of the urban bias literature, see Lipton (1993) and Pugh (1996). I do not assume there to be any binding constraints imposed by the donor as to how aid is allocated. See Snyder (1993, 1996) for empirical examinations of the extent to which aid is fungible.

Solving the leader's optimization problem, one can show that for any $0 < u < A$ (in which case the solution is interior):

$$1/(A-u) = \partial f/\partial u + (\partial f/\partial N)(\partial N/\partial u)\,. \tag{2}$$

The left-hand side of (2) is increasing with u, equaling $1/A$ when $u = 0$ and going to infinity when u goes to A. As for the right-hand side (RHS), the first term is positive but the second term is negative. An increase in u raises N but an increase in N lowers the leader's utility as it creates more political unrest. I make the following assumptions to make the model more tractable.

***Assumption 1*:** At $u = 0$, $\text{RHS} > 1/A$.

***Assumption 2*:** $\partial \text{RHS}/\partial u < 0$ for $0 < u < A$.

Assumption 1 implies that for low values of u, the RHS is positive. This means that the positive direct effect upon the leader's utility of providing services to the urban community dominates the negative indirect effect of the increase in services attracting more urban dwellers. Assumption 2 provides three roles. First, it ensures that the second derivative of the leader's optimization problem is negative and so the solution to (2) provides a maximum. Second, it implies that the total effect from the provision of u upon the leader's utility is subject to diminishing returns. Finally, it along with Assumption 1 guarantees that a unique solution to (2) exists.

Given these assumptions, an increase in aid raises both c and u as the leader allocates part of the increase in aid to both activities. The increase in u then raises the mass of agents in the urban community, N.

The above model is static and all migration takes place instantaneously. Of course, instantaneous migration is not true in reality as transitional periods of adjustment exist where the current N and the equilibrium N differ. To capture a dynamic story, let N still denote the mass of the urban community in equilibrium but let N_{t-1} denote the previous period's mass. N_{t-1} is exogenous and I consider cases where $N_{t-1} < N$ so that urbanization is positive. Suppose that urbanization does not occur instantaneously but takes time to adjust to a new equilibrium after a shock such as an increase in foreign aid. Let the rate of urbanization in the current period be given by $\Delta N_t = g(N - N_{t-1})$ where $g(\cdot)$ is an increasing function of $N - N_{t-1}$. That is, the speed of adjustment to equilibrium is increasing with the distance from equilibrium. Then, it is easy to see that ΔN_t is also increasing with A. Countries receiving more foreign aid should have greater increases in the fraction of the population living in urban areas.

3. Empirical Model

Unless otherwise stated, the data comes from the *2001 World Development Indicators* from the World Bank. I primarily examine urbanization during the period 1995–1999 since data is most available for these years. I only include countries the World Bank lists as low, lower middle, or upper middle income as high income countries are unlikely to receive aid. I also do not include city states such as Hong Kong or Singapore. Finally, I do not include small island nations. A list of the included countries can be found in the appendix.

To measure foreign aid, I initially consider the amount of official development assistance (ODA) per capita averaged from 1990–1994. The World Bank classifies ODA as concessional grants and loans when the latter comprises a grant element of at least 25%. To convert values into a constant price index, I use the imports price index from the International Monetary Fund's International Financial Statistics CD-ROM with 1994 as the base year as in Burnside and Dollar (2000). I use an average over five years so that one year aberrations are less likely to skew results. I consider aid before 1995 both to lessen the possibility of reverse causation and to allow sufficient time for this aid to be delivered and for people to respond accordingly.

Measuring the pace of urbanization is less straightforward. I use a change (subsequent to when aid is given) in the urban to total population ratio as opposed to the level of this ratio at a point in time to mitigate problems of reverse causation. Looking at the change can also be important in that these ratios have not stabilized around some level for many developing countries.

However, there are problems with focussing on changes as the number of people living in urban areas can change for three reasons. The first is due to natural changes to the population through birth and death. These natural occurrences will influence the urban rate if net natural rates of increase differ between urban and rural communities. The second is net migration from rural areas. A third reason is that communities previously not labeled as urban become so after a threshold is crossed. For example, suppose the threshold in defining an urban community is 100,000 people. A community of 95,000 would not be considered as urban, but if 5,000 people migrate to this community, the number of people living in urban areas increases by 100,000, not by only 5,000. It is hoped that by looking at changes over five years, a relatively short period, that this third potential problem is mitigated although obviously not prevented entirely.

