1

WORKING PAPERS

Working Paper no. 89
- Cities and Fragile States -

UNDERSTANDING THE ORIGINS AND PACE OF AFRICA'S URBAN TRANSITION

Sean Fox
Crisis States Research Centre

September 2011

Crisis States Working Papers Series No.2
ISSN 1749-1797 (print) ISSN 1749-1800 (online)

This document is an output from a research programme funded by UKaid from the Department for International Development. However, the views expressed are not necessarily those of DFID.

Crisis States Research Centre

Understanding the Origins and Pace of Africa's Urban Transition

Sean Fox[2]
Crisis States Research Centre

Abstract:
In this article I argue that urbanization should be understood as a global historical process driven primarily by population dynamics stimulated by technological and institutional change. In particular, disease control and expanded access to surplus energy supplies are necessary and sufficient conditions for urbanization to occur given historical evidence of an inherent human propensity to agglomerate. Economic development, which has traditionally been viewed as the primary driving force behind urbanization, can accelerate the process but is not a necessary condition for it to occur. Informed by this historically-grounded theory of urbanization, a range of qualitative and quantitative evidence is used to explain the stylized facts of sub-Saharan Africa's urban transition, namely the late onset of urbanization in Africa vis-à-vis other major world regions, the widely noted but inadequately explained phenomenon of 'urbanization without growth' observed in Africa in the 1980s and 1990s, and the historically unprecedented rates of urban population growth seen in the region throughout the late twentieth century.

[2] Department of International Development, London School of Economics & Political Science. Email: s.fox1@lse.ac.uk

I. Introduction

The process of urbanization has traditionally been understood as a by-product of economic development. However, this theoretical perspective does not provide an adequate explanation for the striking universality of the process, the differential timing of urbanization across countries and regions, the phenomenon of 'urbanization without growth' observed in Africa in the 1980s and 1990s, nor the historically unprecedented rates of urban population growth seen in the region throughout the post-war era (see Table 1). Consequently, a more nuanced theory of the process is necessary to explain the dynamics of Africa's urban transition.

Table 1 Demographic and economic trends by region, 1960-2005

	1960	1960-2005			
	Level of urbanization	Urban growth rate	Urbanization rate	GDP growth rate	Population growth rate
Sub-Saharan Africa	14.75	4.59	1.92	0.59	2.68
East Asia & Pacific	16.75	3.66	2.02	5.03	1.64
South Asia	16.56	3.35	1.21	2.47	2.14
Middle East & North Africa	33.97	3.69	1.13	-	2.56
Latin America & Caribbean	49.02	3.10	1.02	1.58	2.08

Notes: Calculated based on data from World Bank World Development Indicators Database, accessed September, 2010. GDP growth rate estimates based on real GDP per capita (constant 2000 $US)

In this article I argue that urbanization should be understood as a global historical process driven primarily by population dynamics stimulated by technological and institutional change. While urban settlements emerged in many regions prior to the 19^{th} century, the proportion of the global population residing in urban settlements remained limited. Historical research indicates that urban population growth in the pre-industrial era was ultimately restricted by two factors: 1) the oavailability of surplus energy supplies (i.e. food and fuels) to support a non-agricultural population, and 2) the burden of infectious and parasitic diseases, which thrive in densely populated settlements. In other words, limited surplus energy supplies and high disease burdens (and hence high urban mortality rates) placed a natural 'ceiling' on urban population growth and hence urbanization. However, technological and institutional changes in 18^{th} and 19^{th} centuries alleviated these constraints and set the inexorable process of world urbanization in motion, first in Europe and subsequently in other regions as key innovations were diffused through trade and conquest. Crucially, many of these changes contributed to both mortality decline (and hence population growth) and economic development (defined as a structural shift in output away from agriculture and towards industry and services) leading to the spurious conclusion that economic development is the motive force behind urbanization. While there is no question that structural shifts in labour markets contribute to rural-urban migration, the historical record indicates that it is ultimately rapid population growth, stimulated by mortality decline and sustained by improved access to surplus energy supplies, that underpins the urbanization process.

Applying this theory to the African case, the late onset of Africa's urban transition can be attributed to natural geographic endowments that rendered the local production and acquisition (through trade) of surplus energy supplies, as well as disease control, uniquely difficult in the region. The rapid pace of urban growth in Africa since 1960 is explained by the application of technologies and the consolidation of modern institutions introduced through colonialism and trade, which facilitated a secular[3] decline in mortality rates as well as improved access to surplus food supplies, partly through productivity improvements but mostly through imports and international aid. Countries that have experienced more rapid economic and demographic growth have urbanized more quickly in the post-war era, but the absence of economic growth has not been sufficient to arrest urban growth wherever mortality has continued to fall and sufficient surplus food supplies have remained available. In sum, the seemingly unique characteristics of Africa's urban transition are explicable within the framework of the theory of urbanization proposed here.

The remainder of the article is organized as follows. Section two provides a critical literature review and outlines a theory of urbanization integrating demographic, economic and historical perspectives. Section three applies this theory to urbanization trends in Africa in the pre-colonial and colonial era, providing some statistical evidence that natural geographic endowments have influenced the timing of urbanization across countries, as well as evidence that variation in colonial experience—a key mechanism of technological and institutional change in the region—is associated with differential urban trajectories. Section four considers the unique dynamics of urbanization and urban growth in Africa in the post-colonial era and demonstrates empirically that these are accounted for once historical circumstances and population dynamics are taken into account. Section five concludes with a comment on the policy implications of the theory and evidence presented.

Theorizing the urban transition

The standard body of literature on urbanization is divided between economic and demographic theories of the process and there has been surprisingly little cross-pollination between the two. Generally speaking, economists mostly direct their attention to explaining variation in levels and rates of *urbanization* across countries (i.e. the relative balance between rural and urban populations within a country) while demographers have almost exclusively focused on the determinants of *urban growth* rates (i.e. absolute change in the size of urban populations). Despite this difference, both bodies of work offer useful insights into the contemporary dynamics of the process.

However, neither provides an adequate explanation for the universality of the urban transition, nor the geographic and temporal variation of its onset. After reviewing the standard economic and demographic literature, I turn to historical accounts of the first phase of world urbanization, which helps to bring the underlying mechanisms driving world urbanization more clearly into focus. Finally, I present a stylized model of urbanization that integrates these three perspectives.

Economic and demographic theories of urbanization and urban growth

Economic theories of urbanization revolve around the relationship between structural economic change and the spatial dynamics of the labour market. The basic premise underpinning these theories is straightforward: as the 'modern' urban sector expands (i.e. manufacturing, industry and services) surplus labour from the 'backward' rural economy (i.e. agriculture) is 'pulled' into towns and cities. The basic parameters of this 'dual economy' theory of urbanization were first proposed by Lewis (1954) and subsequently formalized by Fei and Ranis (1964). In brief, the formal model identifies rural-to-urban migration as the causal mechanism linking economic change to urbanization, and migration is assumed to be driven by a wage gap that arises between rural and

[3] The word 'secular' is used in the scientific sense throughout to denote a process of change that extends over a very long period of time.

urban areas in the 'take-off' stage of economic development. Over time, the urban labour market becomes saturated, surplus labour in rural areas is exhausted and the wage gap is eliminated.[4]

Decades of cross-country empirical studies provide considerable support for the basic premise that economic development drives urbanization, consistently demonstrating that levels of urbanization are highly correlated with levels of income per capita and with the structural characteristics of economies. However, as early as the 1950s it was recognized that rates of urbanization in many developing countries were incommensurate with the growth of waged employment opportunities in urban areas, resulting in under- and unemployment—a phenomenon dubbed 'over-urbanization' (Davis and Golden 1954).

To explain this deviation from the classic model, and the implied failure of the market to allocate labour efficiently between rural and urban areas, Haris and Todaro (1970) proposed a revised model in which migration decisions are influenced by *expected* as opposed to *actual* earnings in the urban sector. In contexts where urban wages exceed the 'natural' market price due to inflated government salaries and minimum wage legislation, migration incentives are distorted upwards leading to excessive migration. In other words, 'over-urbanization' is explained in the Haris-Todaro model (HTM) as a consequence of wage-distorting government intervention in the labour market. In such contexts the model suggests that wage-equalization or mobility restriction policies will lead to net welfare improvements.

Empirical tests of the wage-differential mechanism assumed in both the classic dual economy model and the revised HTM have produced ambiguous results, explaining only a small fraction of the variation in rates of urbanization across countries (see Mazumdar 1987, Weeks 1995, Becker and Morrison 1995, Fay and Opal 2000, Lall, Selod and Shalizi 2006). This may reflect the failure of standard economic models to account for the role of the urban informal sector (the 'third sector'), which is where most migrants (especially in Africa) end up. As Bhattacharya observes, 'once a dynamic and productive Informal sector is introduced into the analysis, the unemployment consequences of rural-urban migration on which so much attention has been devoted appear to be exaggerated' (1993, 244).[5] Weak evidence in support of the wage-differential hypothesis is also surely a consequence of economists' narrow focus on economic incentives for migration. A large body of qualitative and quantitative studies conducted in the 1960s and 1970s identified myriad non-economic motives for migration, such as the desire of youth to escape the control of older generations; of women to escape gender discrimination, join husbands in town or take advantage of the 'thick' market for spouses in urban areas; and of others to acquire the social prestige associated with urban life or pursue their dreams in the 'bright lights' of the big city (see Byerlee 1974, Mazumdar 1987, Becker and Morrison 1995). More recent studies have explored the impacts of ethnic conflict, war and climatic variation in spurring forced migration to urban areas (Fay and Opal 2000, Barrios, Bertinelli and Strobl 2006). Given the many reasons people leave the countryside for the city it is not surprising that empirical studies have failed to confirm the primacy of the wage-differential mechanism.

In sum, both theory and evidence suggest that urbanization is 'driven' by economic development and that the general mechanism linking the two is rural-to-urban migration. But the pace of urbanization is only partially explained by income growth and wage gaps between rural and urban

[4] The model assumes that higher urban wages reflect a) rising demand for labour in the modern sector, and b) higher marginal returns to labour in the modern sector. The wage gap stimulates migration among rational individuals seeking to maximize their incomes until the labour market clears and the marginal product of labour equilibrates. The classic dual economy model does not factor in the possibility of rising marginal productivity in the rural sector as a result of technological improvement.

[5] The lack of comparable data on informal sector wages precludes the possibility of accurately determining the influence of wage differentials between rural areas and the urban informal economy.

areas, indicating that standard economic theories are incomplete. In other words, economic development appears to be a *sufficient* but *unnecessary* condition for urbanization to occur. Indeed, in an empirical study explicitly designed to solve the paradox of 'urbanization without growth' in sub-Saharan Africa throughout the 1980s and 1990s, Fay and Opal (2000) note that in many regions—not just Africa—'urbanization continues even during periods of negative [economic] growth, carried by its own momentum' (25). The only explanation the authors provide for this momentum is a vague speculation that external forces (namely globalization) may be at work. Somewhat surprisingly, their study did not consider population dynamics.

