

Transforming Dar es Salaam into a City that Work

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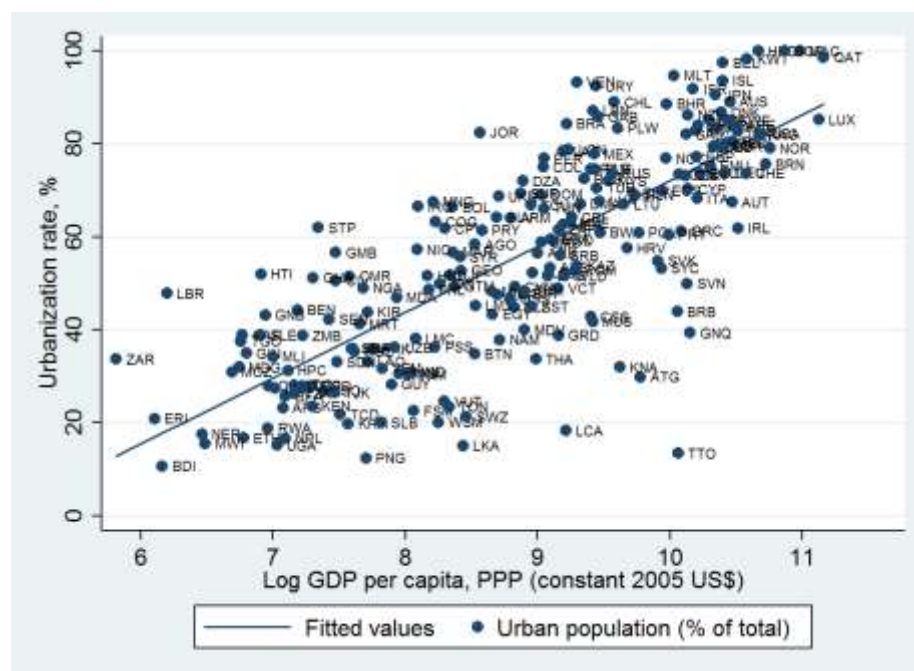
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Introduction

Urbanization is central to the national growth process. As countries develop, workers move from rural areas to urban areas for jobs that are productive and therefore better paid. Not only do the people who migrate to cities gain, those who remain in rural areas also become better off: they have more land per person, and their produce fetches better prices in urban markets.

As shown in Figure 1, most countries reach an urbanization rate of about 40% before achieving upper middle-income status (countries with a GDP per capita of more than US\$2,505 but less than US\$12,125) while high-income countries have urbanization rates of 70% to 80% (World Bank, 2013).

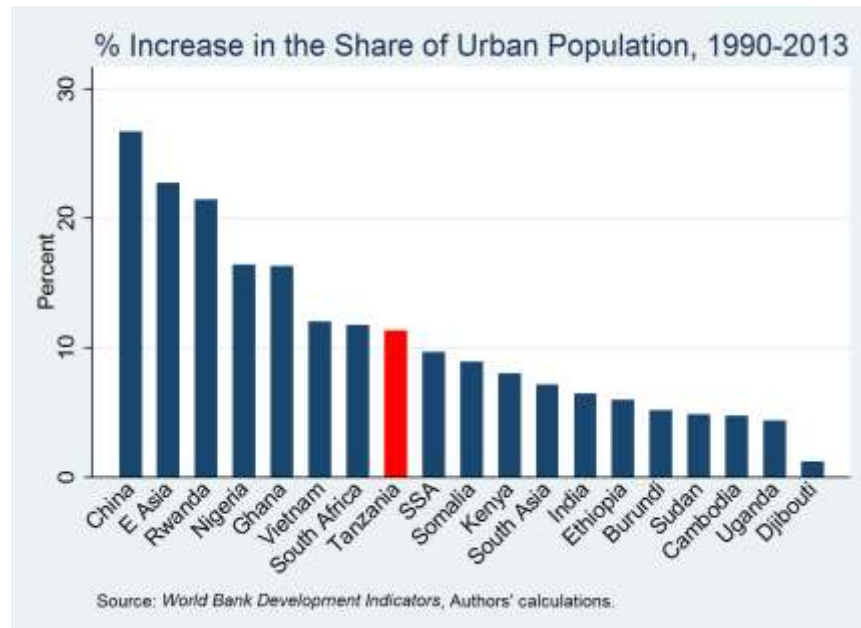
Figure 1: Urbanization and Economic Development



Source: World Development Indicators, Authors' calculation.

Tanzania — like other countries in sub-Saharan Africa — is urbanizing rapidly. Its rate of urbanization is slightly higher than the sub-Saharan Africa average but not as high as that of other developing regions like East Asia (Figure 2).

Figure 2: Urbanization in Tanzania & Other Countries



Since 1967, Tanzania's cities have become home to more than 30 million new residents (Wenban-Smith, 2014). Dar es Salaam — Tanzania's primate city — has experienced the largest increase in population (see Figure 3). Between 2002 and 2012, its population grew by more than 6% per annum, with over 70% of this increase being accounted for by in-migration from other regions (Wenban-Smith, 2014). Although Dar es Salaam is no longer Tanzania's political capital (Dodoma became the national capital in 1973), it remains the country's largest city, both in terms of population and business activity.

Tanzania is 30% percent urban today and will be 50% urban by the year 2030. Since the national population will also increase substantially, Tanzania's urban population is expected to triple in size over the next 34 years. This means that only one third of the urbanization infrastructure that Tanzania will need by 2050 has already been built. Yet it has taken around a century to build that existing third. The challenge facing the society between now and 2050 is thus to build twice as much as has yet been built but in just one third of the time.

Figure 3: Urbanization in Tanzania across Time

Tanzania	1967 Census	1978 Census	1988 Census	2002 Census	2012 Census
Mainland Urban Population (Growth rate % p.a.)	685,092	2,257,921 (11.5%)	3,999,882 (5.9%)	7,554,838 (4.7%)	12,701,238 (5.3%)
- of which: Dar es Salaam (Growth rate % p.a.)	272,821	769,445 (9.9%)	1,205,443 (4.6%)	2,336,055 (4.8%)	4,364,541 (6.5%)
Mainland Total Population (Growth rate % p.a.)	11,975,757	17,036,499 (3.3%)	22,507,047 (2.8%)	33,461,849 (2.9%)	43,625,354 (2.7%)
Urbanisation (%)	5.7	13.3	17.8	22.6	29.1

Source: Wenban-Smith (2014).

But it will not even be enough to do six times more than what has been done. As we show, Tanzania's urbanization to date has not generated the physical conditions in which ordinary workers can be productive, and ordinary households can live in decent surroundings. That so much is left to be built is a huge opportunity to do things better but this depends upon understanding what has gone wrong to date.