The empirical model is given as follows:

$$\Delta \mathrm{URB}_{9599} = a\mathrm{AID}_{9094} + B'X + e \tag{3}$$

$\Delta \mathrm{URB}_{9599}$ denotes the change in the urban to total population ratio from 1995 to 1999. AID_{9094} denotes foreign aid per capita averaged from 1990 to 1994. Of interest is the sign and magnitude of the coefficient a.

Matrix X contains a number of control variables, including a constant and the following variables. GDP_{9094} denotes the natural log of GDP per capita adjusted for purchasing power parity and averaged from 1990 to 1994. Its inclusion controls for two factors. The first is the level of development which can influence how easy it is to move from rural to urban areas. The second stems from the fact that income also determines who receives aid (see Alesina and Dollar, 2000). Another reason to control for income stems from Henderson and Wang (2005). They develop a model where urbanization stems from rising income and population.

Another control for the level of development is the prevalence of schooling within the population. Due to data availability, I use average gross enrollment ratios in primary (PRIM_{9094}) and secondary (SEC_{9094}) education to proxy for human capital levels in the adult population. I include both since the relationship between human capital and urbanization is likely to be nonlinear. Some human capital is expected to foment urbanization whereas societies with higher levels of human capital are less likely to be in such a transitional phase. POP_{9094} denotes the natural log of the population. Both Alesina and Dollar (2000) and Snyder (1993) report that aid is more likely to be given to small countries. Given that I use urban to total population ratios, controlling for the size of the population can also help determine the extent of overcrowding in urban areas. Several dummies are also included to capture various regional characteristics. These dummies include: EUR (Europe), AFRICA (sub-Saharan Africa), MEAST (Middle East and North Africa), SASIA (south Asia), and AMER (North and South America and the Caribbean). The control group of countries comprises those from East and Southeast Asia.

Finally, matrix X includes URB_{9094}, the urban to total population ratio averaged from 1990 to 1994. One reason to include the initial level is that the current urban ratio is an input in $g(\cdot,\cdot)$, the subsequent increase in urbanization towards steady state. In this respect, (3) is analogous to a stock-adjustment model where the populace is moving to a long-run urbanization ratio. URB_{9094} denotes its current position and the other controls serve as determinants for the long-run desired level. As society moves closer to this long-run level, the speed of adjustment should slow, implying that the coefficient on the current level is negative. Of course, URB_{9094}, representing N_{t-1} from Section 2, need not enter (3) linearly and this possibility will be explored in the next section.

Finally, the unobservable in the regression in (3) is assumed to have zero mean and finite but not necessarily identical variance across observations. Thus, heteroskedastic-consistent covariance matrices are used.

4. Empirical Results

By 1994, the average percentage of sample country populations living in urban areas was 44.3% and the median was 44.2%. From 1995 to 1999, the average country saw its urban rate increase by 2.4%. Countries that experienced over a 5% increase were: Indonesia, Mozambique, Ecuador, Equatorial Guinea, Honduras, Turkey, and Gabon. Estonia, Uzbekistan, and the Krgyz Republic all saw a decrease

of over 1%. It is interesting that these three are all former Soviet states. The correlation between AID_{9094} and ΔURB_{9599} is 0.29.

Before examining the results from (3), I consider URB_{9599} (the level as opposed to the change) as the dependent variable as in Moomaw and Shatter (1996). The coefficients provided in column 1 of Table 2 give the associations between these variables and the level of urbanization in a country. Of note is that there is no strong association between AID_{9094} and URB_{9599} although the coefficient is positive. However, this does not necessarily mean that foreign aid does not affect urbanization. Aid might be targeted more towards certain types of countries, including poor rural ones, and so the coefficient on AID_{9094} would then be biased. Moreover, the association between aid and the level of urbanization might not be strong along a transition path where the urban rate is continuing to increase over time. Therefore, the remaining regressions will consider the change in the urban ratio.

Column 2 of Table 2 presents results from (3). The coefficient for URB_{9094} is positive. Of course, since a country cannot be more than 100% urban, a positive coefficient on URB_{9094} does not have intuitive appeal since it implies that countries closer to the 100% limit would have larger subsequent changes in their urban ratios than would countries that are mostly rural. More likely, the positive coefficient implies that the relationship between the initial level of urbanization and the subsequent change is not linear and so would be better represented by a quadratic. Therefore, the remaining specifications also contain the square of URB_{9094} ($SQURB_{9094}$) and the estimated coefficients on these variables lend support to a nonlinear approach. Nevertheless, findings regarding foreign aid are robust to whether $SQURB_{9094}$ is included or not.

