Chapter 3
Urbanisation and Entrepreneurship in Development: Like a Horse and Carriage?

Wim Naudé

3.1 Introduction

In the process of development, urbanisation and entrepreneurship go together, like a horse and carriage. But like love and marriage, the relationship is not a simple one. Both urbanisation and entrepreneurship are central 'demographic facts' of the early twenty-first century. No economy has developed without urbanising (Zhang 2002). The majority of the world's population already resides in urban areas. And the rest is continuing to join them at a fast rate. As Ovanessoff and Purdy (2011) note, the urban population in the developing world is set to 'more than double between now and 2050 to 5.3 billion' (p. 46). The number of megacities continues to grow. Each year, around ten cities the size of New York comes into being in the developing world. Likewise the number of entrepreneurs, defined as those who are self-employed, continues to increase: there are at least a billion entrepreneurs now in the world (Naudé et al. 2017). Most entrepreneurs are to be found in these cities and megacities.[1]

Entrepreneurs hasten urbanisation, but urbanisation also benefits entrepreneurs, so that a virtuous cycle comes into being.[2] As Fig. 3.1 shows, there is a strong positive correlation between how entrepreneurial a country is (measured by its score on the Global Entrepreneurship Index) and its level of urbanisation (measure by the share of the population that is urbanised).

[1] For instance, a study from Sweden found that start up rates of new firms per 10,000 population where 32% higher in cities (metropolitan municipalities) than the national average (Olsson et al. 2015).

[2] In the case of the USA, Glaeser (2007) concludes that 'more entrepreneurial cities are more successful'.

W. Naudé (✉)
Maastricht School of Management and Maastricht University, Maastricht, The Netherlands

IZA Institute of Labor Economics, Bonn, Germany
e-mail: Naude@msm.nl

M. Dastbaz et al. (eds.), *Smart Futures, Challenges of Urbanisation, and Social Sustainability*, https://doi.org/10.1007/978-3-319-74549-7_3

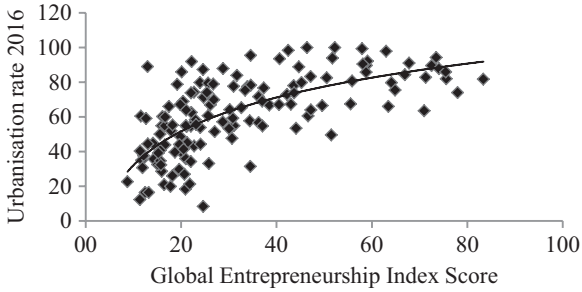


Fig. 3.1 Urbanisation is associated with better entrepreneurship (Source: author's compilation based on data from the World Development Indicators, World Bank and the Global Entrepreneurship Development Index 2017)

(Source: author's compilation based on data from the World Development Indicators, World Bank and the Global Entrepreneurship Development Index 2017)

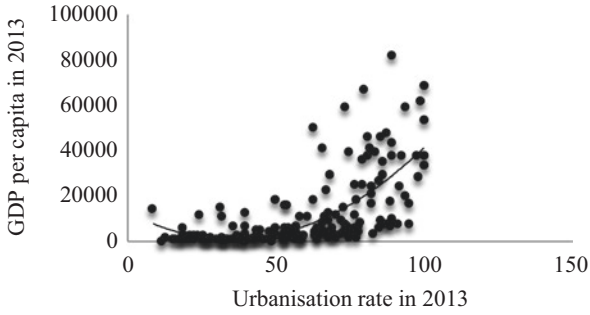


Fig. 3.2 Urbanisation is associated with higher GDP per capita (Source: author's compilation based on data from the World Development Indicators, World Bank)

(Source: author's compilation based on data from the World Development Indicators, World Bank)

The ensuing process of structural transformation is one of the salient facts of development, wherein entrepreneurs create jobs in urban areas, in new sectors such as industry or services, attracting labour and other entrepreneurs out of the agricultural sector and out of rural areas. Eventually, if these developing urban areas and their entrepreneurial dynamics can be appropriately managed and incentivised, it may lead to improvements in GDP per capita (Fig. 3.2) and many other improvements in the quality of life, such as, for example, reduced deaths from communicable diseases, maternal, prenatal and nutrition conditions (Fig. 3.3). Glaeser (2011) has called cities the world's 'greatest invention'.

In this chapter, I discuss the relationship between entrepreneurship, urbanisation and development over the various phases of urbanisation that a stylised country will go through. First, in Sect. 3.2, I set out a simple model of entrepreneurship and urbanisation; to illustrate that without entrepreneurial innovation and the movement of labour from the countryside to the city, a society can get stuck in a situation of rural stagnation.