Traditional demographic accounts of the urban transition depart from the premise that urban population growth has three proximate causes: 1) natural increase, 2) in-migration and 3) reclassification (Cohen 2003). Although significant from a statistical methodology point of view, reclassification cannot logically be a contributing factor to urban growth in any absolute sense, so the focus here is on the first two.[6]

Demographers attribute changes in urban natural increase and rural-urban migration to population dynamics associated with the demographic transition (DT). In brief, the DT involves a secular decline in mortality rates followed by a secular decline in fertility rates, shifting a population from a wasteful cycle of reproduction in which many babies are born but the majority die before reaching adulthood to an efficient cycle in which fewer babies are born but most survive. Importantly, this transition is everywhere associated with a period of rapid population expansion due to the fact that mortality decline precedes fertility decline, creating a substantial window of time in which births far exceed deaths in a population.

In relation to urban growth, the onset of mortality decline ahead of fertility decline in urban areas raises the rate of urban natural increase and urban populations expand, regardless of whether or not they are net recipients of rural migrants. Theoretically urbanization could occur in a population without rural-to-urban migration if urban natural increase were to exceed rural natural increase over a sustained period, but in reality this has rarely happened.[7] With regards to the relationship between population growth and migration it has long been assumed among demographers of a Malthusian persuasion that rapid population growth in rural areas contributes to the 'push' factors that drive people into cities as population pressure strains natural resources (such as land and water) resulting in declining living standards and rural misery (Preston 1979, Kelley and Williamson 1984). It is also worth noting that the early stages of the DT are associated with a 'youth bulge'—i.e. an increase in the proportion of a population ages 15-24—which may raise migration rates given that youth have a substantially higher propensity to migrate than older individuals.

There is ample empirical evidence that mortality decline, and the acceleration in population growth that follows, is an important driver of urban population growth. For example, Preston (1979) demonstrated a strong one-to-one correlation between total population growth and urban growth, and many studies have noted that urban natural increase generally contributes *more* to overall urban population growth than rural-to-urban migration does, although the relative contributions of each tend to shift as a country urbanizes with natural increase playing an increasingly important role (e.g. Davis 1965, Preston 1979, Cohen 2003, Lall, Selod and Shalizi 2006). By contrast, cross-country evidence on the broader relationships between mortality decline, population growth and *urbanization* is virtually non-existent—a surprising omission from the demographic literature.[8]

[6] Reclassification is effectively a political/administrative dynamic, but it is closely related to the first and second factors as settlements are generally reclassified as urban (as opposed to rural) once they reach a certain population threshold.

[7] Dyson (2010b) does provide evidence that urban natural increase outpaced rural natural increase around the turn of the 20th century in Sweden and again in the immediate aftermath of World War II, but this is an exceptional case of relatively brief periods of urbanization without migration.

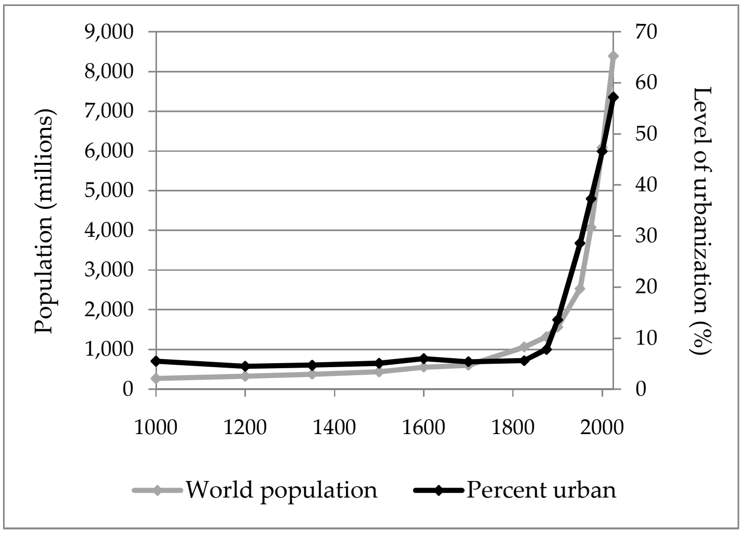
[8] Indeed, I have been unable to locate a single cross-country study that tests this relationship. The general paucity of

Whether or not the onset of the demographic transition is a necessary and/or sufficient condition for the urban transition to occur is difficult to deduce from the existing cross-country research. Hypothetically, urbanization *and* urban growth could occur solely through rural-to-urban migration in a context of static population growth and rapid economic growth. Conversely, if the Malthusians are right, rapid urbanization in Africa in a context of economic stagnation might be explained by exceptionally rapid population growth in the region—a possibility that has never been empirically tested. A relative dearth of evidence leaves the question of demographic causation unresolved in the standard literature. However, there is a small but compelling body of historical demographic research that provides support for the view that the onset of the demographic transition *is* a necessary and possibly sufficient condition for urbanization to occur.

Historical perspectives on urbanization and urban growth

Abstracting from historical accounts detailing the emergence, growth and decline of cities across the world over the past 6000 years, two key theoretical insights can be gleaned concerning the underlying causes of the global urban transition and the variable timing of its onset across regions. Both insights relate to the question of why the proportion of the world's urban population remained roughly constant for thousands of years, hovering around 5%, before suddenly expanding at a breakneck pace from the late 19th century (see Figure 1).

Figure 1: World population & urbanization, 1000 AD – 2000 AD



Sources: Population estimates from Maddison (2009); urbanization estimates from Grauman (1977) and (United Nations 2008a)

The answer provided by historical demographers is that cities were deadly places to live until recently. Prior to the 19th century, urban settlements with rudimentary water and sanitation infrastructure were uniquely conducive to the spread of infectious and parasitic diseases. As a consequence, death rates tended to exceed birth rates rendering cities 'demographic sinks' (Graunt 1662/1964, de Vries 1984, Bairoch 1988, Lowry 1990, Dyson 2010b). With negative rates of natural increase, urban settlements everywhere depended upon a constant inflow of rural migrants to sustain their populations.

This is a crucial observation. The fact that cities formed and grew despite consuming more people than they were capable of producing indicates that a constant flow of rural migrants was *necessary*

evidence concerning the demographic drivers of urbanization is largely due to the fact that urbanization 'has not ranked highly on the intellectual agenda' of demographers (Dyson 2010b).

for cities to exist for any length of time. In turn, this suggests that the impulse to migrate has been a perennial feature of human behavior for as long as cities have existed—even when migrants stood to suffer from higher rates of morbidity and mortality than they would have in the countryside. The important implication is that any realistic model of the urban transition should *assume* some constant rate of rural-to-urban migration, all other things being equal.

This 'disease-constraint' theory also brings the specific mechanism linking the demographic transition to urbanization more clearly into focus by identifying mortality decline stimulated by disease control as the demographic dynamic of greatest causal significance. Where the burden of disease is eased, mortality decline contributes directly to urban population growth in three ways: 1) by raising the rate of urban natural increase above zero (allowing an urban population to reproduce and expand itself), 2) by increasing demographic pressure in rural areas, and hence spurring migration, and 3) by transforming any rural migrants into a source of urban population *growth* instead of mere *maintenance*.

Although evidence in support of the disease-constraint theory comes primarily in the form of a handful of historical case studies, it is compelling enough for Dyson (2010a) to claim that 'No population that has experienced a reduction in its death rate from a high level to a low level has failed to urbanize' (126). In other words, the theory suggests that mortality decline is a *necessary* pre-condition for urbanization and urban growth to occur. Moreover, if some constant net positive rate of rural-to-urban migration is assumed, mortality decline followed by rapid population growth can also be interpreted as a *sufficient* condition.

Economic historians provide a complimentary account of the limited scale of urbanization prior to the 19th century based on a compelling logical premise: cities can only exist where a surplus of energy (i.e. food and fuel) is available to support a large non-agricultural population (Lowry 1990). It follows that the size of the urban population in any given region is first and foremost a function of the quantity of surplus energy it is able to acquire, which in turn is jointly determined by two factors: 1) agricultural productivity and 2) transportation costs (Bairoch 1988).

To appreciate the significance of these basic determinants of urban population size, it is useful to consider the role of each at both local and global scales. Historically, the amount of food that could be produced in a given region was the primary determinant of the surplus available to support an urban population in that region. However, improvements in transport technology eventually made it possible to import food from other regions, rendering the potential amount of surplus that urban populations could theoretically acquire a dual function of local productivity and transport costs.[9] At the global level, the state of agricultural productivity at any given time determines the absolute amount of surplus available to support the world's urban population and transport costs determine the extent to which surplus can be moved from more-productive to less-productive regions.

The productivity-transport cost framework largely explains the geography of early urban settlements, which emerged almost exclusively in areas naturally conducive to surplus food production (e.g. fertile river valleys) or locations with naturally low trade costs (i.e. on coasts and along rivers) (Childe 1950, Davis 1955, Bairoch 1988). It also explains why the proportion of the

[9] The history of Rome provides a useful illustration of this point. At its peak in 200 AD, the city contained over one million residents (including both citizens and slaves)—a population size that far exceeded the total surplus production capacity of the Italian peninsula. To satisfy its energy requirements the city was forced to import approximately 75-95% of its wheat supplies from distant territorial possessions. Given the state of transportation technology at the time, this was an extremely costly means of surplus acquisition and contributed to the financial ruin of the empire. With the relocation of the imperial capital to Constantinople in 330 AD and the subsequent collapse of the publically financed inter-regional grain distribution system, Rome's population plummeted to just fifty thousand inhabitants in 700 AD—a size much more in line with the productive capacity of its hinterland (see Bairoch 1988 and Reader 2004).

world's urban population remained unchanged for so long. Increasing agricultural output in the pre-modern era was driven primarily by bringing more land under cultivation rather than by factor productivity growth, so although the global urban population may have edged up in absolute terms, it could not expand in *relative* terms.[10] Moreover, the potential for regional specialization and exchange in agricultural goods was heavily restricted given that transportation costs remained well above the threshold that would have made large-scale trade in staple foodstuffs economically viable.[11]

The surplus-constraint logic also addresses a weakness in the disease-constraint hypothesis. Substantial variation in the sizes of cities across regions and over time indicates that the demographic 'ceiling' imposed by disease is a soft one. By contrast, energy availability constitutes an absolute constraint. The rise and fall of cities in the pre-industrial era can therefore be understood primarily as a reflection of fluctuations in their capacity to acquire surplus energy supplies rather than temporal variations in the burden of disease. In other words, the expansion of surplus energy supplies is an absolutely necessary condition for urban populations to grow.[12]

Both the surplus and disease-constraint theories trace the origins of the second phase of world urbanization to an explosive confluence of social and technological changes in Northern Europe around 1800. Innovations such as nitrogen fertilizer, crop rotation and mechanization drove a surge in agricultural productivity (Bairoch 1988, Cameron 1997, Maddison 2007). The harnessing of inanimate sources of energy to fuel railroads, steamships and eventually automobiles, led to a dramatic reduction in transportation costs (Bairoch 1988, Crafts and Venables 2003). Improvements in hygiene, medical knowledge, maternal education, urban planning practices and the expanded availability of healthcare sparked a secular decline in mortality rates (Szreter 1997, Bloom and Sachs 1999, Reher 2004, Livi-Bacci 2007). Political-institutional changes such as the consolidation of private property rights, improved third-party contract enforcement and an expansion of the role of governments in the provision of public goods (i.e. healthcare, education and infrastructure) served to reinforce and sustain these trends (Szreter 1997, Cameron 1997, Maddison 2007). Collectively, these changes catalyzed a permanent shift in Europe from a Malthusian economy characterized by stagnant per capita income growth and high mortality to a modern growth regime characterized by secular improvements in factor productivity and life expectancy (Galor and Weil 1999).