There is not a strong relation between GDP_{9094} and the change in urbanization, although there is evidence of a negative relation between population size and how fast a country is urbanizing. Associations between human capital and the speed of urbanization also appear to be nonlinear. Societies with some human capital urbanize faster, but as the level of development as measured by the fraction of attendance in secondary education increases, there appears to be less impetus for a rapidly rising urban ratio. Of the geographic dummies, Europe and Latin America have smaller changes than does East Asia in the degree of urbanization, while the others do not show a significant difference.

The coefficient on AID_{9094} is positive and significant at the 1% level. Its magnitude suggests that a one standard deviation increase in AID_{9094} (1.2) is associated with a change in the urban ratio of 0.49%, which is just less than one-third of a standard deviation (1.71). An R^2 of 0.54 shows that over half of the variance in ΔURB_{9499} is explained by these variables. Without including foreign aid, the R^2 drops slightly to 0.50.

Column 4 uses the AID to gross national income ratio instead of foreign aid per capita. The coefficient remains positive and significant when this other measure of foreign aid is used. Column 5 contains the Gastil measure of political freedoms (DEM_{9094}) to control for political differences across countries since aid might be

more targeted to democracies than to dictatorships. Nevertheless, the coefficient on foreign aid is hardly affected.

Table 2. Least Square Regressions

Column	1	2	3	4[a]	5	6	7	8	9[b]	10[c]
Dep Var.	URB_{9599}	ΔURB_{9599}	ΔURB_{9599}	ΔURB_{9599}	ΔURB_{9599}	ΔURB_{9599}	ΔURB_{9599}	ΔURB_{9599}	ΔURB_{9599}	ΔURB_{9599}
Constant	−68.276**	0.411	−0.412	−3.718	−3.141	0.441	−0.446	−0.292	4.160***	−1.712
	(27.875)	(1.952)	(1.901)	(3.001)	(2.938)	(1.985)	(2.050)	(2.260)	(1.326)	(2.459)
URB_{9094}	—	0.049***	0.147***	0.159***	0.150***	0.146***	0.147***	0.127***	−0.627**	0.140***
		(0.012)	(0.028)	(0.030)	(0.028)	(0.028)	(0.028)	(0.038)	(0.251)	(0.031)
$SQURB_{9094}$	—	—	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001**	—	−0.001***
			(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0004)		(0.0003)
AID_{9094}	0.212	0.526***	0.412***	0.573**	0.453***	0.348**	0.411***	0.403**	0.234**	0.630**
	(1.751)	(0.164)	(0.146)	(0.284)	(0.147)	(0.157)	(0.150)	(0.194)	(0.102)	(0.277)
GDP_{94}	11.37***	−0.260	−0.263	0.174	−0.196	−0.344	−0.266	−0.292	0.139	−0.208
	(3.549)	(0.288)	(0.282)	(0.329)	(0.292)	(0.282)	(0.296)	(0.363)	(0.196)	(0.300)
POP_{9094}	0.896	0.270**	0.210*	0.171	0.220**	0.169	0.213*	0.233*	0.730***	0.325*
	(1.145)	(0.113)	(0.106)	(0.109)	(0.106)	(0.114)	(0.109)	(0.121)	(0.267)	(0.164)
SASIA	−7.932	−0.361	0.102	0.200	0.241	0.075	0.040	0.159	0.315	0.051
	(5.977)	(0.516)	(0.492)	(0.504)	(0.456)	(0.487)	(0.501)	(0.523)	(0.540)	(0.473)
MEAST	17.02**	−0.338	−0.652	−0.673	−0.776	−0.556	−0.677	−0.662	−0.253	−0.597
	(6.752)	(0.647)	(0.572)	(0.587)	(0.608)	(0.585)	(0.576)	(0.644)	(0.480)	(0.581)
AMER	22.22***	−0.947	−1.192**	−1.298**	−1.058*	−1.181**	−1.239**	−0.863	−0.049	−1.133*
	(6.134)	(0.667)	(0.595)	(0.593)	(0.594)	(0.589)	(0.614)	(0.717)	(0.479)	(0.601)
EUR	14.046*	−0.709	−0.955*	−0.955	−0.899	−0.824	−1.038*	−0.858	−1.250**	−0.960*
	(7.766)	(0.655)	(0.567)	(0.585)	(0.555)	(0.560)	(0.594)	(0.682)	(0.521)	(0.548)
AFRICA	11.108***	−0.075	−0.241	−0.223	−0.268	−0.196	−0.317	0.012	0.706	−0.237
	(5.872)	(0.520)	(0.438)	(0.464)	(0.438)	(0.442)	(0.458)	(0.476)	(0.434)	(0.431)
$PRIM_{9094}$	0.054	0.022***	0.019***	0.021***	0.019***	0.018***	0.019***	0.020***	0.009**	0.019***
	(0.068)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.004)	(0.006)
SEC_{9094}	0.128	−0.044***	−0.048***	−0.051***	−0.048***	−0.043***	−0.048***	−0.045***	−0.040***	−0.046***
	(0.124)	(0.010)	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)	(0.012)	(0.006)	(0.010)
DEM_{9094}	—	—	—	—	0.111	—	—	—	—	—
					(0.101)					
USSR	—	—	—	—	—	−0.624	—	—	—	—
						(0.442)				
$POPG_{9094}$	—	—	—	—	—	—	0.057	—	—	—
							(0.104)			
R^2	0.677	0.482	0.540	0.537	0.546	0.546	0.522	0.501	0.868	0.531
N	109	109	109	109	109	109	107	90	109	109