Then in Sect. 3.3, I discuss some of the potential pathologies that can obstruct sustainable developed in the early phases of the entrepreneurship-urbanisation

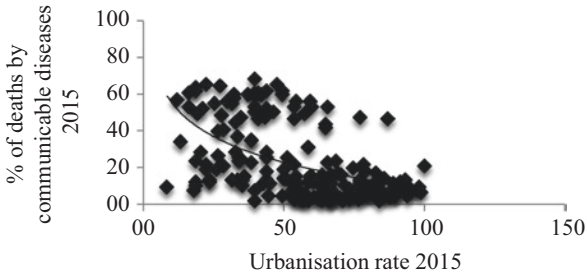


Fig. 3.3 Urbanisation is associated with reduced deaths from communicable diseases (Source: author's compilation based on data from the World Development Indicators, World Bank)

(Source: author's compilation based on data from the World Development Indicators, World Bank)

relationship. In Sect. 3.4, I continue by describing how successful cities become 'entrepreneurial hotspots', 'global start-up cities' and even 'smart cities', leading to an explosion of services consumption goods but also tensions due to competition, price rises and negative environmental impacts.

Finally, as I set out in Sect. 3.5, there comes a stage when more and more people residing in cities, the imperative to address environmental concerns and vulnerability to shocks become more important, and if well managed and regulated, more and more entrepreneurs enter the circular and sharing economy, contributing towards sustainable development.

Section 3.6 concludes, pointing out that given that urbanisation is a relatively recent phenomenon in human history. In 1800, only 3% of the world's population was urbanised (Bezerra et al. 2015). The most interesting period in the world's urbanisation is thus still to come. Entrepreneurs will for sure play a central role in this future.

3.2 A Model of Entrepreneurship, Rural Stagnation and Urbanisation[3]

Gries and Naudé (2010) proposed a stylised model of entrepreneurship and urbanisation. In this section, I summarise and present the essential elements of their model, which shows how entrepreneurship (and innovation) or its lack, can lead to the process of urbanisation and development being set in motion, or not. I discuss some of the comparative statics generated by the model, such as that entrepreneurial ability and business conditions, including financing, are essential factors or conditions that drive the rise of cities.

[3] This section is taken from Naudé (2016a).

3.2.1 Rural and Urban Sectors

Gries and Naudé (2010) start by noting that in underdevelopment, countries are characterised by a large and growing rural population. They denote the rural population in a representative underdeveloped country by L number of people earning an income w and Δ_T earning no income. These latter people provide what has been termed surplus labour (Lewis 1954). Total population in the rural economy is

$$\text{Pop}_T = L + \Delta_T = L\left(1+\delta_T\right), \quad \text{with} \quad \delta_T = \Delta_T / L \tag{3.1}$$

where δ_T denotes the ratio of *surplus labour* to income earners in the rural economy.

Population growth in rural areas is assumed to be a function of per capita income in the sector, y_T, and can be expressed as:

$$\gamma_L \equiv \frac{\dot{L}}{L} = g_L\left(y_T\right) = y_T^{\varphi} \quad \text{with} \quad \varphi < 0 \tag{3.2}$$

φ denotes the elasticity of population growth with respect to per capita income in the rural areas. This indicates a negative relationship between income per capita in rural areas and population growth.

More specifically, it can be shown that population growth in the rural sector is a negative function of the rural unemployment rate (labour surplus rate) δ_T (and a positive function of the marginal and average labour productivity (a_T)):

$$\begin{aligned} \gamma_L &= \left(\frac{a_T}{\left(1+\delta_T\right)}\right)^{\phi} \\ &= g_L\left(\delta_T, a_T, \phi\right), \text{ with } \frac{dg_L}{d\delta_T} < 0, \frac{dg_L}{da_T} > 0, \frac{dg_L}{d\phi} > 0 \end{aligned} \tag{3.3}$$

At any given moment, the unemployed (surplus labour[4]) will be searching for either wage employment or self-employment on farms (as farmers) or be searching for opportunities to start-up an entrepreneurial venture (as a small firm) in the urban sector, i.e. in secondary cities and/or primary (capital) cities. If the start-up is successful, the respective agent will leave the rural areas and migrate to the urban area. Hence, migration out of farms and out of farming areas is critical for urbanisation.

The urban sector consist of large formal firms and small, informal firms. Large formal firms are typically owned either by foreigners (multinational firms) or the government. These firms produce final goods (Y) for consumption in both urban and rural areas using human capital H and N intermediate inputs x_j, which they will

[4] As in the Lewis model, the assumption of surplus labour means (disguised) unemployment in rural areas and on farms.

outsource to the N small household enterprises. The production function for the representative large formal firm producing for the final goods market is

$$Y = AH^{1-\alpha} \sum_{j=1}^{N} \left(x_j \right)^{\alpha} = AH^{1-\alpha} N x^{\alpha} \tag{3.4}$$