Against a backdrop of rising surplus, intensified regional trade and falling mortality, the stage was set for European urbanization.[13] Between 1800 and 1900, the proportion of Europe's population living in urban settlements nearly tripled (growing from around 10 percent to 30 percent), and by the turn of the millennium approximately 70 percent of the region's population lived in urban areas

---

[10] Angus Maddison's historical estimates of world population and GDP indicate that per capita output increased from $412 in 1AD to just $606 in 1700 (expressed in 1990 International Geary-Khamis dollars). From this we can infer that factor productivity growth was marginal over this period. In other words, there was very little increase in energy surplus per capita.

[11] The bulk of world trade in the pre-industrial era involved relatively lightweight, non-perishable and high-value items such as spices and luxury textiles (see Braudel 1984, Bairoch 1988).

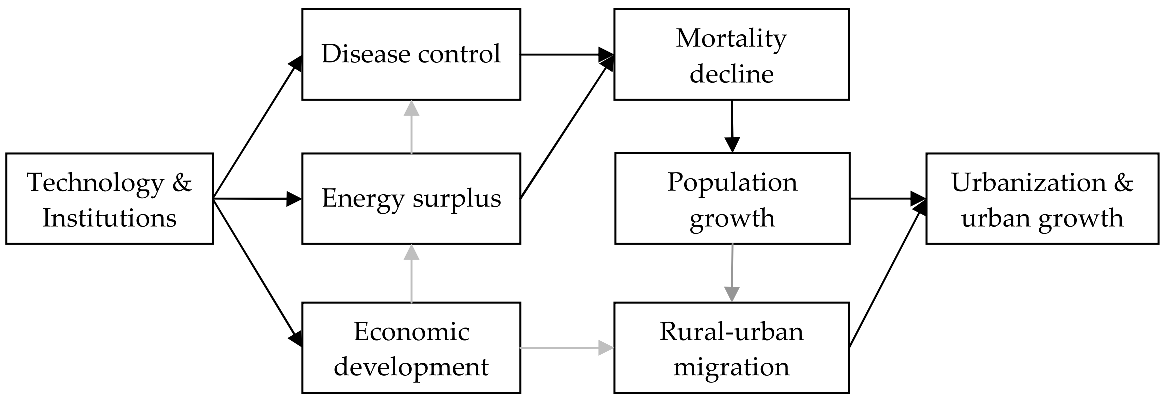
[12] Whether or not growth in surplus energy supplies is a sufficient condition for urbanization to occur is a difficult question to answer definitively. History suggests that wherever surplus energy becomes available, cities form, suggesting that the very presence of the surplus is sufficient to spur migration. This is, however, virtually impossible to verify empirically.

[13] In a cross-country statistical study, Bairoch and Goertz (1986) demonstrated that the pace urbanization in nineteenth-century Europe was driven primarily by changes in agricultural productivity, by the pace of industrial growth and the expansion of trade. However, they found evidence that the most important factors driving urbanization varied over time within and between countries. In particular, their results concerning the role of agricultural productivity were ambiguous. In some models the coefficient was positive suggesting that rising output facilitated urbanization, while in others the coefficient was negative. They speculate that agricultural success in certain regions resulted in the retention rather than release of rural labour.

(Bairoch and Goertz 1986; United Nations 2010). Through trade, colonialism and (in the latter half of the 20th century) international development assistance, the key technological and institutional developments that set Europe's urban transition in motion were diffused to other regions, stimulating urbanization in these regions as well. The onset of the urban transition in any given country or region should be therefore be understood as part of a global historical process linked to technological and institutional change and diffusion, not simply as a product of endogenous economic and demographic forces.

Figure 2 provides a stylized diagram of this historically grounded theory of urbanization. In brief, the underlying causes of the urban transition are the advent of technologies and institutions that facilitate disease control and surplus energy availability (i.e. productivity growth and reductions in transport costs). These factors stimulate mortality decline in both rural and urban areas.[14] Mortality decline facilitates urban population growth directly by raising the rate of urban natural increase and indirectly by raising the rate of rural-urban migration.

Figure 2 ***Historical theory of urbanization***



Technological and institutional changes also drive economic development, which is understood here to be a qualitative change in the structure of output. Economic development exerts a positive effect on urbanization and urban growth by further stimulating rural-urban migration as demand for labour in non-agricultural sectors expands in urban areas. However, it is a conditioning factor. Given that non-economic motivations for migration are ever-present, every country will exhibit net positive rates of urbanization so long as mortality rates continue to fall and surplus energy supplies keep pace with urban population growth.[15]

The fact that many of the technological and institutional changes that drive mortality decline and facilitate surplus expansion also drive economic development is the source of the spurious conclusion that urbanization is fundamentally a by-product of economic development. These two processes can become decoupled—as in the African case, to which we now turn. First, the timing of Africa's urban transition is explained with reference to geographical characteristics of the region and the influence of European colonialism. Second, the unique characteristics of African

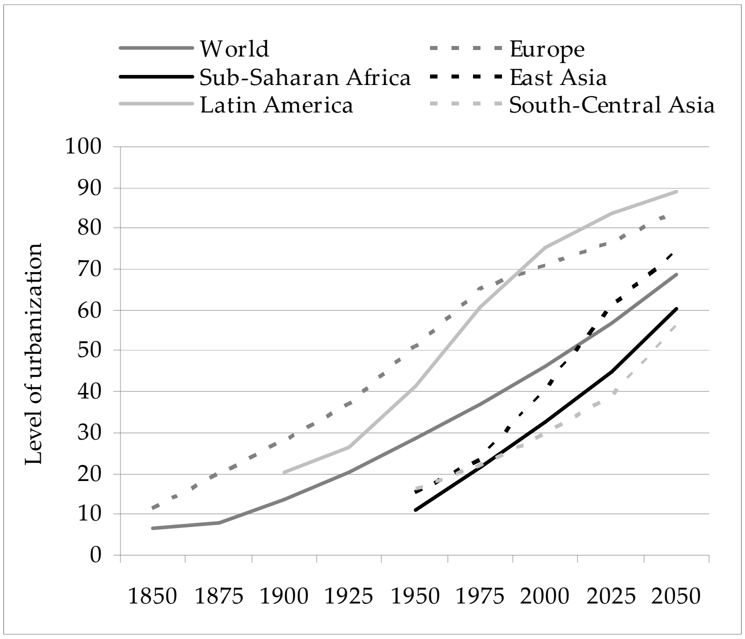
[14] Surplus food expansion contributes to mortality decline through improved nutrition, which is an important determinant of variation in disease-related morbidity and mortality rates.
[15] Urbanization is, of course, a finite process. Therefore the rate of urbanization is naturally decreasing with its level. By contrast, there is technically no upper bound on urban growth. This explains continued urban growth in some fully urbanized countries such as many in South America, which continue to experience fertility rates that exceed the replacement rate of 2.1.

urbanization in the postcolonial era (i.e. urbanization without growth and exceptionally high urban population growth rates) are explained by a combination of demographic forces, historically unique political dynamics associated with decolonisation, and economic trends.

Geography, colonialism and early urbanization in Africa

Archaeological evidence and oral histories confirm the presence of urban settlements in sub-Saharan Africa for over 2000 years (Anderson and Rathbone 2000). However, these settlements remained relatively small, few and far between in comparison to other regions of the world, and most proved ephemeral. As Figure 3 demonstrates, it was not until the middle of the 20th century that Africa's urban transition got underway.

Figure 3 ***Levels of urbanization by major world region, 1850-2050***



Sources: Grauman (1977) and United Nations (2009)

Drawing on the surplus/disease constraint theory outlined above, the late onset of Africa's urban transition can largely been explained by natural geographical endowments. Africa's climate, soils, topography and disease ecology represent considerable obstacles to surplus agricultural production; a large land area-to-coastline ratio, few navigable rivers and low population densities are significant natural barriers to trade, contributing to exceptionally high transportation costs in the region (even today) and limited scope for specialization and innovation; and climatic and ecological characteristics render Africa uniquely conducive to infectious and parasitic diseases, the consequences of which are evidenced by the fact that sub-Saharan Africa has consistently suffered the highest mortality rates in the world since comparable records became available in the 1950s (see Diamond 1998, Bloom and Sachs 1999, Acemoglu, Johnson and Robinson 2001, Iliffe 2007). In other words, the region has historically faced extensive surplus and disease constraints due to its natural geographic endowments.

Despite the profound technological and institutional changes that have spurred urban transitions across the world over the past two centuries, it is still possible to detect the influence of geographical endowments on the differential timing of urbanization across countries and regions. As noted above, access to surplus food supplies was a key constraint on early urbanization. Prior to the advent of production and transport technologies that facilitated the boom in surplus food production and exchange that began in the 18th century, the two factors that determined a particular settlement's access to surplus was the agricultural potential of the surrounding region area and transportation costs. We can therefore hypothesise that countries with greater agricultural potential and naturally lower transportation costs began urbanising earlier than those with limited agricultural potential and higher trade costs.

This hypothesis can be simply tested using cross-country regression analysis in which a country's level of urbanization and urban population size in 1960 are modelled as a function of relatively time-invariant geographical characteristics that influence agricultural productivity and transportation costs: soil quality (measured as the percentage of a country's land area that has soils that are very or moderately suitable for six key rain-fed crops), length of coastline in kilometres and total length of navigable waterways in kilometres. Table 2 presents the results of such an analysis based on a sample of 126 countries for which data are available. A control for GDP per capita in 1960 is included to capture the inevitable mediating effects of technological and institutional changes prior to 1960 on natural geographical constraints. In the second specification, in which the dependent variable is the total size of the urban population (as opposed to the ratio of urban to rural), an added control for national population size is included due to the natural correlation between total population and urban population size (Davis and Henderson 2003). Full details of all variables and sources can be found in Appendix A.