Notes: Standard errors are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels. [a] AID in column 4 denotes the foreign aid to gross national income ratio, not the amount of foreign aid per capita as in the other columns. [b] URB in column 9 denotes the natural log of the urban population, not the urban to total population ratio as in the other columns. [c] Estimated by 2SLS using civil liberties and the fraction of time that a country was a colony from 1990 to 1994 as instruments.

One cause for concern is that the countries of the former Soviet Union experienced de-urbanization during this period (Rowland, 1998) and did not receive large amounts of foreign aid. Column 6 adds a USSR dummy (1 if the country was a former member of the Soviet Union and 0 otherwise) to the specification to control for events particular to post-Soviet states. The coefficient on USSR is negative. Moreover, the coefficient on AID_{9094} drops in magnitude to 0.35 although still significant at conventional levels.

Column 7 includes the current population growth rate ($POPG_{9595}$) to control for changes in the total population when examining changes in relative population shares. The results are only slightly altered. Column 8 removes upper middle income countries from the sample and shows that the results are robust to including only the poorer countries of the world. In fact, the foreign aid coefficient only changes slightly.

Next I replace the change in the urban to total population ratio with the growth rate in the total urban population ($GURB_{9599}$). In other words, I replace a measure of relative urban change with a measure of absolute change. To control for initial size when examining subsequent growth, I use the natural log of the initial urban population ($LURB_{9094}$) in place of URB_{9094} although I do not employ its square since $LURB_{9599}$ need not have an upper bound. As before the coefficient on foreign aid is positive and significant at conventional levels.

One cause for concern is that aid could be endogenous. Consider a country where the underlying cause—call it factor z—for urbanization persists over time. Moreover, suppose that foreign aid responds to urbanization pressures or to urban poverty. Then z is correlated with urbanization between 1990 and 1994 and with urbanization between 1995 and 1999. Furthermore, foreign aid inflows between 1990 and 1994 would also be correlated with commensurate urbanization. If the regression does not control for z, its effect would be found in the residual, and under the above framework AID_{9094} would be correlated with the residual, making its coefficient biased. To help alleviate such concerns, I instrument for aid using the Freedom House measure of civil liberties averaged from 1990 to 1994 and the variable COLONY from Alesina and Dollar (2000) where COLONY denotes the fraction of time between 1986 and 1990 that a country was a colony. Alesina and Dollar (1990) find that foreign aid more likely goes to countries providing civil liberties and recent colonies to assist them with their transitions at independence. However, I assume that neither is associated with urbanization given the control variables. Estimating by 2SLS in column 10 shows that results are robust. The coefficient on AID_{9094} even increases slightly.

Finally, I consider urbanization over more than one period and jointly examine urbanization from 1989 through 1994 along with that from 1994 to 1999 using a specification analogous to the one from column 3. The RHS variables are taken from the previous five year period (i.e., from 1989–1994 for the 1994–1999 change in the urban ratio and from 1984–1989 for the 1989–1994 change). I do not consider periods prior to 1989 since data quickly becomes less available. Although coefficients are constrained to be identical between the two periods, I do allow for

the intercepts to differ. I estimate this panel both by least squares and as a SUR model. Results are given in Table 3. Many of the coefficients for the control variables are similar to the ones above. The coefficient on foreign aid remains significant (although only at the 10% level in the SUR model) but is smaller than that reported above and suggests that the association between aid and urbanization is not quite as strong in the earlier subperiod.