In Eq. (3.4), A is a technology shift parameter. Producers of the final good maximise profits according to the profit function $\pi_Y = Y_M - w_H H - N p_j x_j$ with p_j the price of intermediate good x_j and w_H denoting the returns on the entrepreneurial and managerial abilities of the owner of the formal firm. Using the first-order conditions, the demand for each intermediate (service) input, is

$$x_j = H \left(\frac{A\alpha}{p_j} \right)^{\frac{1}{1-\alpha}} \tag{3.5}$$

The demands for these j intermediate inputs constitute an opportunity for the people in rural areas, Pop_T. Not all intermediate goods demanded constitute an opportunity, as some will already be taken by other household enterprises. The number of opportunities, O, in the urban area is the number of opportunities for subcontracting to a formal large firm that has not yet been taken by existing household enterprises and can be written as

$$O = \delta_N N \tag{3.6}$$

where $\delta_N = \Delta_N / N$ with Δ_N the number of offered but yet not realised business opportunities.

If they spot these opportunities, O, households will form an enterprise in an urban area. Each will then produce a unique intermediate input that they sell to the large formal firms (in this Gries and Naudé (2010) follow Ciccone and Matsuyama 1996). The requirement that they each produce a unique input x_j allows Gries and Naudé (2010) to introduce innovation, start-ups and start-up costs in the urban economy into the model and hence ultimately deal with the obstacles in the process of urbanisation.

3.2.2 *Entrepreneurs, Innovation and Household Enterprise Start-Ups*

If a household in rural areas spots an opportunity to provide a unique intermediate input x_j to established large firms in the urban areas, it needs to create a new household enterprise. This involves incurring costs to differentiate the product to the needs of the large firm and to finance the start-up and running costs of the household enterprise.

Gries and Naudé (2010) assume that start-up costs will depend on the density of already existing household enterprises. The more competition there is, the more costly it is to break into the market, including migrating to a more congested non-rural destination. If there is *N*-number of household enterprises operating in the modern economy, and total output (GDP) in the economy is denoted with *Y*, then I can write the density of household enterprises as *N*/Y. Start-up costs as a function then is $\chi\left(N/Y\right)=\varepsilon\frac{N}{Y}$, with $\varepsilon>0$. In addition to start-up costs, there are permanent operational costs to operate the household enterprise. These costs are denoted by c_x.

These start-up costs need to be financed from an external finance because typically as the rural households do not have sufficient own assets from which to finance this.

The decision of the rural household on starting a household enterprises or not depends on the expected profits in comparison to agricultural wages. Once the household enterprise has been started, profits are the difference between its sales (price times quantity) and operating costs, which is

$$\pi_j^x=\left(p_j-c_{xj}\right)x_j \tag{3.7}$$

Since the prospective household enterprise is assumed to have no immediate income or accumulated savings, the start-up costs must be financed and at a loan rate of r_l. Given that the financial sector is often not very well developed in typically rural-dominated economy imperfections in financial markets will affect the availability of credit. The total number of banks is *B*. Each bank b offers deposits D_b to households and loans K_b to potential start-up household enterprises. The solution to the banks' optimisation problem results in a loan-deposit rate spread. This spread (see Gries and Naudé 2010) is to be determined by two factors, namely, the costs of monitoring (c_b) and the concentration of banks measured by the index $\left(1+\frac{1}{B\eta}\right)$. A lower number of banks will increase the concentration of financial intermediaries and widen the interest spread, and similarly if the costs of monitoring increase (decrease) due to for instance a worsening (improvement) of managerial practices, the interest spread will increase (decrease).

Given the loan rate r_l, the expected net present value of the planned household enterprise is

$$\mathrm{EV}_m\left(\tau\right)=\left(1-\vartheta\right)\int_{\tau}^{\infty}\left(p_j-c_{xj}\right)x_j e^{-r_d(t,\tau)(t-\tau)}dt \tag{3.8}$$

where ϑ represent the expected rate of business failure and $(1-\vartheta)$ the expected rate of success. The household will compare these expected profits (or net present value) to wages that can be earned from supplying labour to agriculture (denoted $Ey_{T,i}$) in making its decision to start an enterprise.

If favourable, a new household enterprise will be started up. Because the start-up of a new household enterprise depends on the match between an entrepreneur in the

rural sector and opportunities in the city, entrepreneurial abilities, which can be denoted by H, are required to grab a business opportunity, O.

If there is a match, then a household enterprise is established. The number of household enterprises started every period is denoted by γ_N, and over time the growth of household enterprises is $\gamma_N = \dot{N} / N$. This is the speed of urbanisation in the model.

The higher the growth rate γ_N, the more people from rural areas will find employment in cities, and for those that remain in farming, average and marginal productivity will increase, leading to a rise in wage incomes in agriculture. The change in agricultural wages is γ_{y^T}. As per capita incomes (labour productivity) in agriculture grow then rural population will grow as per Eq. (3.2), and the rural sector will expand. For structural transformation and hence development to occur, the speed of urbanisation must exceed the speed of expansion of the rural sector.