Table 2 ***Geography & urbanization in 1960***

	Level of Urbanization	Urban population
Coastline (km)	.051***	.055**
	(.015)	(.016)
Waterways (km)	.029**	.035**
	(.012)	(.014)
Soil potential	.330***	.342***
	(.110)	(.111)
GDP per capita, 1960	.700***	.691***
	(.048)	(.050)
National population		.973***
		(.035)
R-squared	.734	.941
Observations	126	126

Notes: Standard errors are in parentheses. Significance at the 1, 5 and 10 percent levels are indicated by ***, **, * respectively.

The results confirm that countries with better soil quality and more extensive 'natural' transportation infrastructure were both more urbanized and had larger overall urban populations in 1960 than countries that were less favourably endowed, as expected. Given Africa's poor endowments in terms of surplus production potential, the late onset of urbanization in the region is explicable. Ideally, this 'endowment' model would also account for differential disease ecologies across countries. Unfortunately, a dearth of such data from the pre-1800 era renders this impossible. It is likely that the inclusion of such information would improve the explanatory power of the model.

The alleviation of geographical constraints on urbanization in Africa began in the colonial era. In the early colonial period the slave trade, violence, the introduction of foreign pathogens and the disruption of traditional systems of production and networks of trade contributed to a shrinking of Africa's population. However, after World War I (WWI) European powers began to invest more heavily in primary commodity production, launched health campaigns to combat epidemic diseases, expanded transport infrastructure and introduced new agricultural technologies and cultigens such as cassava, which is drought resistant and has become an important anti-famine crop across Africa (Iliffe 2007, Clapham 2006). While these changes collectively improved access to surplus and stimulated a secular decline in mortality rates in the region, urbanization remained limited between WWI and World War II due to colonial restrictions on African mobility and residence in urban areas, poor living conditions in urban areas and limited waged employment opportunities.

After WWII colonial powers (especially Britain and France) changed tack and launched a 'modernization' drive designed to prepare colonies for eventual independence. This involved significant expansion of public education and health services, further infrastructure development and some (limited) industrial investments (Cooper 2002, Iliffe 2007). Vaccination schemes led to a sharp reduction in mortality associated with epidemic diseases, child mortality rates began to fall due to better treatments for afflictions such as polio, measles, diarrhoea and malnutrition, and improved road and rail transport contributed to reductions in famine related mortality by rendering affected areas more accessible to emergency aid (Iliffe 2007). As mortality rates fell, Africa's population began to grow rapidly. With the gradual relaxation of restrictions on African mobility coupled with higher demand for labour in urban areas during and immediately after World War II, there was a region wide surge in rural-to-urban migration, which exacerbated poor housing conditions and drove consumer price inflation and unemployment—issues that proved instrumental in catalyzing the growth of the union movement, which played a pivotal role in securing independence in the region (Cooper 2002, Iliffe 2007).

In sum, Africa's urban transition was set in motion by technologies and institutions introduced in the late colonial period that facilitated a population boom in the region. However, the nature and impact of colonialism varied widely across countries within the region, and this variation provides a means of assessing the relative impact of colonialism on urbanization trends. We can hypothesise that those countries in which colonial powers were more economically and politically active experienced higher degrees of technological and institutional transfer and diffusion, thereby creating more favourable conditions for urbanization and urban growth. To test this hypothesis we can use three separate indicators of colonial influence: relative colonial investment, an indicator of relative direct vs. indirect rule derived from legal records, and an indicator of colonial administrative depth.

Figures 4 and 5 present evidence that variation in levels of colonial capital investment in African territories is correlated with variation in early urbanization in the region. In both figures the X-axis represents the total amount of publically listed capital investments in European colonial territories between 1870 and 1936, as catalogued by Frankel (1969). In Figure 4, the Y-axis represents the relative size of the urban population for the corresponding territory in 1950; in Figure 5 the Y-axis represents the proportion of the territory's population living in urban areas in 1950 (the earliest date for which comparable figures are available). Despite the fact that only twenty observations are available, there is a clear correlation between early colonial investment and early urbanization in the region.[16]

[16] The direction of causality assumed in Figure 4 could be challenged by the argument that colonisers invested more where there were larger African populations (and hence a larger pool of labour to exploit). Given that total population and urban population are highly correlated, this is a potentially valid criticism. However, given the paucity of pre-colonial urban settlements in the region, it is unlikely that colonizers invested in areas with existing urban populations, so the assumed causal link between colonial investment and urban population size is reasonable. Moreover, total

Figure 4 ***Colonial investment & urban population size in 1950***

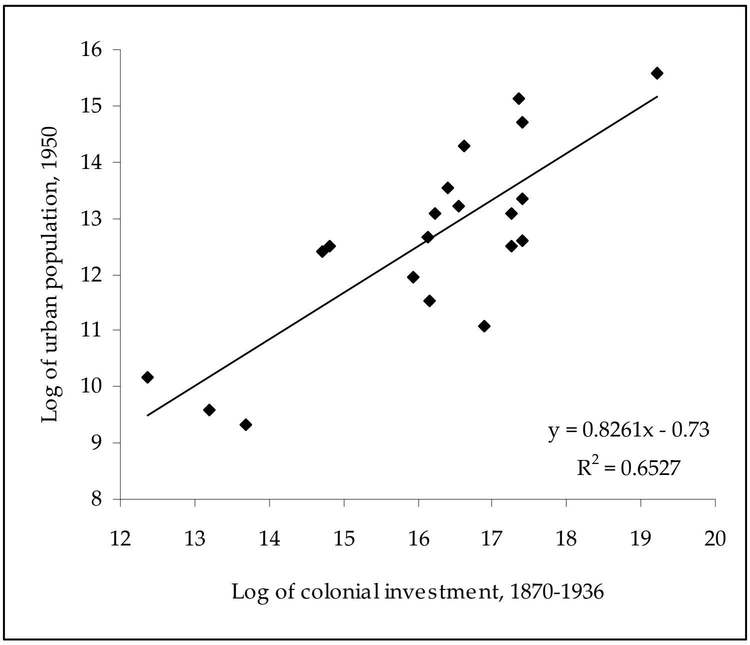
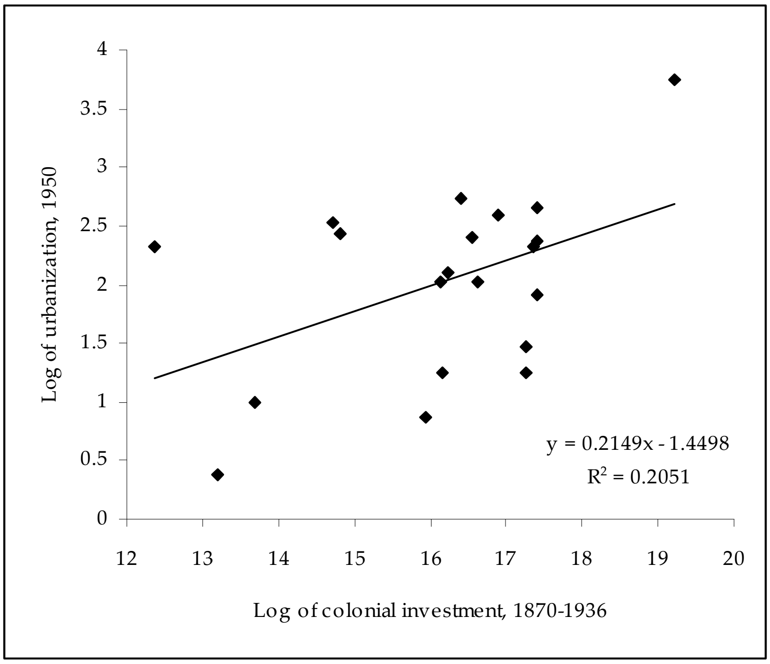


Figure 5 ***Colonial investment & level of urbanization in 1950***



Notes for Figures 4 & 5: Colonial investment data is from Frankel (1969); population estimates are drawn from United Nations (2010). I have used only Frankel's estimates of publically listed capital investments for 20 colonial territories. As the boundaries of these territories do not correspond to the contemporary national boundaries used in UN population statistics I aggregated population data for all countries that correspond to Frankel's regions.

---

population and levels of urbanization are not at all correlated. Consequently the assumed direction of causality in Figure 5 is robust to this challenge. In results not reported here, Frankel's colonial investment figures were also found to be negatively correlated with crude death rates in 1950 and positively correlated with income per capita in 1950, consistent with the hypothesis that colonial investment had the dual effect of reducing mortality and improving access to surplus food supplies.

More nuanced evidence of colonial influence can be identified using regression analysis, the results of which are presented in Table 3. In the upper half of the table, the independent variable is a measure of relative ‘indirect rule’ in 33 former British colonies developed by Lange (2004). The indirect rule index represents the percentage of legal settled by ‘traditional’ authorities (as opposed to formal courts) in 1955. The higher this percentage, the more British authorities were relying on local power brokers to maintain order in their territories. As Lange (2004) has demonstrated, higher degrees of colonial indirect rule resulted in less effective public institutions in the postcolonial period. In the lower half of the table, the independent variable is the number of colonial civil servants per capita in British and French colonial territories in Africa circa 1936, as calculated by Richens (2009). This serves as a proxy for administrative depth. As with capital investment, it is reasonable to suppose that higher degrees of direct political rule and administrative depth resulted in greater technological and institutional transfer and diffusion, and hence more favourable conditions for early urbanization and urban growth.

The dependent variables in Table 3 include a range of measures associated with disease control and access to surplus. These include the infant mortality rate in 1960 (a proxy for disease burden), food supply in 1960 (measured in calories per capita per day), the number of registered physicians per 1000 population around 1960, the average annual rate of change in the infant mortality rate in the 15 years after 1960, the level of urbanization in 1960 and total urban population in 1960.

Table 3 ***Colonial origins of variation in early urbanization & urban growth***

	IMR 1960	Calories per capita	Physicians per 1000	Δ IMR 1960-1975	Urbanization, 1960	Urban population, 1960
	Former British colonies					
Indirect rule	.012*** (.002)	-.002*** (.001)	-.023*** (.004)	.026*** (.007)	-.019*** (.004)	-.022*** (.005)
Population						1.091*** (.073)
R-squared	.654	.259	.576	.299	.429	.889
Observations	33	31	33	33	33	33
	Former African colonies					
Col. Civ. Serv.	-.088* (.044)	.090*** (.029)	.690*** (.177)	-.458*** (.140)	.376** (.181)	.429** (.187)
Population						1.137*** (.129)
R-squared	.120	.252	.352	.269	.130	.735
Observations	31	31	30	31	31	31

Notes: Standard errors are in parentheses. Significance at the 1, 5 and 10 percent levels are indicated by ***, **, * respectively.