Table 3. Panel Data, 1989-1994 and 1994-1999 Periods

Column[a]	1	2
Est. Technique	OLS	SUR
Dep. Var.	ΔURB	ΔURB
$Constant_{9499}$	0.111	−0.171
	(1.866)	(1.839)
$Constant_{8994}$	0.406	0.054
	(1.824)	(1.802)
URB	0.158***	0.163***
	(0.026)	(0.027)
URBSQ	−0.001***	−0.001***
	(0.0002)	(0.0002)
AID	0.239*	0.241**
	(0.135)	(0.114)
GDP	−0.243	−0.193
	(0.244)	(0.250)
POP	0.082	0.148
	(0.103)	(0.094)
SASIA	−0.167	−0.150
	(0.591)	(0.667)
MEAST	−0.914*	−1.281***
	(0.582)	(0.484)
AMER	−1.694***	−1.654***
	(0.472)	(0.505)
EUR	−1.596***	−1.472***
	(0.605)	(0.519)
AFRICA	−0.263	−0.525
	(0.423)	(0.448)
PRIM	0.018***	0.020***
	(0.005)	(0.005)
SEC	−0.042***	−0.049***
	(0.008)	(0.007)
N	195	195

Notes: Standard errors are in parentheses. [a] Except for intercepts, coefficients on RHS variables are constrained to be equal between subperiods. *, **, and *** denote significance at 10%, 5%, and 1% levels.

5. Conclusion

As described in the introduction, there has been considerable attention paid to the effects of foreign aid in poor countries. This paper examines a potential effect that has been mostly overlooked, namely to what extent foreign aid is associated with urbanization in developing countries. The paper generally finds a positive association between foreign aid and subsequent urbanization. One explanation is that leaders have more incentive to allocate resources, including foreign aid, to urban areas and so more people choose to dwell there.

Of course, this finding in no way implies that foreign aid is a primary influence of urbanization as income or regional characteristics can mostly explain why some countries have greater fractions of their population living in urban areas. Still, inflows of foreign aid could still matter at the margin. I also do not want to suggest that foreign aid has deleterious net effects on development. For one, foreign aid can influence development along several dimensions. This paper only considered one. Second, even if foreign aid encourages growth in urban areas resulting in greater overcrowding, it could also possibly raise welfare for urban dwellers by alleviating some of the problems that overcrowding creates. Thus, net effects on welfare could be ambiguous.

Finally, this paper only examines one facet of development, namely how foreign aid influences subsequent urbanization controlling for other factors such as income and education. Obviously, foreign aid could also affect income and education levels and so produce (long-run) indirect effects on urbanization. Urbanization could also impose ramifications for income growth and rising education standards. Such connections are important and a more complete examination that studies these connections simultaneously is encouraged. Still, this paper can help bring attention to a link that many have not before considered nor examined as part of a larger picture.

Appendix

The countries considered in this analysis are Angola, Armenia, Azerbaijan, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republican, Chad, Congo (Dem Rep.), Congo, Cote d'Ivoire, Eritrea, Ethiopia, Gambia, Ghana, Guinea, Haiti, India, Indonesia, Kenya, Krgyz Republic, Laos, Lesotho, Madagascar, Malawi, Mali, Mauritania, Moldova, Mongolia, Mozambique, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Rwanda, Senegal, Sierra Leone, Tanzania, Togo, Uganda, Ukraine, Uzbekistan, Vietnam, Yemen, Zambia, Zimbabwe, Albania, Algeria, Belarus, Belize, Bolivia, Bulgaria, China, Columbia, Costa Rica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Guatemala, Guyana, Honduras, Iran, Jamaica, Jordan, Kazakhstan, Latvia, Lithuania, Macedonia, Morocco, Namibia, Papua New Guinea, Paraguay, Peru, Philippines, Romania, Russia, Sri Lanka, Suriname, Swaziland, Syria, Thailand, Tunisia, Turkey,

Argentina, Botswana, Brazil, Chile, Croatia, Czech, Estonia, Gabon, Hungary, Lebanon, Malaysia, Mexico, Panama, Poland, Saudi Arabia, Slovakia, South Africa, Uruguay, Venezuela.

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