3.2.3 Diagrammatic Analysis

The essentials of the model outlined so far can be graphically illustrated with the help of Figs. 3.4, 3.5, and 3.6. Figure 3.4 contains the basic model, depicting the relationship between the central variables outlined above.

The figures have four quadrants. Let us start with Fig. 3.4. In the northeast γ_N -δ quadrant depicts the equilibrium values of γ_N and δ that results from the demand and supply of surplus labour in the city. The downward sloping curve (the *surplus labour curve*) indicates that as the growth rate of city household enterprises γ_N increase, so the surplus labour in the rural areas would decline—hence, the slope is negative.

The upward sloping curve (which is termed the *household enterprise curve*) depicts the converse, namely, that the higher the rate of surplus labour that can be successfully extracted from the rural sector, the more household enterprises can be established in cities. The steady-state equilibrium is at A, which determines the growth rate of the household enterprise sector and the surplus labour rate in the rural sector. At this point, the reallocation of surplus labour to the city is too low (due to the slopes and location of the two curves) so that the growth in the rural area is higher than the growth of the city. Given the population growth rate, an initial equilibrium at point A is consistent with rural stagnation; in other words, the size of the rural area will grow relative to that of the city, as $\gamma_N < \gamma_{y^T}$. Not enough farmers are reallocated via household enterprises to the city. Structurally, the economy remains largely a rural, agriculture-based economy with low productivity, surplus labour in rural areas.

From the discussion above the growth rate of the number of start-ups, i.e. the slope and position of the *household enterprise curve*, is a function of the endogenous surplus labour rate δ_T, and a number of other parameters that have been mentioned in the foregoing, specifically:

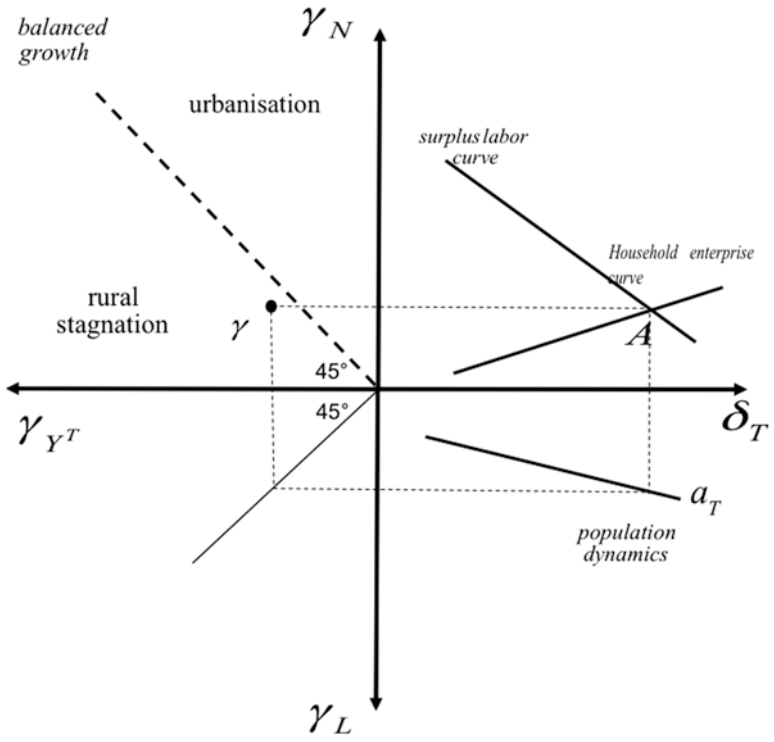


Fig. 3.4 Entrepreneurship and structural transformation: basic model (Source: Based on Gries and Naudé (2010))

- Productivity in agriculture (a_T). If productivity in agriculture improves, then for a given population growth rate γ_L there will be more surplus labour released, which will shift the population dynamics curve in the southeast quadrant inwards and the surplus labour curve outwards, so that there will be growth in the number of household enterprises (see Eq. 3.3).
- Entrepreneurial ability (H). Improvements in H will shift the household enterprise curve upwards, so that there will be growth in the number of household enterprises.
- Finance (B). Improvements in B will shift the household enterprise curve upwards, so that there will be growth in the number of household enterprises.

Improvements in these last two parameters are depicted in Fig. 3.5. If the steady-state equilibrium moves from A to A' (e.g. if entrepreneurial ability improve or access to finance improve) the economy's structure changes from being in rural stagnation (at point γ) to being in the region of 'urbanisation' at point γ'.