In this chapter we set out the potential of urbanization, present new evidence that Dar es Salaam is not yet realizing this potential, and discuss the policies that could promote change. We focus on Dar es Salaam because it is Tanzania's primate city. Currently, Dar es Salaam accounts for 40 percent of the country's urban population, 17 percent of GDP and 70 percent of all taxes (World Bank, 2015).

2. Connectivity and the Miracle of Urban Productivity

The starting point in understanding what has gone wrong is to see how a successful city raises the productivity of its workforce. It does so through enabling firms to achieve *scale* and *specialization*. The simplest benefits of scale are technological: for example, a large boiler is more efficient than a small one. Specialization enables skills to develop. Skill develops through time spent doing the same task, a process known as 'learning by doing'. Probably the most important component of the miracle of productivity that cities enable is that by specializing on a single narrowly-defined task, a worker is able to concentrate learning on acquiring the corresponding narrowly-defined skill. As a result, the workforce accumulates far more human capital than if it were unspecialized. Scale

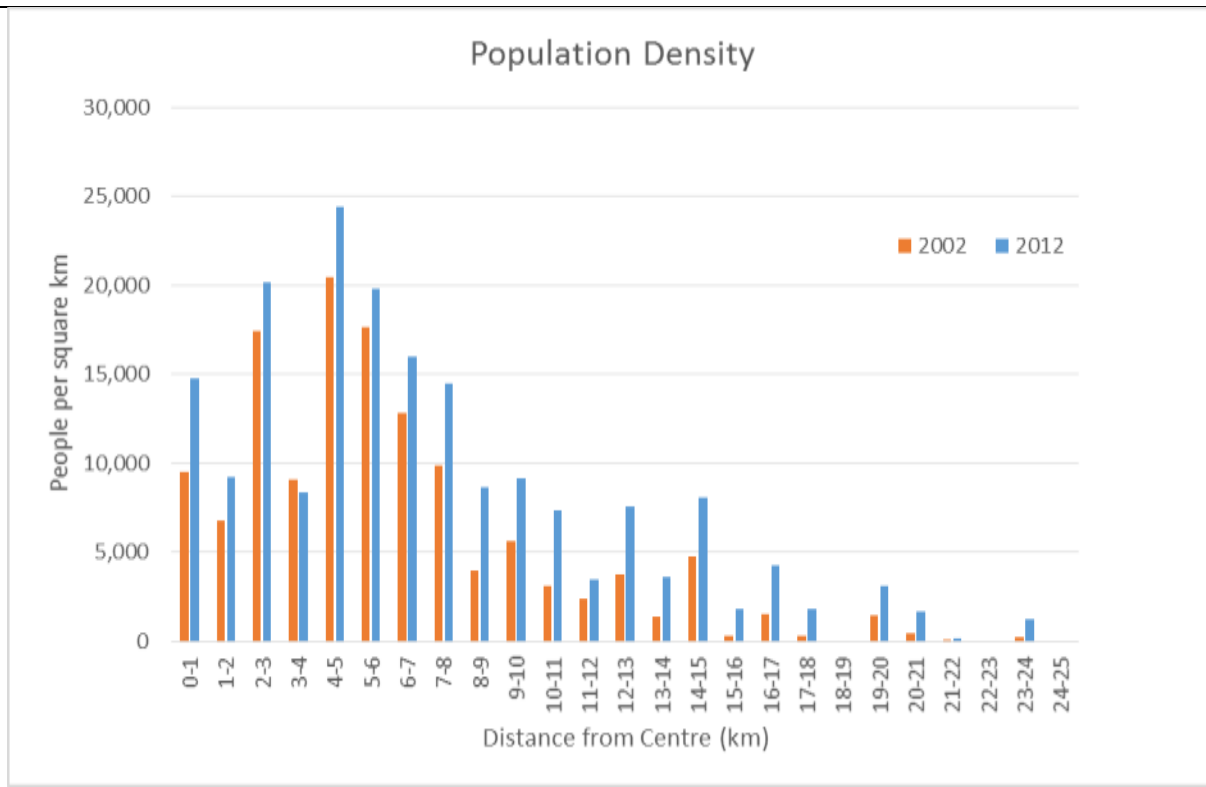
and specialization interact. At low volumes of production a task that requires only a small proportion of the total work time will not warrant having anyone dedicated to it. Hence, the larger is the scale of production the more specialized each worker can be. Scale and specialization apply not just within individual firms, but to the market as a whole. Scale enables more firms to co-exist, and so makes markets more competitive. Competition is a spur to *dynamic* efficiency: firms struggle to innovate in order to get ahead of rival firms.

Scale and specialization both have important spatial implications. Technological scale can only be realized if the product is produced in one place. Market scale economies can only be realized if many producers are able to reach a common large group of consumers. Specialization in a particular skill is only possible if many complementary skills can be mustered together in the same location. The common spatial requirement for these conditions is *connectivity*. Producers must be sufficiently well-connected with consumers that both can transact in markets that are specialized yet competitive; workers must be sufficiently well-connected with firms that both can transact in such markets. Since people both consume and work these distinct transactions share a common need: *connectivity between households and firms*.

A successful city provides good connectivity. It can be achieved in two different ways: the distance between households and firms can be reduced, and the cost of transport per unit of distance between them can be reduced. These two approaches require different actions but they are complements not alternatives. Reducing the distance between households and firms involves increasing their density of occupation: firms and households cluster more closely together. Reducing the cost of transport per unit of distance involves investment in transport infrastructure, such as roads and rail lines, and transport services such as bus companies. Although these are distinct, over a range they are complements. As the density of occupation in any two locations increases, there is more scope for reaping scale economies in transport links between them. However, for any given transport technology, at some point increases in density start to increase the unit cost of transport. This is due to congestion, the most evident example being a traffic jam.

In summary, *productivity depends upon connectivity, and the two inputs into connectivity are density and transport*. So how well has Dar es Salaam been doing in respect of density and transport?