The results indicate that higher degrees of indirect rule are associated with higher infant mortality, lesser food surplus and fewer physicians per capita in 1960, while greater administrative depth is associated with lower infant mortality rates, greater food surplus and more physicians per capita in 1960. The direction of causality in these correlations is not necessarily clear. As Acemoglu, Johnson and Robinson (2001) have argued, patterns of colonial settlement may have been influenced by the disease environment and agricultural potential of a region, so these correlations could be interpreted as suffering from reverse causality. In other words, colonizers may have invested economically and politically in territories with lower disease burdens and greater agricultural potential.

However, there is no theoretical reason to believe that mortality decline in the independence period was driven by anything other than the further diffusion of technologies and the consolidation of institutions introduced during the colonial period that affect public health. As column 4 shows, African countries that had more robust colonial legal institutions and greater colonial administrative capacity experienced more rapid declines in infant mortality in the early postcolonial period than those that experienced less colonial institutional and administrative investment. In this case the direction of causality is clear: postcolonial *changes* in mortality cannot logically have driven colonial settlement patterns. Finally, columns 5 and 6 confirm the association demonstrated above between colonial capital investment and early urbanization: the indirect rule and administrative depth indicators are both significantly correlated with both the size and percentage of a countries urban population in 1960.

While no single piece of this statistical mosaic provides definitive confirmation that urbanization in African was historically inhibited by unfavourable geographic endowments and ultimately set in motion by technologies and institutions introduced by European colonizers, collectively the evidence provides significant support for these arguments founded on the surplus/disease constraint theory outlined above.

Urbanization and urban growth in the post-colonial era

The surge in urban populations that began in the late colonial period accelerated in the independence era due to a confluence of demographic, political and economic factors. The mortality decline that began in the late colonial era continued while fertility rates remained exceptionally high resulting in a population boom of historically unprecedented scale.[17] There was a sharp increase in

[17] The unprecedented lag between mortality decline and fertility decline is usually explained as a consequence of historical factors that have rendered high birth rates culturally desirable in the region (see Iliffe 2007 and Clapham 2009).

urban employment opportunities due to the expansion and Africanization of civil service administrations, investments in public works and an industrialization drive largely financed through international development assistance (Miner 1967, Stren and Halfani 2001, Iliffe 2007). And economic growth rates in the region reached historic highs in this era, fuelled by public and private investment and strong growth in commodity exports. As a result, rates of urbanization and urban population growth reached exceptional heights between 1960 and 1975 (see Table 4).

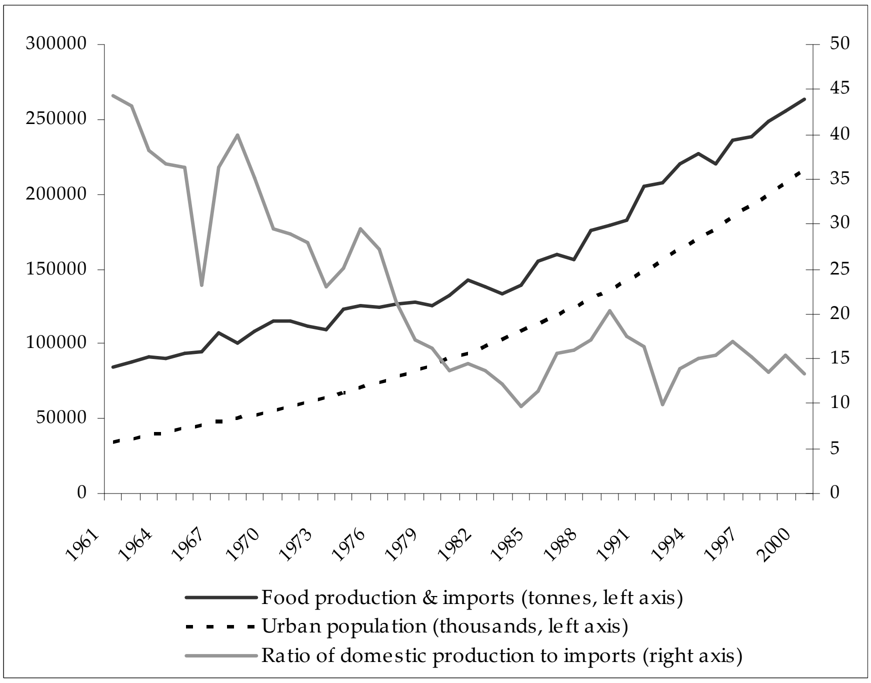
Table 4 ***Demographic & economic trends in Africa***

	1960-1975	1975-1990	1990-2005
Urban population growth	5.09	4.64	4.06
Rate of urbanization	2.52	1.78	1.45
GDP per capita growth	2.03	-0.61	0.36
Population growth	2.56	2.86	2.60

Notes: Calculated based on data from World Bank World Development Indicators Database, accessed September, 2010. GDP growth rate estimates based on real GDP per capita (constant 2000 $US)

However, unsustainable fiscal expansion, poor macroeconomic management, deteriorating terms of trade and a global recession following the 1973 oil price shock resulted in a region-wide economic crisis. By the early 1980s sub-Saharan Africa was experiencing negative per capita income growth and fiscal retrenchment in the form of donor-imposed structural adjustment programmes. The consequences were severe in urban areas. Public and private sector employment contracted sharply, real wages declined, investments in housing and urban infrastructure came to a virtual standstill and the yawning rural-urban wage gap that arose in the early independence era essentially vanished (Potts 1995, Weeks 1995, Becker and Morrison 1995). Yet urbanization and urban growth rates remained generally high in the region, with a few notable exceptions. This can be explained by continued mortality decline, which sustained high rates of population growth, and steady surplus expansion sustained by imports and aid. As Figure 6 shows, surplus food supplies (measured as tons per capita of cereals and starchy roots) generally kept pace with urban population growth, even in the crisis years of the 1980s and early 1990s. It also shows that this growth was made possible by imports more than productivity growth.

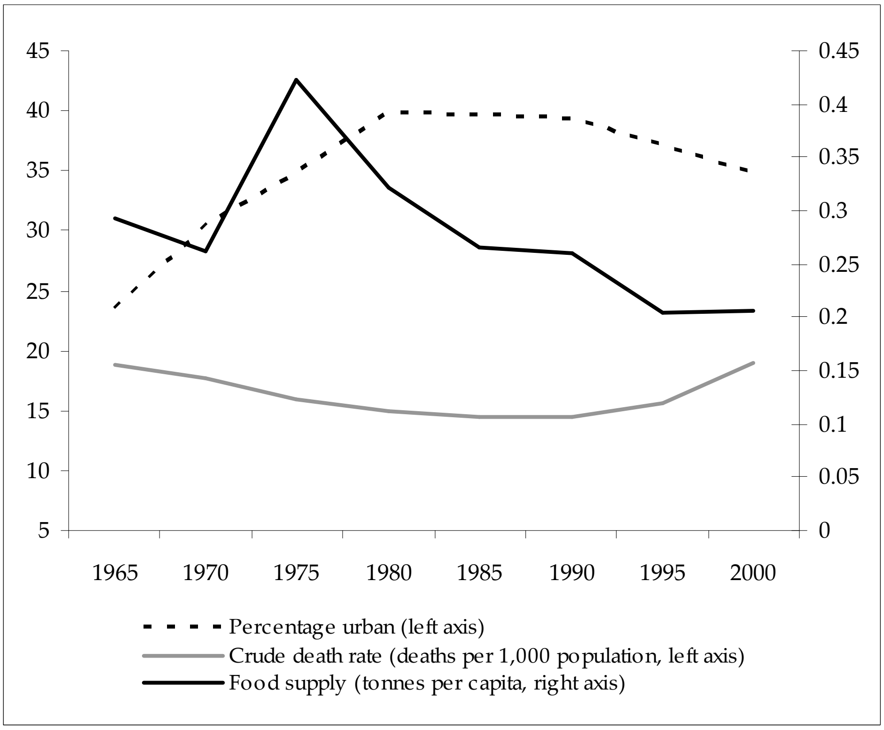
Figure 6 ***Urban population growth & food supply in Africa, 1961-2000***



Notes: Food supply data are from FAOSTAT online database, accessed June 2010. Population figures are from the United Nations. Production and import data refer only to cereals (excluding beer) and starchy roots.

Perhaps the most well-known exception to this narrative is the case of Zambia in the 1990s; one of the few countries to experience an episode of *de*-urbanization in the modern era. This is generally attributed to a severe economic crisis and the effects of structural adjustment on urban employment and incomes (Potts 1995), yet many other countries experienced similar crises without de-urbanization. However, Zambia also experienced a sharp decline in food supplies beginning in the 1980s and a reversal in the trend of declining mortality in the early 1990s, likely due to rising urban poverty and exceptionally high HIV prevalence rates in urban areas (Dyson 2003). As Figure 7 demonstrates, these trends map directly onto Zambia’s episode of de-urbanization. Economic crisis and public sector retrenchment surely contributed indirectly to surplus contraction and rising mortality, but the actual *cause* of Zambian de-urbanization was a resurgence of surplus and disease constraints.

Figure 7 The case of de-urbanization in Zambia



Notes: Food supply data are from FAOSTAT online database, accessed June 2010. Population and mortality figures are from the United Nations. Food supply data refer only to cereals (excluding beer) and starchy roots.

In sum, Africa's urban transition in the early postcolonial period was driven by a combination of rapid population growth set in motion in the late colonial period, a postcolonial 'adjustment' involving the Africanization and expansion of employment opportunities in urban areas, and an early investment drive. It was sustained through the recessionary years of 1975-1990 and the slow-growth recovery years of the 1990s by persistent demographic expansion. In other words, urbanization without growth and exceptionally high urban growth rates in the late twentieth century are both explicable once Africa's post-war political and population dynamics are taken into account.

As a test of this argument, Table 5 presents the results of an OLS regression analysis in which average annual rates of urbanization and urban growth are modelled as a function of a) average annual rates of population growth, b) average annual rates of per capita income growth, and c) the sectoral composition of output, measured as the average percentage of agriculture value-added in GDP over the relevant period. According to the theory outlined above, population growth and economic growth rates should both be positively correlated with rates of urbanization and urban growth while agriculture as a percentage of GDP should be negatively correlated (as a result of labour being retained in the rural sector). The model also incorporates a dummy variable for sub-Saharan African countries to determine whether or not African countries share some unobserved characteristics that account for persistent urbanization in the absence of economic growth and exceptionally high urban population growth rates.