The interdependence between entrepreneurship, urbanisation and development in this model is evident from the fact that it can be seen that urbanisation has resulted

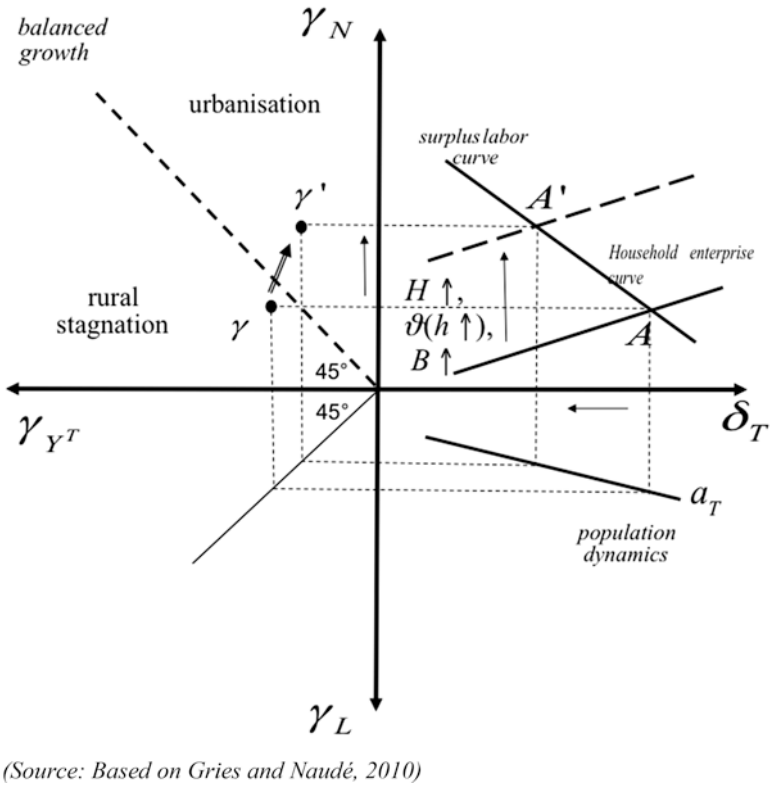


Fig. 3.5 Entrepreneurship and structural transformation: improving entrepreneurial ability and finance (Source: Based on Gries and Naudé (2010))

in an increase in productivity growth and hence per capita GDP, two empirical facts of urbanisation.

Finally, for present purposes, although this is not formally derived here, the slope of the household enterprise curve will depend on the ease with which for a given population growth rate, surplus labour can migrate to the city. One can show that if surplus labour moves to a secondary city, it may be easier given the proximity, ease of access to opportunities and other reasons[5] (see Christiaensen and Todo 2014). Hence, by having more of such agglomerations, the slope of the household enterprise curve can become steeper and urbanisation can occur.

In Fig. 3.6, I show what can happen if it is easier to migrate, because there is a secondary city/rural agglomeration that can absorb farmers. The household enterprise curve swivels (i.e. changes slope) leading to the growth rate in household

[5] Christiaensen and Todo (2014) found that migration of labour from rural areas into secondary towns result in greater poverty reduction than migration to capital cities. They find that 'off-farm jobs generated in nearby villages or rural towns may be more readily accessible to the poor given lower thresholds to migrate and better compatibility with their skill set' (p.43).

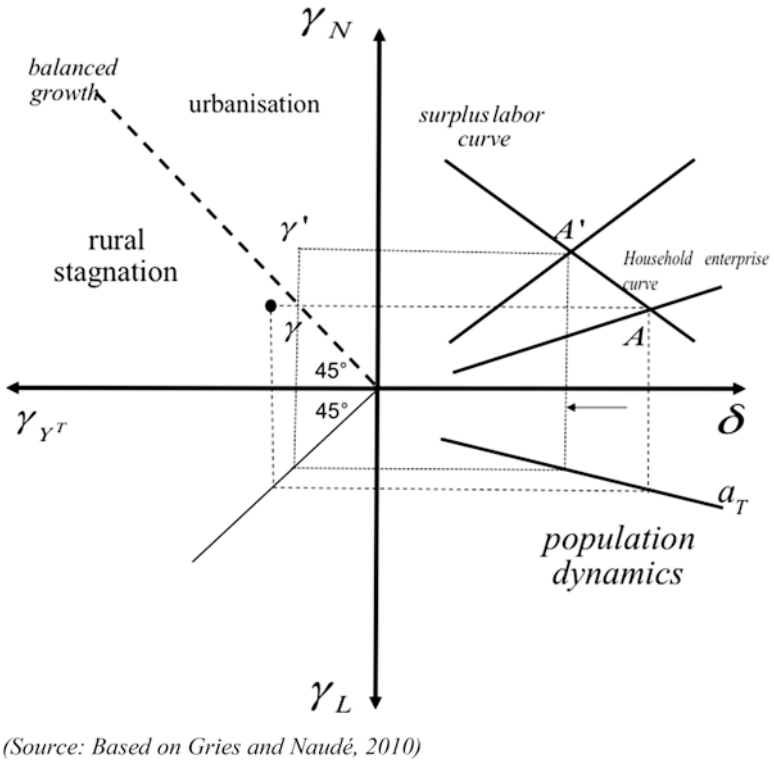


Fig. 3.6 Entrepreneurship and structural transformation: secondary cities (Source: Based on Gries and Naudé (2010))

enterprises exceeding the growth rate in rural incomes and the population share of the city relative to agriculture increasing. It emphasises the importance of migration for urbanisation and development (Naudé et al. 2017) and moreover for the individual welfare of the migrant (Gibson and McKenzie 2012).