Figure 4: Population density in Dar es Salaam 2002 and 2012

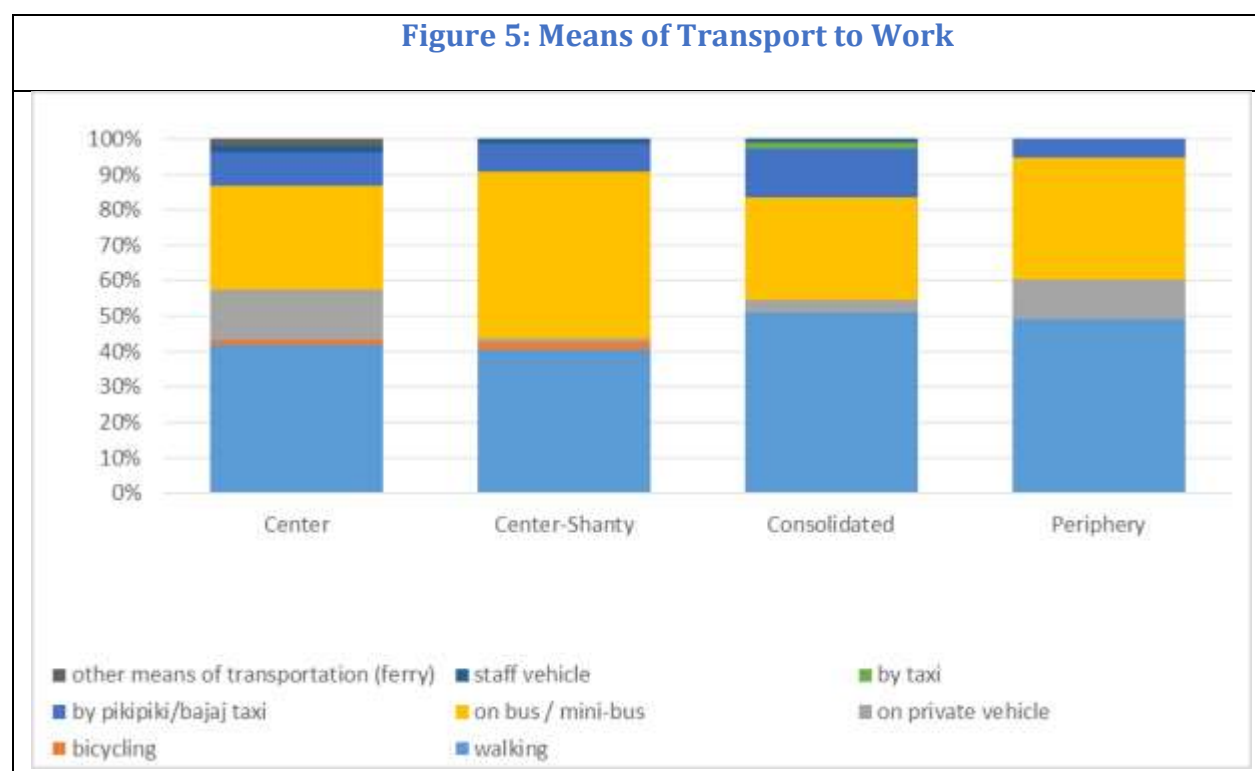


Source: Census 2002 and 2012

Near the central business district (CBD), the average population density of Dar es Salaam is about 20,000 people per square kilometer (Figure 4). This is much lower than in more successful developing country cities. For example, by 1980 Jakarta's CBD was more than double this density, while in Shanghai and other large Asian cities it has exceeded 100,000 people per square kilometer. Although the population of Dar es Salaam is growing, the extra people are accommodated predominantly by the city spreading outwards rather than by higher density. Figure 4 shows where the extra population located during 2002-12.

As to transport in the city, a useful indicator is how people get to work. The most common mode of transport to work is on foot. According to the Measuring Living Standards within Cities data, 43% of household heads walk to work (Figure 5). One implication is that many

workers are only able to seek jobs in those areas of the city within walking distance of their homes. Thus, Dar es Salaam is currently not benefiting from the potential productivity gains of an integrated urban labour market.



Source: World Bank (2015).

More fundamentally, it is not generating the productive jobs that follow from firms being able to achieve scale and specialization. Most people (87%) work in micro enterprises (World Bank, 2014). Such small firms cannot generate high productivity even if they cluster together in densely populated areas. While our data does not allow us to investigate changes over time, we find that for micro, small, and medium-sized firms, worker productivity is *not* correlated with density. As a result, around half of all the owners of small-scale businesses, (let alone their employees), say that they would accept a fulltime, salaried job if offered one

(MSME, 2010). Given the shortage of wage employment in larger, more productive firms, these individuals have no choice but to earn a living through self-employment. To the limited extent that Tanzanian cities have provided connectivity it has helped larger firms to be more productive. We find that in contrast to the lack of a relationship between productivity and density for smaller firms, for those which are larger and formal, (those with over 100 employees), productivity increases as cities get larger. The problem is not that good connectivity does not deliver productivity in Tanzania, but that connectivity is so inadequate that few large firms can survive.

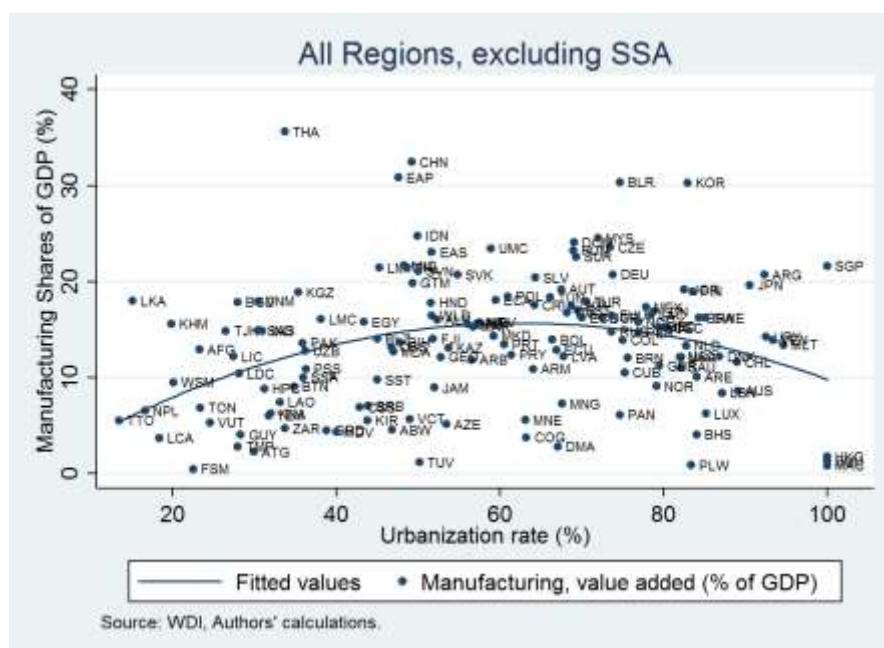
The density and transport which a city needs to support productive firms are the result of investments in physical structures. There are three distinct types of structures, each undertaken by a different type of investor: households invest in residential property, firms invest in commercial property, and government invests in infrastructure. Each type of investment involves thousands of decisions by many different people, but the pay-off to each particular investment depends upon what other investments are made. This interdependence requires some mechanism for coordination of the thousands of decisions involved. There are two processes for achieving this coordination: active markets in urban land, and credible planning. Sometimes they are posed as alternatives, but this is a mistake: they are complementary. Markets alone cannot satisfactorily resolve the indeterminacy that follows from interdependence, while planning alone cannot possibly cope with the vast amount of information required for so many different decisions. Tanzanian urbanization has not suffered from an imbalance between active land markets and credible planning, but from an acute shortage of both.