The data consist of an unbalanced panel dataset with 353 observations from over 150 countries spanning three 15 year intervals that roughly correspond to global economic trends (1960-1975, 1975-1990 and 1990-2005) in order to limit the influence of short-term fluctuations in economic and demographic conditions. This arrangement also permits the inclusion of two more control variables: interactive regional dummies to determine whether there was a significant post-colonial adjustment effect (Fay and Opal 2000). These are AFRICA*P1 covering the 1960-75 period and AFRICA*P2 covering the 1975-90 period. Finally, as per convention, the initial level of urbanization in each period is controlled for.

Table 5 ***Determinants of urbanization & urban growth rates***

	Urbanization rate	Urban growth rate
Population growth	.151***	1.151***
	(.042)	(.042)
Per capita GDP growth	.125***	.125***
	(.024)	(.024)
Agriculture (% of GDP)	-.016***	-.016***
	(.005)	(.005)
AFRICA	.143	.142
	(.190)	(.190)
AFRICA*P1	1.154***	1.155***
	(.260)	(.260)
AFRICA*P2	.598**	.599***
	(.233)	(.233)
Urbanization $_{t1}$	-1.296***	-1.296***
	(.127)	(.127)
R-squared	.602	.827
Observations	353	353

Notes: Standard errors are in parentheses. Significance at the 1, 5 and 10 percent levels are indicated by ***, **, * respectively.

As expected, population growth and GDP growth are both positively and significantly correlated with urbanization and urban growth rates while agriculture is negatively and significantly correlated. The Africa dummy is insignificant, however the period interaction dummys are both positive and significant. The fact that the AFRICA*P1 coefficient is both larger in magnitude and more statistically significant than the AFRICA*P2 dummy is suggestive of a post-colonial adjustment effect that abated with time—consistent with the historical narrative presented above. There is little reason to suspect reverse causality in this model, given that higher levels of urbanization are generally associated with lower fertility rates and hence lower population growth rates. Consequently, if rates of urbanization were having an effect on urbanization and urban growth rates, it would most likely be a negative effect. Similarly, there is no evidence that levels of urbanization affect GDP growth rates (Bloom, Canning and Fink 2008).

Nevertheless, a second test examining the determinants of level changes in urbanization and urban population size serves as a robustness check. In this case, we examine whether or not the independent variables of interest add predictive power to a model that includes lagged values of the dependent variable as an independent variable. This approach follows the logic (although not the exact form) of a 'Granger causality test' (see Granger 1969 and Bloom, Canning and Fink 2008). A variable X can be said to 'Granger-cause' Y if X_{t-1} explains variation in Y_t when Y_{t-1} is included as a control variable in the equation. In this case, we examine whether or not our independent variables of interest help to predict levels of urbanization and urban population size at time t_2 when levels of urbanization and urban population size in t_1 are controlled for. The results of this test are presented in Table 6.

Table 6 ***Determinants of changes in relative & absolute size of urban populations***

	Level of $urbanization_{t2}$	Urban population $_{t2}$
Population growth	.023*** (.006)	.142*** (.007)
Per capita GDP growth	.019*** (.004)	.019*** (.004)
Agriculture (% of GDP)	-.002*** (.001)	-.002*** (.001)
AFRICA	.021 (.029)	.016 (.029)
AFRICA*P1	.173*** (.039)	.163*** (.039)
AFRICA*P2	.090** (.035)	.086** (.035)
$Urbanization_{t1}$	.806*** (.019)	
Urban population $_{t1}$		.804*** (.019)
National population $_{t2}$		.188*** (.020)
R-squared	.944	.992
Observations	353	353

Notes: Standard errors are in parentheses. Significance at the 1, 5 and 10 percent levels are indicated by ***, **, * respectively.

Again, the results are consistent with the hypotheses: population growth and economic growth continue to exhibit a positive and significant effect on levels of urbanization and urban population size while the share of agriculture in GDP remains negative. There is also no evidence of an 'Africa' effect, but significant evidence of a post-colonial adjustment effect as captured by the two interaction dummys. Moreover, these results can be interpreted as providing strong evidence of a causal relationship between our independent and dependent variables: levels of urbanization and urban population size at time t_2 cannot logically have influenced rates of urbanization or GDP growth in the previous 15-year period.

Conclusion

Urbanization should be viewed as a global historical process set in motion by technological and institutional changes which alleviated the surplus and disease constraints that limited population growth in the pre-industrial era. These changes initially emerged in Europe and subsequently spread, albeit unevenly, through conquest and trade. This historically grounded theory of urbanization stands in contrast to the traditional view that urbanization is essentially a by-product of industrialisation. While it is true that mortality decline and expanded access to surplus food supplies—pre-requisites for urbanization—often go hand-in-hand with economic development, they do not always do so.

In the case of sub-Saharan Africa, colonizers introduced key technological and institutional innovations and facilitated economic integration between Africa and the rest of the world, thereby alleviating the geographically determined surplus and disease constraints that had prevented urbanization from occurring earlier in the region. However, colonial influence varied significantly across countries within the region, and this variation accounts for a significant fraction of variation in early urbanization across countries.

In the post-WWII era, significant gains in life expectancy and increased access to surplus food supplies progressed more rapidly than economic development in sub-Saharan Africa. As a result, many countries in the region experienced urbanization without growth. Moreover, rapid mortality decline coupled with minimal fertility decline has created a population boom of historically unprecedented proportions—a population boom that largely accounts for extraordinary urban growth rates in the region.

There is, in sum, nothing particularly unusual about Africa's urban transition when viewed through the lens of the historical theory of urbanization outlined here. The implications of this theory, from a practical policy perspective, is that the process of urbanization cannot restrained without implementing draconian mobility restrictions or permitting disease and hunger to re-surface in urban areas. For governments concerned with easing demographic pressure in urban areas, the only humane policy option is one targeted at encouraging fertility decline in order to reduce population growth rates. While fertility decline is a natural consequence of urbanization, interventions such as family planning initiatives may serve to accelerate the process and ease the strains associated with rapid urban population growth in the region.

References

Acemoglu, D., Johnson, S. and Robinson, J. A. (2001) 'The colonial origins of comparative development: An empirical investigation', *American Economic Review*, 91 (5), pp. 1369–1401.

Anderson, David M and Richard Rathbone (2000) *Africa's Urban Past*, Oxford: James Currey, Ltd.

Bairoch, Paul (1988) *Cities and Economic Development: From the Dawn of History to the Present*, Chicago: University of Chicago Press.

Bairoch, Paul and Gary Goertz (1986) 'Factors of urbanization in the nineteenth century developed countries: A descriptive and econometric analysis', *Urban Studies*,Vol. 23 (4): 285-305.

Barrios, Salvador, Luisito Bertinelli and Eric Strobl (2006) 'Climatic change and rural-urban migration: The case of sub-Saharan Africa', *Journal of Urban Economics*, Vol. 60 (3): 357-371.

Becker, Charles M. and Andrew R. Morrison (1995) 'The Growth of African Cities: Theory and Estimates' in *Economic and Demographic Change in Africa*, Archie Mafeje and Samir Radwan (eds), Oxford: Clarendon Press, pp. 109-142.

Bhattacharya, Prabir C. (1993) 'Rural-Urban Migration in Economic Development', Journal of Economic Surveys, Vol. 7 (3): 243-281.

Bloom, David. E., David Canning and Gunther Fink (2008) ‘Urbanization and the Wealth of Nations,’ *Science*, Vol. 319 (5864): 772-75.

Bloom, David E. and Jeffrey D. Sachs (1999) 'Geography, Demography, and Economic Growth in Africa' in *Brookings Paper on Economic Activity, 2:1998*, William C. Brainard and George L. Perry (eds.), Washington, D.C.: The Brookings Institution, pp. 207-295.

Braudel, Fernand (1984) *Civilization and Capitalism, 15th-18th Century*, Vol. 3, *The Perspectives of the World*, New York: Harper & Row.

Byerlee, Derek (1974) 'Rural-Urban Migration in Africa: Theory, Policy and Research Implications', International Migration Review, Vol. 8 (4): 543-566.

Cameron, Rondo (1997) *A Concise Economic History of the World: From Paleolithic Times to the Present (Third Edition)*, Oxford: Oxford University Press.

Childe, V. Gordon (1950) ‘The Urban Revolution’, *Town Planning Review* 21(1): 3-17.

Clapham, Christopher (2006) 'The Political Economy of African Population Change', *Population and Development Review*, Vol. 32, The Political Economy of Global Population Change 1950-2050: 96-114.

Cohen, Barney (2003) 'Urban Growth in Developing Countries: A Review of Current Trends and a Caution Regarding Existing Forecasts', World Development, Vol. 32 (1): 23-51.

Cooper, Fredrick (2002) *Africa Since 1940: The Past of the Present*, New York: Cambridge University Press

Crafts, Nicholas and Anthony J. Venables (2003) 'Globalization in History: A Geographical Perspective' in *Globalization in Historical Perspective*, Michael D. Bordo, Alan M. Taylor and Jeffrey G. Williamson (eds.), National Bureau of Economic Research, Chicago: University of Chicago Press, pp. 323-364.

Davis, Kingsley (1955) 'The Origins and Growth of Urbanization in the World', *The American Journal of Sociology*, Vol. 60 (5): 429-437.

Davis, Kingsley (1965) 'The Urbanization of the Human Population', *Scientific American* 213 (September): 40-53.

Davis, Kingsley and H. Goldem (1954) 'Urbanization and the Development of Pre-Indistrial Areas', *Economic Development and Cultural Change*, Vol 3: 6-24.

de Vries, Jan (1984) *Eurpean Urbanization 1500-1800*, London: Methuen and Co. LTD

Diamond, Jared (1998) *Guns, Germs and Steel*, London: Vintage.

Dyson, Tim (2003) 'HIV/AIDS and Urbanization', *Population and Development Review*, Vol. 29 (3): 427-442.

Dyson, Tim (2010a) *Population and Development: The Demographic Transition*, London: Zed Books.

Dyson, Tim (2010b, forthcoming) 'The role of the demographic transition in the process of urbanization', in R. Lee and D. Reher (eds.) *Demographic Transition and Its Consequences*, Supplement to *Population and Development Review* vol. 36.

Fay, Marianne and Charlotte Opal (2000) *Urbanization without growth: A not so uncommon phenomenon*, Policy Research Working Paper no. 2412, Washinton D.C.: The World Bank.

Fei, J. C. H., Ranis, G. and Kuo, S. W. Y. (1979) *Growth with Equity*, New York: Oxford University Press.

Frankel, S. Herbert (1969) *Capital Investment in Africa: Its Course and Effects*, New York: Howard Fertig

Galor, Oded and David Weil (1999) 'From Malthusian Stagnation to Modern Growth', *American Economic Review*, Vol. 89 (2): 150-154.