In Figs. 3.4 and 3.5, the urbanisation of the economy takes place and is driven by the entrepreneurship. To the extent that urban growth is driven by household enterprise start-ups that supply intermediate services to large firms in the modern sector (who in turn produce for final demand), the service sector assumes an increasingly important role in the economy. This is consistent with the 'stylised facts' of structural change.

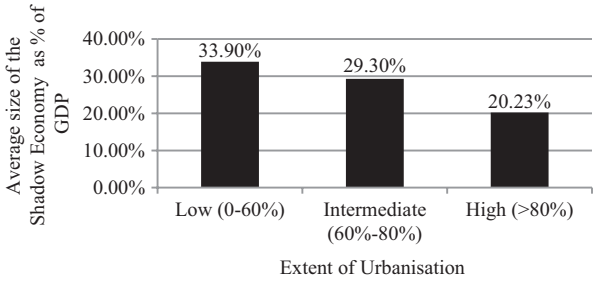
Although in this model the productivity of each intermediate service remains constant, total factor productivity increases in the final goods producing sector (manufacturing) the steeper the entrepreneurial start-up curve or the higher it shifts. This can account for a further 'stylised fact' of modern structural change, namely, the higher productivity of the manufacturing sector relative to the services sector (and the rural economy).

In conclusion, in this simple model, for urbanisation to start, the vehicle is entrepreneurial innovation and start-ups. Factors to facilitate this, such as a conducive business environment (e.g. for finance), education and skills formation (e.g. for entrepreneurial ability) has been shown to be essential in the process of urbanisation and hence of development.

3.3 Early Development and Cities

At early stages in a country's development, when most people are living in rural areas (corresponding to point γ in Fig. 3.4), people will start to flock to an emerging city with the hope to find a job (and better health and education) and to start-up a new enterprise by providing a unique good or service (as described in the previous section). Many will succeed: the probability of a job is higher in most countries in a city than in a rural area. But many will not and will resort to survival or necessity self-employment, as opposed to providing the innovative unique goods and services as in the previous section that drives urban development.

Therefore, in reality in cities in developing countries, we find almost without exception large numbers of small, micro informal and formal enterprises providing all kinds of undifferentiated consumer products and services. A lot of these play a role in sustaining the 'shadow economy', including the illegal drug trade, prostitution, people smuggling and the like. It starkly reminds us that entrepreneurship is not always good for development: entrepreneurs can be unproductive and even destructive (Baumol 1990). And the shadow economy never disappears: as cities grow and countries become more urbanised, the size of the shadow economy declines, but it remains a feature to be dealt with (see Fig. 3.7).



(Source: author's compilation based on data from the World Development Indicators, World Bank and fromManes et al., 2016)

Fig. 3.7 The size of the shadow economy is on average largest in countries that are less urbanised (Source: author's compilation based on data from the World Development Indicators, World Bank and from Manes et al. (2016))

Hence, the policy quest is to design an urban entrepreneurial ecosystem[6] that will offer strong incentives for high-growth, productive and legal entrepreneurship and discourage illegal activities. One of the most import requirements for such an emerging entrepreneurial ecosystem is infrastructure. Infrastructure provides connectivity and energy,[7] which is needed by entrepreneurs for obtaining 'scale and specialisation' (Collier and Venables 2016:394). The difficulty is that sound political decision-making and governance institutions, including land rights, are required for such an ecosystem: in most rapidly developing and urbanising countries these are largely missing. Good urban planning and management skills, including urban policing and dealing with land disputes, may be amongst the most sorely needed in the emerging world today.

Countries at relatively earlier stages of development and urbanisation will, apart from thousands of self-employed entrepreneurs and their small businesses, also attract larger foreign businesses into their growing cities. These foreign 'entrepreneurs' arrive to make use of the pool of low-wage labour, to access raw minerals and natural resources in the hinterland and to sell consumption goods to the local population. As with the case of small and informal businesses, these large foreign businesses can have negative side effects on development. Rent-seeking, lobbying, bribing and exploitation, these are just some of the nefarious activities that large foreign businesses and foreign entrepreneurs have been documented to indulge in the fledgling capitals of developing countries (see, e.g. Burgis 2016). For many developing country cities, this exacerbates the impact of the domination by multinational corporations during the period of colonialism (see, for instance, the account by Jones (2010)).