3. Connectivity and Firm Productivity: New Tanzanian Evidence

Inadequate investment in connectivity inhibits the miracle of productivity. One consequence is that firms struggle to compete internationally and this may have contributed to Africa's lack of success in global manufacturing. Since 1980, Africa's share of world output of both manufactured goods and trade has declined (UNIDO, 2009). Between 1995 and 2008, employment growth in manufacturing was only about 3% in Africa whereas it was more than 6% for other developing regions (Page, 2011).

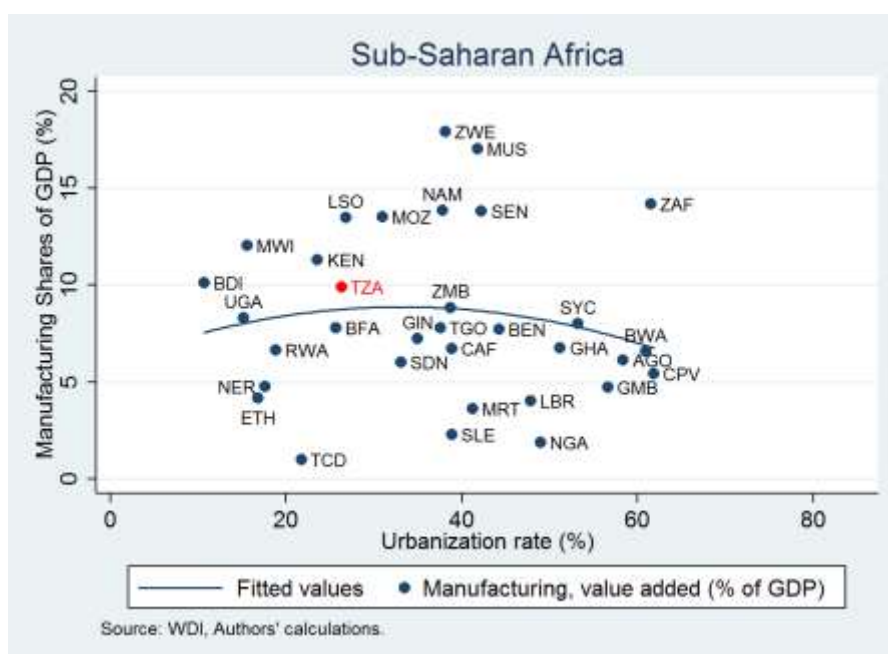
In other regions urbanization and industrialization have tended to go hand-in-hand (Figure 6). Manufacturing continues to grow until urbanization reaches about 60% and manufacturing comprises about 15% of GDP.

Figure 6: Urbanization and Industrialization



This pattern of development, however, not been followed by Tanzania, and indeed not by most countries in sub-Saharan Africa (Figure 7). Instead, urbanization has occurred without industrialization. While Tanzania is slightly above the African average in terms of its manufacturing share, it lags behind other African countries like South Africa.

Figure 7: Urbanization and Industrialization in SSA



So what has been driving urbanization in Tanzania? Recent research by Gollin *et al.* (2014) suggests that the key driver has been rapid, natural resource development. In Tanzania, as in much of Africa, the natural resource sector has grown rapidly, due partly to new discoveries and partly to the increased prices of the recent super-cycle for existing resource extraction. This expansion has attracted workers into the sector from both agriculture and manufacturing. Meanwhile, the income generated from the resource sector has been spent disproportionately on manufactured goods that are imported, and services that cannot be

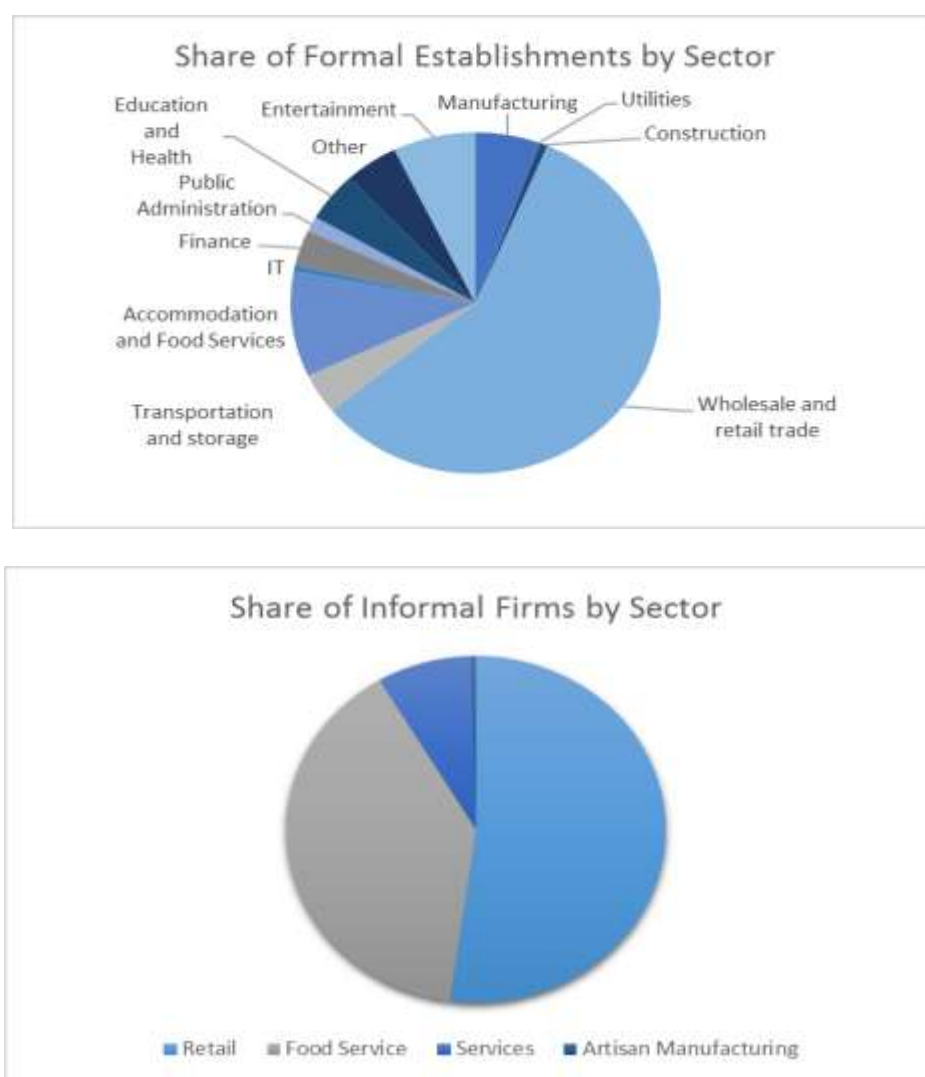
imported. These services are produced in Tanzania's cities and account for the rapid urban growth. However, such cities are merely catering for consumer demand generated by the success of the resource sector, rather than themselves generating a miracle of productivity. Gollin terms them 'consumption cities' to contrast with the cities of East Asia in which growth is driven by industrialisation.