Granger, C.W.J. (1969) 'Investigating Causal Relations by Econometric Models and Cross-spectral Methods', *Econometrica*, Vol. 37(3): 424-438.

Grauman, John V. (1977) ‘Orders of magnitude of the world’s urban population in history’, *Population Bulletin of the United Nations No.8 -1976*, New York: United Nations.

Graunt, John (1662/1964) 'Natural and Political Observations made upon the Bills of Mortality', *Journal of the Institute of Actuaries*, Vol. 90: 4-61.

Harris, John R. and Michael P. Todaro (1970) ‘Migration, Unemployment and Development: A Two-Sector Analysis’, *American Economic Review*, 60(1): 126-142.

Iliffe, John (2007) *Africans: The History of a Continent*, Cambridge: Cambridge University Press.

Kelley, Allen C. and Jeffrey G. Williamson (1984) 'Population Growth, Industrial Revolutions, and the Urban Transition', *Population and Development Review*, Vol. 10 (3): 419-441.

Lange, Matthew K. (2004) 'British Colonial Legacies and Political Development', World Development, Vol. 32, No. 6: 905-922

Lall, Somik V., Harris Selod and Zmarak Shalizi (2006) 'Rural-Urban Migration in Developing Countries: A Survey of Theoretical Predictions and Empirical Findings', *World Bank Policy Research Working Paper 3915*, Washington, D.C.: The World Bank.

Lewis, Arthur (1954). ‘Economic Development with Unlimited Supplies of Labor’, *The Manchester School, Vol. 22: 139–191.*

Livi-Bacci, Massimo (2007) *A Concise History of World Population*, Fourth Edition, Oxford: Blackwell Publishing.

Lowry, Ira (1990) ‘World Urbanization in Perspective’, *Population and Development Review*, 16: 148-176.

Maddison, Angus (2007) *Contours of the World Economy, 1-2030 AD*, Oxford: Oxford University Press.

Maddison, Angus (2009) Historical statistics: World Population, GDP and Per Capita GDP, 1-2003 AD (March 2009). Available online at: http://www.ggdc.net/maddison/

Mazumdar, Dipak (1987) 'Rural-Urban Migration in Developing Countries' in *Handbook of Regional and Urban Economics: Volume II*, E.S. Mills (Ed.), Amsterdame: Elsevier, pp. 1097-1128.

Miner, Horace (1967) ‘The City and Modernization: An Introduction’ in *The City in Modern Africa*, Horace Miner (ed.), London: Pall Mall Press, pp. 1-20.

Potts, Deborah (1995) 'Shall we go home? Increasing Urban Poverty in African Cities and Migration Processes', *The Geographical Journal*, Vol. 161 (3): 245-264.

Preston, Samuel H. (1979) 'Urban Growth in Developing Countries: A Demographic Reappraisal', *Population and Development Review*, Vol. 5 (2): 195-215.

Reader, John (2004) *Cities*, London: Vintage.

Reher, Davis S. (2004) 'The Demographic Transition Revisited as a Global Process', *Population, Space and Place*, Vol. 10: 19-41.

Richens, Peter (2009) 'The Economic Legacies of the 'Thin White Line': Indirect Rule and the Comparative Development of Sub-Saharan Africa', Economic History Working Paper No. 131, London School of Economics & Political Science.

Stren, Richard and Mohamed Halfani (2001) ‘The Cities of Sub-Saharan Africa: From Dependency to Marginality’ in *Handbook of Urban Studies*, Ronan Paddison (ed.), London: Sage Publications, pp. 466-485.

Szreter, Simon (1997) 'Economic Growth, Disruption, Deprivation, Disease, and Death: On the Importance of the Politics of Public Health for Development', *Population and Development Review*, Vol. 23 (4): 693-728.

United Nations, Department of Economic and Social Affairs/Population Division (2010) *World Urbanization Prospects: The 2009 Revision*, New York: United Nations.

Weeks, John (1995) 'Income distribution and its Implications for Migration in Sub-Saharan Africa' in *Economic and Demographic Change in Africa*, Archie Mafeje and Samir Radwan (eds), Oxford: Clarendon Press, pp. 63-83.

Appendix A

Variable	Description	Source
Level of urbanization	Percentage of national population residing in urban areas	United Nations Population Division, World Population Prospects: the 2009 Revision (2010)
Urban population	Absolute size of a country's urban population in 1000's	United Nations Population Division, World Population Prospects: the 2009 Revision (2010)
National population	Absolute size of a country's population in 1000's	United Nations Population Division, World Population Prospects: the 2009 Revision (2010)
World population (Fig. 1)	Population in millions	Maddison, Angus (2009) Historical statistics: World Population, GDP and Per Capita GDP, 1-2003 AD (March 2009). Available online at: http://www.ggdc.net/maddison/
Historical urbanization estimates (Fig. 1 & 3)	Percentage of world population residing in urban areas	Grauman, John V. (1977) 'Orders of magnitude of the world's urban population in history', Population Bulletin of the United Nations No.8 -1976, New York: United Nations.
Coastline (km)	Log of kilometres of coastline	CIA World Factbook (various years)
Waterways (km)	Log of navigable waterways	CIA World Factbook (various years)
Soil potential	Percentage of land area with soil very or moderately suitable for 6 key rainfed crops	Gallup, John L. and Jeffrey D. Sachs, with Andrew Mellinger,"Geography and Economic Development" (CID Working PaperNo. 1, March 1999). Available at: http://www.cid.harvard.edu/ciddata/ciddata.html
GDP per capita	Real GDP per capita in 1990 International Geary-Khamis dollars	Maddison, Angus (2009) Historical statistics: World Population, GDP and Per Capita GDP, 1-2003 AD (March 2009). Available online at: http://www.ggdc.net/maddison/
Colonial investment, 1870-1936	Sum of publically listed capital invested in African colonial territories between 1870 and 1936, calculated in pounds sterling	Frankel, S. Herbert (1969) Capital Investment in Africa: Its Course and Effects, New York: Howard Fertig
Indirect rule	Percentage of legal cases adjudicated by 'traditional' authorities in British colonies, 1955	Lange, Matthew K. (2004) 'British Colonial Legacies and Political Development', World Development, Vol. 32, No. 6: 905-922
Col. Civ. Serv.	Colonial civil servants per capita in African territories c. 1936	Richens, Peter (2009) 'The Economic Legacies of the 'Thin White Line': Indirect Rule and the Comparative Development of Sub-Saharan Africa', Economic History Working Paper No. 131, London School of Economics & Political

		Science.
IMR 1960	Infant mortality rate in 1960	United Nations Population Division, World Population Prospects: the 2008 Revision (2009)
Calories per capita	Average available calories per capita per day in 1960	Food and Agricultural organization, available at http://faostat.fao.org
Physicians per 1000	Physicians per 1000 population around 1960. Missing values were replaced by nearest available year	World Bank World Development Indicators online, accessed June 2011. Available at: http://data.worldbank.org/data-catalog/world-development-indicators
ΔIMR 1960-1975	Average annual rate of change in infant mortality rate between 1960 and 1975	Author calculations based on data from United Nations Population Division, World Population Prospects: the 2008 Revision (2009)
Food production & imports (Fig. 6)	Production and import volume of cereals (excluding beer) and starchy roots in tonnes	Food and Agricultural organization, FAOSTAT database. Available at http://faostat.fao.org
Food supply (Fig. 7)	Available tonnes per capita of cereals and starchy roots	Food and Agricultural organization, FAOSTAT database. Available at http://faostat.fao.org
Crude death rate (Fig. 7)	Deaths per 1000 population	United Nations Population Division, World Population Prospects: the 2008 Revision (2009)
Agriculture (% of GDP)	Average of agriculture value-added as a percentage of GDP. Calculated for three 15-year periods: 1960-1975, 1975-1990, 1990-2005	World Bank World Development Indicators online, accessed June 2011. Available at: http://data.worldbank.org/data-catalog/world-development-indicators

CSRC Series 2 Working Papers

WP1 James Putzel, 'War, State Collapse and Reconstruction: phase 2 of the Crisis States Programme' (September 2005)

WP2 Simonetta Rossi and Antonio Giustozzi, 'Disarmament, Demobilisation and Reintegration of ex-combatants (DDR) in Afghanistan: constraints and limited capabilities', (June 2006)

WP3 Frederick Golooba-Mutebi, Gabi Hesselbein and James Putzel, 'Political and Economic Foundations of State making in Africa: understanding state reconstruction', (July 2006)

WP4 Antonio Giustozzi, 'Genesis of a Prince: the rise of Ismail Khan in western Afghanistan, 1979-1992' (September 2006)

WP5 Laurie Nathan, 'No Ownership, No Peace: the Darfur Peace Agreement', (September 2006)

WP6 Niamatullah Ibrahimi, 'The Failure of a Clerical Proto-State: Hazarajat, 1979-1984' (September 2006)

WP7 Antonio Giustozzi, "Tribes" and Warlords in Southern Afghanistan, 1980-2005' (September 2006)

WP8 Joe Hanlon, Sean Fox, 'Identifying Fraud in Democratic Elections: a case study of the 2004 Presidential election in Mozambique'

WP9 Jo Beall, 'Cities, Terrorism and Urban Wars of the 21st Century', (February 2007)

WP10 Dennis Rodgers, 'Slum Wars of the 21st Century: the new geography of conflict in Central America', (February 2007)

WP11 Antonio Giustozzi, 'The Missing Ingredient: non-ideological insurgency and state collapse in Western Afghanistan 1979-1992', (February 2007)

WP12 Suzette Heald, 'Making Law in Rural East Africa: SunguSungu in Kenya', (March 2007)

WP13 Anna Matveeva, 'The Regionalist Project in Central Asia: unwilling playmates', (March 2007)

WP14 Sarah Lister, 'Understanding State Building and Local Government in Afghanistan', (June 2007)

WP15 Pritha Venkatachalam, 'Municipal Finance Systems in Conflict Cities: case studies on Ahmedabad and Srinagar, India', (July 2007)

WP16 Jason Sumich, 'The Illegitimacy of Democracy? democratisation and alienation in Maputo, Mozambique', (September 2007)

WP17 Scott Bollens, 'Comparative Research on Contested Cities: lenses and scaffoldings', (October 2007)

WP18 Debby Potts, 'The State and the informal in sub-Saharan African economies: revisiting debates on dualism', (October 2007)

WP19 Francisco Gutiérrez Sanín, Tatiana Acevedo and Juan Manuel Viatela, 'Violent liberalism? State, conflict, and political regime in Colombia, 1930-2006: an analytical narrative on state-making', (November 2007)

WP20 Stephen Graham, 'RoboWar TM Dreams: Global South Urbanisation and the US Military's 'Revolution in Military Affairs'', (November 2007)

WP21 Gabi Hesselbein, 'The Rise and Decline of the Congolese State: an analytical narrative on state-making', (November 2007)