3.4 Entrepreneurial Hotspots

Once a country's state of development and urbanisation has reached point γ' (see Fig. 3.5) and if these new urban agglomerations are managed well to limit the negative spillovers from entrepreneurship as mentioned, many of the small start-ups will scale up and employ more people. The larger and denser population matters for learning, for sharing ideas and for innovation and technological take-up. Population growth and the density that urbanisation provides to a larger population are essential elements in long-run development. As Derex et al. (2013) put it 'complex cultural traditions—from making fishing nets to tying knots—last longer and improve faster at the hands of larger, more sociable groups. This helps to explain why some groups, such as Tasmanian aboriginals, lost many valuable skills and technologies as their populations shrank'.

[6] For a discussion on the concept of an 'entrepreneurial ecosystem' see Isenberg (2010) and Stam and Spigel (2016).

[7] Energy provision is more amenable to being provided by private entrepreneurs as opposed to connectivity, which requires government investment, regulation and coordination (Collier and Venables 2016).

Into these 'larger, more sociable groups' in cities also more foreign entrepreneurs will be attracted. International migration is an essential process to keep fledgling cities vibrant. Think of how cities such as London, New York and Shanghai were built by waves of immigrants.[8] Empirical evidence suggests that culturally diverse cities are more productive and more innovative and better hotspots for entrepreneurship. For instance, Ottaviano and Peri (2006:9) report evidence from the USA that 'US-born citizens living in metropolitan areas where the share of foreign-born increased between 1970 and 1990, experienced a significant increase in their wage and in the rental price of their housing'.

The growing city will become an entrepreneurial hotspot, as local and foreign firms vie to build houses, office spaces, retail centres and public infrastructure. Entrepreneurial support services, such as banks, transport providers, export and import agents, ICT specialists, job placement agencies and business schools will thrive. Urban governments will spend resources on locality marketing and promoting entrepreneurship and small businesses within their jurisdictions, often becoming *entrepreneurial governments* in the process.[9]

Venture capital follows and leads these entrepreneurial hotspots and tend to be concentrated in certain 'global start-up cities': for instance, the volume of venture capital lending in cities like San Francisco and Beijing exceeds the volume of venture capital in an entire country such as Germany (Florida and King 2016).

As a result of the above, productivity, and hence average wages, would rise. Collier and Venables (2016:396) report that empirical evidence suggests that 'productivity in a city of 5m is between 12% and 26% higher than in a city of half a million'. A large volume of empirical research furthermore confirm that formal, urban-based firms are more productive than nonurban and informal firms (see, e.g. Rijkers et al. (2010), Söderbom and Teal (2004) and Van Biesebroeck (2005)) and that wages are higher in cities than elsewhere, on average (Glaeser 1998). If productivity growth is higher in some industries than others in particular city, as a result of that industry reaping economies of scale, we will see some cities starting to specialise, for instance, London or Frankfurt where the financial industry is concentrated or Los Angeles in cultural industries and Bangalore in ICT (Duranton and Puga 2000; Henderson 2010).

Eventually, rising property prices and rents, urban congestion and fierce business competition will mean that the costs of urbanisation will rise. Henderson (2010) reports that 'moving from a city of 250,000 to one of 2.5 million is associated empirically with a 80% increase in commuting times and housing rental prices' (p.519). With property investments becoming profitable, entrepreneurs in the property development sector could start to claim and develop more land for urban expansion. This

[8] In the case of the USA, for example, Hirschman and Mogford (2009) document that by 1900 no less than 75% of the populations of the largest cities, including New York, Chicago, Boston and San Francisco consisted of first and second generation immigrants.

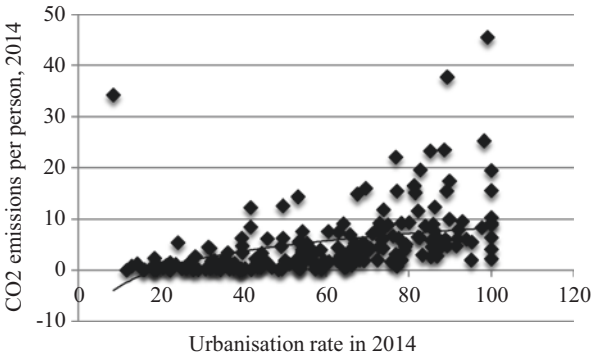
[9] Urban governments' initiatives to develop the economies of their cities have been described as being entrepreneurial if these 'involve the creation of new institutions of governance, new links between existing institutions or actors or new ways of exploiting opportunities' (Olsson et al. 2015:137).

property development role of entrepreneurs is important for the continued development of cities and in turn requires adequate land rights and land markets (Collier and Venables 2016). Cities will become larger and or multiply in number, and the spatial form of cities will change shape. Urban sprawl may become a problem. In general, industry will, under pressures of competition, become more technologically advanced.