Is this an accurate characterization of Tanzanian urbanization to date? To find out, we use new data on the productivity of Tanzanian firms. We draw upon two surveys: the World Bank Enterprise Survey data (2006-2012) and the Micro, Small, and Medium Enterprise (MSME) Survey which was collected in 2010 by the Financial Sector Deepening Trust in collaboration with the Tanzanian Ministry of Trade and National Bureau of Statistics.

Gollin et al's hypothesis of the 'consumption city' is that urban growth is dominated by the services sector. This is indeed the pattern in Dar es Salaam: a large percentage of both formal and informal sector firms operate in retail trade and services. According to the most recent Business Register Survey (2011/2012), 57% of firms in the formal sector and 52% of firms in the informal sector are engaged in wholesale or retail trade. This percentage rises to almost 75% when food service is included. Consistent with Dar es Salaam being a 'consumption city', manufacturing accounts for only 6% of formal sector firms and 1% of micro and small firms. Furthermore, this percentage has decreased over the past decade. Back in 2003-05, the figure for formal sector firms was 10% (Business Survey 2003-05, National Bureau of Statistics).

According to the MSME data, there are 405,902 micro, small, and medium enterprises in Dar es Salaam, with over 800,000 people working in them. Most of these enterprises are one person establishments with no paid employees that are run at the household level. These firms trade mainly in retail and food services (Figure 8), and their turnover rate is high. For example, more than 30% of these firms had exited the market during the two years prior to the MSME survey.

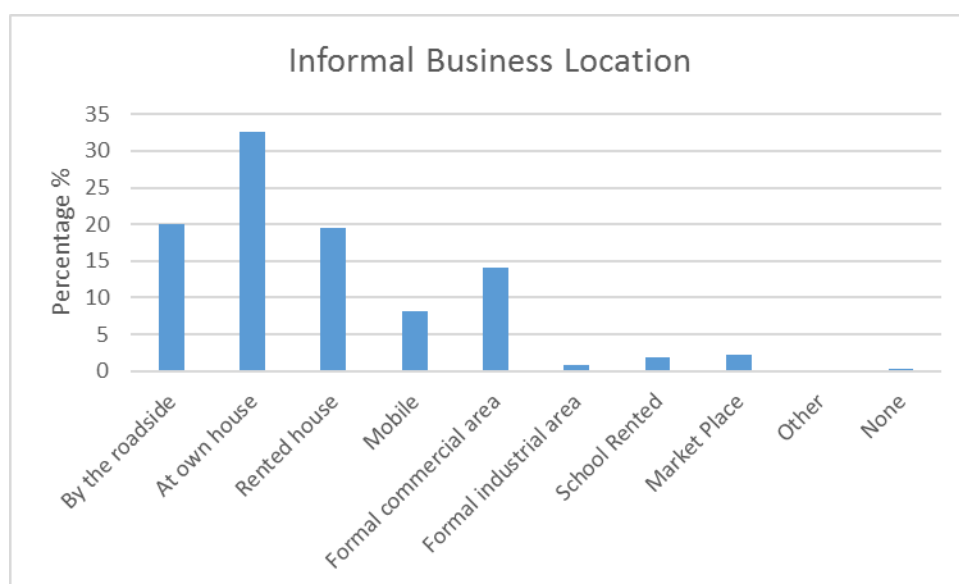
Figure 8: Share of Firms, by Sector



Source: Author's calculations based on Business Register Report 2011/12 (National Bureau of Statistics, Tanzania) and MSME Survey (FSDT 2012).

Around a third of all informal enterprises are located at the owner's own house, and a further 20% are located in a house that the business owner rents. Thus over half of all informal sector firms are located in residential areas (Figure 9). Most of the others are located by the roadside or operate as mobile businesses which move across the city from day to day. Only 17% are in fixed markets, commercial or industrial areas. Perhaps not surprisingly, the geographic market which these firms serve is limited. More than 70% report that 'most of their customers live within the same ward as where their firm is located.'

Figure 9: Business Local among Informal Enterprises



Source: MSME Survey (FSDT 2012).

Inevitably, firms that are this small cannot reap the potential of urbanization for productivity gains. We find that their productivity is not correlated with either density or transport connections (as measured by access to roads). More specifically, to examine the relationship

between urban characteristics and firm productivity, we estimate the following productivity equation:

$$\ln y_{idr} = \beta_0 + X_{idr}\theta + Z_{idr}\gamma + U_d\delta + v_r + \varepsilon_{idr} \quad (1)$$

where y is the monthly sales per worker of the i^{th} firm which is located in urban district d and region r , X is a vector of the business owner's characteristics (e.g., age, gender, years of education, etc.), Z is a vector of firm characteristics (e.g., number of paid employees, industrial sector, firm age, etc.), δ is a vector of urban district characteristics, v_r are regional fixed effects, and ε_{idr} is an error term. Our focus is on the estimated coefficients for the urban characteristics, δ . We include six of them and restrict our sample to firms which operate in urban districts of which there are 24 in Tanzania. Our six characteristics are population density (logged); the growth of night lights 2005-10; and four distances: to the nearest paved, trunk road, to the nearest paved, regional road, to the coast, and to Lake Victoria.

We distinguish between two types of entrepreneurs: true and reluctant. We proxy 'true' entrepreneurs as those business owners who reported that they started their business because they 'saw a profitable market opportunity,' or 'wanted to try a business idea' or 'believed they could make more money working for themselves than someone else.' 'Reluctant' entrepreneurs are simply those who cited any other reason for starting a business. For example, 12% of business owners reported that they started their business because they had 'no better option.' Such business owners are not entrepreneurs in the true sense — that is, individuals who see a market opportunity and capitalize on it. Rather, they are struggling to survive.

When we run the equation on the sample of ‘reluctant’ entrepreneurs, none of these urban characteristics is significant. By contrast, when run on the sample of ‘true’ entrepreneurs, we find that proximity to a paved road and access to electricity are both positively correlated with firm productivity and significant at the 5% level. Population density, however, remains insignificant. We then introduced another likely influence on productivity, namely education. We investigated whether education enabled entrepreneurs to take advantage of the greater market opportunities provided by population density. For this we added a further term which inter-acted the entrepreneur’s level of education with the population density of his district. This new term was indeed positively associated with firm productivity (and significant) — but again only for the sample of ‘true’ entrepreneurs. Thus, even for small firms, as long as they are run by entrepreneurs who are educated and motivated, productivity is enhanced by connectivity (through both density and transport). This is the case even when controlling for the capital intensity of the firm, the industry that it is in, and the entrepreneur’s other personal characteristics. An implication is that connectivity can benefit small firms as well as large ones. But the benefits for small firms depend upon a higher level of education than is currently common, and a more selective entry into entrepreneurship. This in turn depends upon more jobs being generated by large firms that provide a better alternative for ‘reluctant’ entrepreneurs.