WP22 Diane Davis, 'Policing, Regime Change, and Democracy: Reflections from the Case of Mexico', (November 2007)

WP23 Jason Sumich, 'Strong Party, Weak State? Frelimo and State Survival Through the Mozambican Civil War: an analytical narrative on state-making', (December 2007)

WP24 Elliott Green, 'District Creation and Decentralisation in Uganda', (January 2008)

WP25 Jonathan DiJohn, ' Conceptualising the Causes and Consequences of Failed States: A Critical Review of the Literature', (January 2008)

WP26 James Putzel, Stefan Lindemann and Claire Schouten, 'Drivers of Change in the Democratic Republic of Congo: The Rise and Decline of the State and Challenges For Reconstruction - A Literature Review', (January 2008)

WP27 Frederick Golooba Mutebi, 'Collapse, war and reconstruction in Uganda: An analytical narrative on state-making', (January 2008)

WP28 Frederick Golooba Mutebi, 'Collapse, war and reconstruction in Rwanda: An analytical narrative on state-making', (February 2008)

WP29 Bjørn Møller, 'European Security: the role of the European Union', (February 2008)

WP30 Bjørn Møller, 'European Security: The Role of the Organisation for Security and Co-operation in Europe', (February 2008)

WP31 Laurie Nathan, 'Anti-imperialism Trumps Human Rights: South Africa's Approach to the Darfur Conflict', (February 2008)

WP32 Ben Moxham, 'State-Making and the Post-Conflict City: Integration in Dili, Disintegration in Timor-Leste', (February 2008)

WP33 Kripa Sridharan, 'Regional Organisations and Conflict Management: comparing ASEAN and SAARC', (March 2008)

WP34 Monica Herz, 'Does the Organisation of American States Matter?' (April 2008)

WP35 Deborah Fahy Bryceson, 'Creole and Tribal Designs: Dar es Salaam and Kampala as Ethnic Cities in Coalescing Nation States

WP36 Adam Branch, 'Gulu Town in War and Peace: displacement, humanitarianism and post-war crisis' (April 2008)
WP37 Dennis Rodgers, 'An Illness called Managua' (May 2008)
WP38 Rob Jenkins, 'The UN peacebuilding commission and the dissemination of international norms' (June 2008)
WP39 Antonio Giustozzi and Anna Matveeva, 'The SCO: a regional organisation in the making' (September 2008)
WP40 Antonio Giustozzi, 'Afghanistan: transition without end' (November 2008)
WP41 Niamatullah Ibrahimi, 'At the Sources of Factionalism and Civil War in Hazarajat' (January 2009)
WP42 Niamatullah Ibrahimi, 'Divide and Rule: state penetration in Hazarajat, from monarchy to the Taliban' (January 2009)
WP43 Daniel Esser, 'Who Governs Kabul? Explaining urban politics in a post-war capital city' (February 2009)
WP44 Francisco Gutierrez et al, 'Politics and Security in Three Colombian Cities' (March 2009)
WP45 Marco Pinfari, 'Nothing but Failure? The Arab League and the Gulf Cooperation Council as Mediators in Middle Eastern Conflicts' (March 2009)
WP46 Anna Matveeva, 'The Perils of Emerging Statehood: civil war and state reconstruction in Tajikistan' (March 2009)
WP47 Jennifer Giroux, David Lanz and Damiano Sguaitamatti, 'The Tormented Triangle: the regionalisation of conflict in Sudan, Chad and the Central African Republic' (April 2009)
WP48 Francisco Gutierrez-Sanin, 'Stupid and Expensive? A critique of the costs-of-violence literature' (May 2009)
WP49 Herbert Wulf and Tobias Debiel, 'Conflict Early Warming and Response Mechanisms: tools for enhancing the effectiveness of regional organsations? A comparative study of the AU, ECOWAS, IGAD, ASEAN/ARG and PIF' (May 2009)
WP50 Francisco Gutierrez Sanin and Andrea Gonzalez Pena, 'Force and Ambiguity: evaluating sources for cross-national research- the case of military interventions' (June 2009)
WP51 Niamatullah Ibrahimi, 'The Dissipation of Political Capital amongst Afghanistan's Hazaras: 2001-2009' (June 2009)
WP52 Juergen Haacke and Paul D. Williams, 'Regional Arrangements and Security Challenges: a comparative analysis' (July 2009)
WP53 Pascal Kapagama and Rachel Waterhouse, 'Portrait of Kinshasa: a city on (the) edge', (July 2009)
WP54 William Freund, 'The Congolese Elite and the Fragmented City', (July 2009)
WP55 Jo Beall and Mduduzi Ngonyama, 'Indigenous Institutions, Traditional Leaders and Elite Coalitions for Development: the case of Greater Durban, South Africa' (July 2009)
WP56 Bjorn Moller, 'Africa's Sub-Regional Organisations: seamless web or patchwork?' (August 2009)
WP57 Bjorn Moller, 'The African Union as Security Actor: African solutions to African problems?' (August 2009)
WP58 Francisco Gutierrez Sanin, 'The Quandaries of Coding & Ranking: evaluating poor state performance indexes' (November 2009)
WP59 Sally Healy, 'Peacemaking in the Midst of War: an assessment of IGAD's contribution to regional security' (November 2009)
WP60 Jason Sumich, 'Urban Politics, Conspiracy and Reform in Nampula, Mozambique', (November 2009)
WP61 Koen Vlassenroot and Karen Büscher, 'The City as Frontier: urban development and identiy processes in Goma', (November 2009)
WP62 Antonio Giustozzi, 'The Eye of the Storm: cities in the vortex of Afghanistan's civil wars', (November 2009)
WP63 Kristof Titeca, 'The Changing cross-border Trade Dynamics of north-western Uganda, north-eastern Congo and southern Sudan', (November 2009)
WP64 Neera Chandhoke, 'Civil Society in Conflict Cities: the case of Ahmedabad', (November 2009)
WP65 Gonzalo Vargas, 'Armed Conflict, Crime and Social Protest in South Bolivar, Colombia (1996-2004), (December 2009)
WP66 Talatbek Masadykov, Antonio Giustozzi, James Michael Page, 'Negotiating with the Taliban: toward a solution for the Afghan conflict' (January 2010)
WP67 Tom Goodfellow, 'Bastard Child of Nobody?': anti-planning and the institutional crisis in contemporary Kampala' (February 2010)
WP68 Jason Sumich, 'Nationalism, ,Urban Poverty and Identity in Maputo, Mozambique', (February 2010)
WP69 Haris Gazdar, Sobia Ahmad Kaker, Irfan Khan, 'Buffer Zone, Colonial Enclave or Urban Hub? Quetta: between four regions and two wars' (February 2010)
WP70 Azmat Ali Budhani, Haris Gazdar, Sobia Ahmad Kaker, Hussain Bux Mallah, 'The Open City: social networks and violence in Karachi' (March 2010)
WP71 Neera Chandhoke, 'Some Reflections on the Notion of an 'Inclusive Political Pact': a perspective from Ahmedabad' (March 2010)
WP72 Sean Fox and Kristian Hoelscher, 'The Political Economy of Social Violence: theory and evidence from a cross-country study' (April 2010)
WP73 Chris Alden, 'A Pariah in our Midst: regional organisations and the problematic of Western-designated pariah regimes: the case of SADC/Zimbabwe and ASEAN/Myanmar' (May 2010)
WP74 Benedito Cunguara and Joseph Hanlon, 'Poverty in Mozambique is not being reduced' (June 2010)

WP75 Jonathan DiJohn, 'Political Resilience against the odds: an analytical narrative on the construction and maintenance of political order in Zambia since 1960' (June 2010)
WP76 Stefan Lindemann, 'Exclusionary Elite Bargains and Civil War Onset: the case of Uganda' (August 2010)
WP77 Stefan Lindemann, 'Inclusive Elite Bargains and Civil War Avoidance: the case of Zambia' (August 2010)
WP78 Jonathan DiJohn, 'The Political Economy of Taxation and State Resilience in Zambia since 1990' (August 2010)
WP79 Anna Matveeva, 'Kyrgyzstan in Crisis: permanent revolution and the curse of nationalism' (September 2010)
WP80 Stefan Lindemann, 'Civilian Control of the Military in Tanzania and Zambia: explaining persistent exceptionalism', (September 2010)
WP81 Laure Nathan, 'The Peacemaking Effectiveness of Regional Organisations' (October 2010)
WP82 Wilbard Kombe, 'Land Acquisition for Public Use: emerging conflicts and their socio-political implications' (October 2010)
WP83 Jonathan Goodhand and David Mansfield, 'Drugs and (Dis)order: a study of the opium trade, political settlements and state-making in Afghanistan' (November 2010)
WP84 Jonathan DiJohn, 'Taxation, Resource Mobilisation and State Performance' (November 2010)
WP85 Jo Beall, Tom Goodfellow, Dennis Rodgers 'Cities, Conflict and State Fragility' (January 2011)
WP86 Antonio Giustozzi, 'Double-edged Swords: armies, elite bargaining and state-making' (February 2011)
WP87 Lucy Earle, 'Citizenship, the 'Right to the City' and State Fragility' (March 2011)
WP88 Gabi Hesselbein, 'Patterns of Resource Mobilisation and the underlying elite bargain: drivers of state stability or state fragility' (July 2011)

These can be downloaded from the Crisis States website (www.crisisstates.com), where an up-to-date list of all our publications including Discussion Papers, Occasional Papers and Series 1 Working Papers can be found.

The Crisis States Research Centre aims to examine and provide an understanding of processes of war, state collapse and reconstruction in fragile states and to assess the long-term impact of international interventions in these processes. Through rigorous comparative analysis of a carefully selected set of states and of cities, and sustained analysis of global and regional axes of conflict, we aim to understand why some fragile states collapse while others do not, and the ways in which war affects future possibilities of state building. The lessons learned from past experiences of state reconstruction will be distilled to inform current policy thinking and planning.

Crisis States Partners

Ardhi University
Dar es Salaam, Tanzania

Collective for Social Science Research
Karachi, Pakistan

Developing Countries Research Centre (DCRC)
University of Delhi
Delhi, India

Department of Environmental and Geographical Sciences
University of Cape Town
Cape Town, South Africa

Instituto de Estudios Políticos y Relaciones Internacionales (IEPRI)
Universidad Nacional de Colombia
Bogotá, Colombia

Makerere Institute of Social Research
Makerere University
Kampala, Uganda

Research Components

Development as State-Making

Cities and Fragile States

Regional and Global Axes of Conflict

Development Studies Institute (DESTIN)
LSE, Houghton Street, London WC2A 2AE
Tel: +44 (0)20 7849 4631
Fax: +44 (0)20 7955 6844
Email: csp@lse.ac.uk
Web: www.crisisstates.com