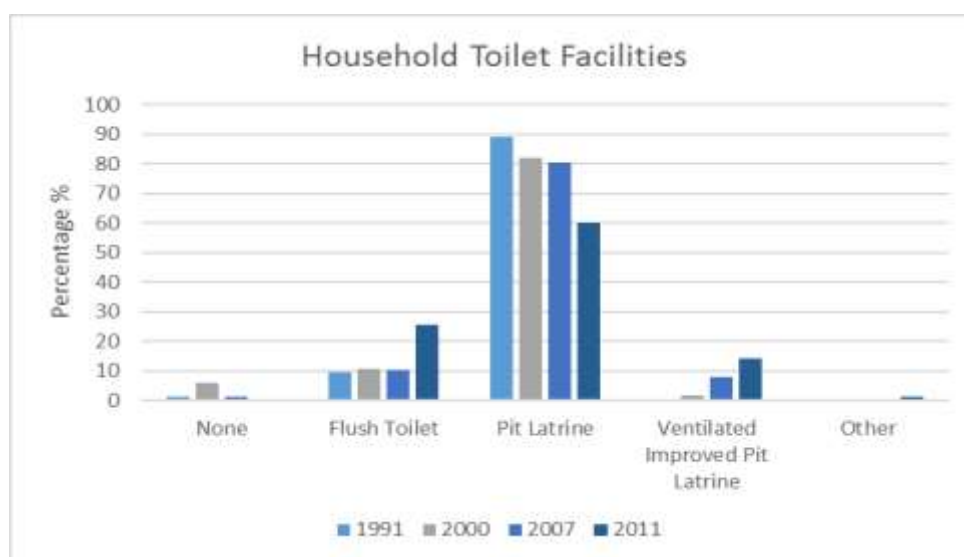
3. Livability: Evidence for Dar es Salaam

Well-functioning cities are not only productive places for firms, they are also pleasant places for people to live. So how liveable is Dar es Salaam? We take several measures of livability, drawing on the Tanzanian Budget Surveys, the Tanzanian National Panel Survey, and the Measuring Living Standards within Cities Survey of the World Bank. The evidence suggests

that Dar es Salaam still has a long way to go before the majority of its residents have access to basic services and affordable housing. According to the latest Population and Housing Census (2012), the city has 4.4 million inhabitants. It accounts for 40 percent of Tanzania's urban population, 17% of its GDP, and 70% of its taxes (World Bank, 2015).

Due to its implications for health, probably the single most important measures of livability concern water: both the disposal of human waste, and the supply of drinking water. Most households in Dar es Salaam (58%) share their toilet facilities. This is considerably higher than in other urban areas at 46% (Tanzania National Panel Survey (2010-11). Not only do most households share toilets, but they rely upon unventilated pit latrines (Figure 10). Having more space, rural households have better access to sanitation than urban households with only 20% sharing a toilet.

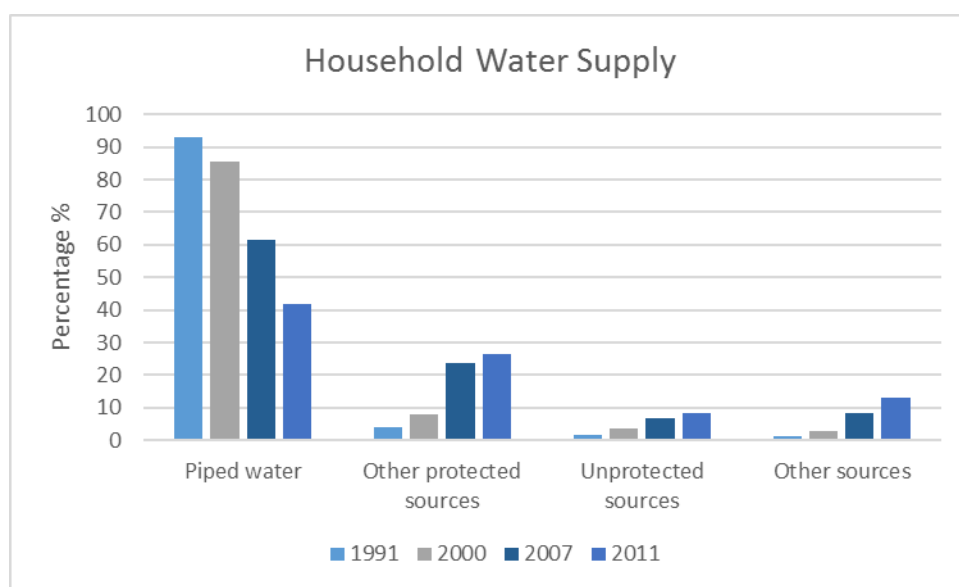
Figure 10: Household Sanitation in Dar es Salaam



Source: Household Budget Surveys.

As to drinking water, less than half of households have access to piped water, and this is mostly shared. Over 40% of households report that their main source of water is the water pipe at a neighbour's house (*Measuring Living Standards within Cities Survey (MLSC)*). Strikingly, access to piped water has sharply declined over the past decade (see Figure 11 below).

Figure 11: Household Water Supply in Dar es Salaam



Source: Household Budget Survey

The city authorities have not yet managed to reconcile livability with density. In the high density areas of the city - the shanty areas – 80% of households share toilet facilities and 51% share a water source. In contrast, on the periphery of the city, where density is much lower, access to basic services is better. There, only 36 percent of households share toilet facilities (World Bank, 2015).

A further important measure of livability is the quality of the housing stock. In Dar es Salaam, 60% of residents now live in slums, defined as areas characterized by some combination of poor quality housing, over-crowding, and inadequate access to clean water and sanitation (UN Habitat, 2012).

4. Public Policies that Deliver Connectivity: Land Markets and Credible Planning

Evidently Dar es Salaam is not yet a city in which plenty of firms can be productive, and ordinary people are able to live in decent conditions. But by 2050 Dar es Salaam may well be three times its present size, and this expansion is an opportunity to reshape the city. We have suggested that making Dar es Salaam a productive city requires enhanced connectivity. In turn this requires both greater density of firms and households, and better transport links between them. Coordinating the thousands of investment decisions involved in achieving connectivity depend upon active land markets and credible planning. Each of these requires strong public policies.

Land markets depend upon an efficient process of registering and exchanging land titles: Tanzania lacks such a system. Many households do not have tenure security and therefore worry about possible eviction. Around 80% of all the buildings in Dar es Salaam are situated on unplanned land (Kironde, 2009). Lacking both secure title and supporting infrastructure, there has been little incentive to make substantial investments in these buildings. As a result, Dar es Salaam is overwhelmingly a single-storey city, and so even the modest levels of density achieved near the city centre come at the price of overcrowding. Lacking the floor

space that would be provided by multi-storey building, the shanty areas are very crowded without being very dense.

Secure titles will need to be complemented by active markets in land and homes. Land near the city centre needs to change use from single-storey homes to business premises and multi-storey housing; people will only search for jobs in a wider area of the city if they can readily relocate.

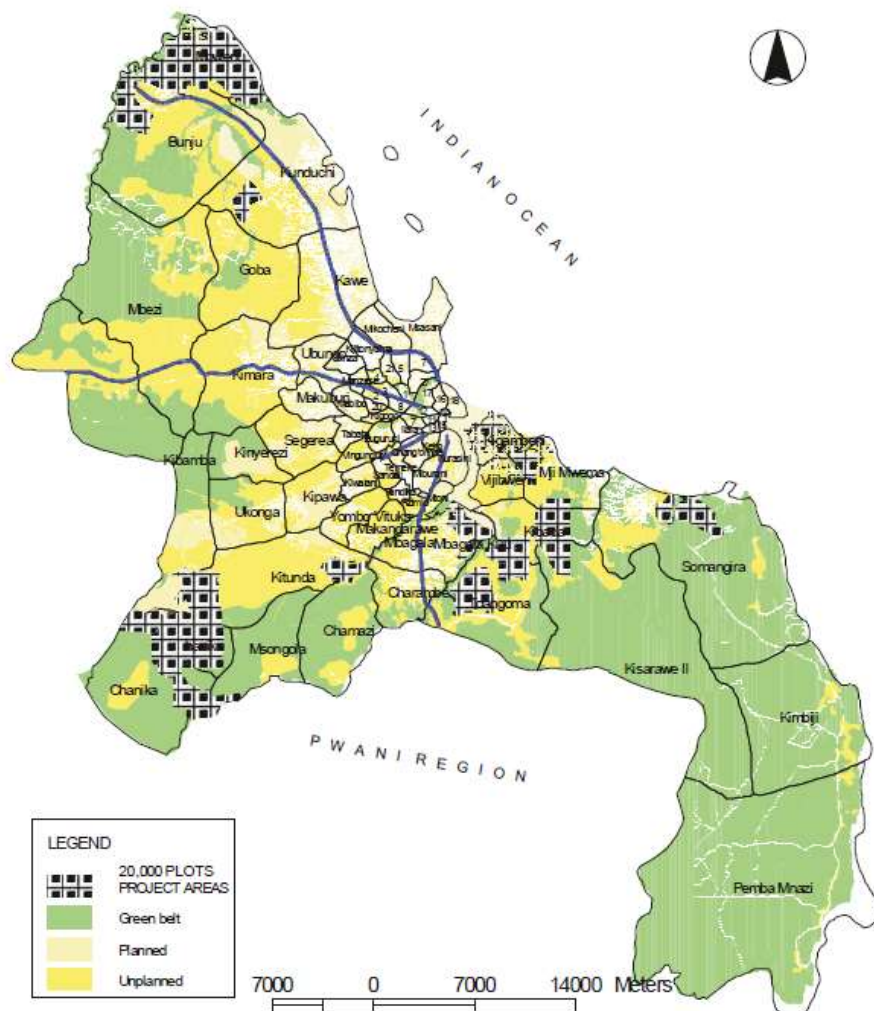
Credible planning depends not upon drawings done by architects, but upon laying down physical infrastructure that decisively defines patterns of future land use by means of roads, water, power and sewerage. Yet Dar es Salaam has little planned land. While many factors are likely to be involved, there is little doubt that the city's regulatory framework plays a major role. Acquiring planned land in Dar es Salaam is not easy. Individuals must comply with at least three forms of regulation. First are *administrative procedures* (steps that individuals have to take in order to apply for and acquire planned land); next are *planning standards* (requirements — like minimum plot size); and finally, *planning regulations* (rules that restrict land from certain types of development). In many cases, these regulations make it economically infeasible for urban residents to acquire planned land, forcing them to seek alternative land sources. Planning standards, for example, require that urban plots be at least 400 square meters which, given current land prices, is beyond the budget of most Tanzanians.

To try to alleviate this problem, the government initiated a large, planned land delivery project in 2002 which became known as the 20,000 Plots Project. The project eventually turned out nearly 35,000 plots in 12 locations, consuming some 75,816,731m² of land. However, it had weaknesses. Despite the poor living conditions for ordinary people it targeted mainly middle and high income households. Despite the need for density, it contributed to Dar es Salaam's sprawl, a process which we have already seen from Figure 3, which showed the changes in population density at different distances from the city centre. Most of the 20,000 plots were developed in peri-urban areas and had large plot sizes. Figure 12 shows their location. Despite it now being over 10 years since the project was first implemented, many plots remain undeveloped and, those that have been developed tend to have expensive houses.

Despite these limitations, the Ministry of Lands has chosen to replicate the 20,000 Plots Project, extending loans to the three municipalities of Dar es Salaam so that they can implement similar schemes. Planned land use schemes have been carried out in areas of Gezaule (Temeke), Kinyerezi (Ilala) and Mivumoni (Kinondoni). Municipalities have also taken out loans from financial institutions to assist them in their development. The Kinyerezi scheme, however, has stalled due to disagreement between the municipality and land owners. A further large new housing project has taken place in Kigamboni which, though near the city centre, is not easily accessible. The area lies on the eastern shore of Dar es Salaam (across the harbour from the CBD) and can only be reached by ferry or car. Both options are time consuming: there are long waits for the ferry and the overland car route can take two hours. A bridge is being constructed across the harbour, financed largely by the

National Social Security Fund (NSSF), and this will connect Kigamboni to the CBD. It is likely to have a fundamental impact on the spatial development of Dar es Salaam.

Figure 12: Map of the locations of the 20,000 plot areas



Source: UN Habitat (2010).

While these government projects were intended to increase the supply of planned land, severe shortages still persist. If it is not possible radically to speed up the public preparation of land, a more minimalist approach would be to auction land to commercial developers, with conditions attached concerning the infrastructure which they must provide and the time by which it must be completed. Recall that the preparation of urban land must proceed far more swiftly than it has to date.

The infrastructure needed for connectivity and decent living conditions is partly for livable density and partly for transport links. That for density is site preparation such as beneath-ground water, sewerage and power. That for transport links is the local road grid, the arteries that connect localities to the CBD, and a dedicated mass transit system such as Bus Rapid Transit (BRT). A BRT system is now being retrofitted to cover parts of Dar es Salaam, but it would have been far easier to install, in terms of both politics and cost, if it had been done in advance of settlement.

Despite government initiatives, Dar es Salaam and other cities have become increasingly short of the infrastructure needed for connectivity and decent living conditions. Yet with an effective tax system, its cost can be fully recovered. The productivity that connectivity generates is reflected in higher land values for those locations at which firms can operate productively and households can live within reach of productive work. Taxing this appreciation in land values, both directly and through annual charges on land ownership, provides a simple means of financing infrastructure. Yet to date, land appreciation in Dar es Salaam has been captured by well-connected individuals rather than by society as a whole.

Conclusion

Tanzania is urbanizing fast but it is still only about one-third of the way through its urbanization process. This gives policy makers a window of opportunity to design new policies which avoid the mistakes of the past. From global experience, we know that urbanization can bring large benefits: by enabling firms to reap the productivity gains of scale and specialization it makes ordinary workers better off. Cities perform this miracle of productivity by providing good connectivity between firms and households. Connectivity depends partly upon high density of settlement, and partly upon good transport links within the city and to national and international markets. But high density threatens to reduce livability unless floor space per hectare is increased by constructing buildings that have multiple storeys. Both transport links and building height require large investments. The myriad decisions that underpin these investments need to be coordinated through active land markets and planning that is made credible by advance public investment in pertinent infrastructure. Both land markets and public investment require strong public policies.

The evidence that we have presented suggests that even to date such limited connectivity as has been achieved has enhanced firm productivity. But connectivity has been far too limited to provide an environment in which many large firms can prosper. The most common means of getting to work is on foot, and in receiving and making the deliveries intrinsic to the functioning of large firms, they face traffic gridlock. As a result there are very few jobs in large firms. Most urban workers have no option but to try to be small-scale entrepreneurs despite lacking the motivation and education to succeed. Such tiny, ill-managed firms cannot

harness even the limited potential for scale and specialization feasible with current urban connectivity since they lack the necessary 'organizational capital'.

The evidence also suggests that, as in much of urban Africa, living conditions in urban Tanzania are very poor. In some respects they are worse than in rural areas, and also worse than Asian cities. The cost of African urban labour is often higher than in other developing regions that are competitors for the location of global manufacturing (Gelb, 2013; Iarossi, 2009). The need for firms to compensate for poor living conditions by offering higher wages may account for the higher cost of labour. If so, poor living conditions feed directly back onto the economy, inhibiting industrialization.

So, what needs to be done to transform Dar es Salaam into a well-functioning city? Getting the right institutional and planning systems in place is critical. Much of the city's growth has taken place without effective planning by local government. Dar es Salaam, for example, had no master plan in place between 1999 and 2012. As a result, a large percentage of the city's roads are unplanned and not paved. While the government published a new master plan in 2013, it will need to expand its revenue base significantly in order to carry out the planned investments.

Both Dar es Salaam and secondary cities in Tanzania need to develop clear investment plans that are funded through a variety of financial instruments. Recent improvements in revenue collection in Tanzania's medium-sized cities (utilizing modern, GIS-based, electronic systems) show promise, and similar efforts should be scaled-up to all urban local

governments. Intergovernmental fiscal transfers need to become more consistent, be linked with investment demand, and respond to performance metrics. In addition, taxing land appreciation is a fair and non-distortionary way of raising tax revenues. Building the capacity to tax valuable urban land links naturally to the need for a register of land ownership. In turn, clarity of land ownership is a pre-condition for an effective land market. Without such a market, the city is unable to evolve through changing uses of land as it grows. Partly because of this, to date, much of the growth has been in outward sprawl instead of internal intensification. Looking towards the future, plans should be put in place to reinvest the anticipated revenue from the gas sector into Tanzania's cities.

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Appendix: City Size and Firm Productivity

Our results on small firms depend upon a single, cross-section of data. The correlations that we observe may reflect causal relationships but could also arise indirectly. Our evidence is consistent with what is known about the productivity benefits of connectivity from studies in other countries, but in itself it is not decisive. We can correct for some of these deficiencies by using new data from the World Bank Enterprise Surveys which enable the same firm to be studied at two different times: 2006 and 2012. With these data we ask a simple question: ‘Do larger cities in Tanzania increase firm productivity?’ For this we estimate the following equation:

$$\ln y_{ict} = \beta_0 + \beta_1 \ln k_{ict} + \beta_2 \ln l_{ict} + \beta_3 \ln POP_{ct} + v_i + w_t + \varepsilon_{ict} \quad (2)$$

where y is the annual sales per worker of the i^{th} firm which is located in city c at year t , k is the firm’s capital-labour ratio, l is the firm’s number of full-time employees, POP is the city population of the city where the firm is located, v_i are firm fixed effects, w_t are time fixed effects, and ε_{ict} is an error term. Our sample is comprised of 288 firms which are located in Tanzania’s three largest cities (Dar es Salaam, Mwanza, and Arusha). We estimate the model with fixed effects (using a fixed effects estimator) and without (using an OLS estimator). In addition, we estimate equation (2) with an interaction term between $\ln POP$ and $\ln l$. The results from our estimation analysis are listed in Table 1.

Controlling for firm fixed effects makes a difference when examining the impact of city size on firm productivity. In columns (1) and (2) of Table 2, the coefficient on city size is

insignificant when we estimate our model using OLS analysis. It is also insignificant when we control for firm fixed effects (column 3). Only when we add the interaction term between city size and firm size do we find that city size has a significant effect on firm productivity. The addition of the interaction term (column 4) reveals that city size raises firm productivity but only for relatively large firms. Indeed, further analysis reveals that the city size effect is significant only with firms with 100+ employees. This effect is revealed when we replace $\log(L)$ in equation (2) by two firm size dummies (MEDIUM and LARGE) and then add interaction terms between the dummy variables and $\log(POP)$. Only the coefficient on the interaction term between LARGE and $\log(POP)$ is significant.

Table 1: Firm Productivity and City Size

	(1)	(2)	(3)	(4)
Log (K/L)	0.273** (0.02)	0.285** (0.02)	0.161** (0.05)	0.201** (0.05)
Log(L)	0.294 (0.08)	-0.374* (0.09)	-0.134 (0.12)	-1.297** (0.32)
Log(POP)	0.073 (0.05)	-0.307 (0.10)	-0.039 (0.09)	-0.7210** (0.21)
Log(POP)*Log(L)		0.099** (0.01)		0.164** (0.04)
Firm Fixed Effects	No	No	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
R-squared	0.41	0.42	0.17	0.34
Observations	288	288	288	288

Notes: Dependent Variable is the logarithm of annual sales per worker. Robust standard errors in parentheses. ** and * represents significance at the 1%, and 5% level respectively.