Entrepreneurial innovation will become an important driver of productivity and economic growth and will be almost exclusively found in larger cities. Jobs will move out of mechanised and automated industry into services—and the high tech, high skill requirements on these services will spurn many new entrepreneurial opportunities. Think of new business models and new markets being created by the intersection of new technologies and entrepreneurship in congested cities, such as *Uber* (solving transport problems) or *AirBnB* (solving short-term accommodation problems) and many other service apps. 'Smart cities' defined as cities that 'uses digital technologies to improve its performance management and well-being, reduces costs and resource consumption and engages more efficiently and effectively with citizens', becomes a trend at this stage (Bezerra et al. 2015:1).

3.5 Quality of Life: The Quest for Sustainability

As the virtuous development cycle of urbanisation and entrepreneurship continues, most people end up living in or near a city. The high concentration of billions of people in a few geographic spots, many of them on the coast, raises the vulnerability of a highly interconnected system of production and consumption to, for instance, natural disasters (e.g. the 2011 Fukushima nuclear disaster caused by a tsunami) or urban terrorism (e.g. the 9/11 attacks on New York). Moreover the rise of cities inevitably has led to concerns about the environmental impact of development, in terms of, for instance, CO2 emissions and pollution. Figure 3.8 shows the strong positive correlation between the degree of urbanisation and the greenhouse gas emissions (GHG) (e.g. CO2 emissions) per person in a country.



(Source: author's compilation based on data from the World Development Indicators, World Bank)

Fig. 3.8 Urbanisation is associated with increased GHG emissions (Source: author's compilation based on data from the World Development Indicators, World Bank)

These risks and dangers pose new challenges for urban management and city planning, as well as create opportunities for entrepreneurs to generate and implement technologies arise to deal with these vulnerabilities and risks. Examples are the development and use of better surveillance systems and prediction models based on 'big data', or the emergence of urban agricultural systems (e.g. vertical farming) aimed at reducing food insecurity and GHG emissions.

At this stage, cities may compete to attract what Richard Florida called the 'creative class' (Florida 2002). Quality of life becomes central. Security, health, education, a beautiful environment and efficient public services, including arts and cultural amenities, are required to attract and keep the 'creative class'. This becomes more acute as declining transport costs make production less place dependent and more human capital dependent (Glaeser 2003).

Around this stage, many cities also become the centres of the circular economy.[10] An example is the Dutch city of Almere, where in 2016 Europe's first 'eco-village' was started that is a completely self-sustainable urban community. An entrepreneur, who plans to roll out the concept across Europe in coming years, drives this initiative.[11] Sustainability, in the city context, is however a wicked problem, and as explained by Woolthuis et al. (2013:94), 'the wickedness lies not only in the technical sophistication, multiple scales and multi-actor character of the problem, it also relates to the fact that there is no consensus on what sustainability is in an urban context'. They call for institutional entrepreneurship[12] to play an important role in finding solutions to environmental challenges in cities by 'creating the conditions in which right solutions can be realized' (Woolthuis et al. 2013:94).

Finally, one can ask what does the future hold, what is the ultimate role of cities, and entrepreneurs, in development? Clearly, with cities becoming more important, the governance of cities and the political power concentrated in cities will make city-states perhaps even more important than the nation state. Will we see growing decentralisation away from the current global governance system of 193 nation states towards a myriad of city-states? Will physical and virtual citizenship of a city-region become more important for one's welfare in the future? There are certainly many scholars and policymakers who think so. According to McKinsey[13] 'the 21st century will not be dominated by America or China, Brazil or India, but by The City. In a world that increasingly appears ungovernable, cities—not states—are the islands of governance on which the future world order will be built'.

Continued technological innovations in ICT and logistics, including the Internet of things, automation, artificial intelligence, and big data will play a key role in driving the further evolution of the city-entrepreneurship nexus. These will by improv-

[10] See, for instance, the Circle Cities Programme: https://www.circle-economy.com/tool/cities/#.Wcz4CFzyiS0.

[11] Read more in The Guardian, at: https://www.theguardian.com/sustainable-business/2016/jul/12/eco-village-hi-tech-off-grid-communities-netherlands-circular-housing-regen-effekt.

[12] Institutional entrepreneurship can be defined as 'influential (groups of) individuals or organizations that challenge old, and initiate new, institutions' (Woolthuis et al. 2013:91).

[13] See https://www.mckinsey.com/global-themes/urbanization/when-cities-rule-the-world.

ing government effectiveness and making government and governance even more customer-focused, result in more inclusive societies and proliferation of new business models. For instance, crowd sourcing, 'open government', big data, 'virtual-citizen schemes' (such as Estonia's e-residency[14]) and virtual currencies such as 'Bitcoin' are eroding the traditional nation state and may continue to foster a proliferation of government types and hybrid non-state structures offering 'public services' and 'attracting customers, and deriving revenues without regard to physical territory… [allowing] states to turn public goods into virtual business ventures' (Schnurer 2014, 2015). According to Khanna (2013) 'though most of us might not realize it, "non-state world" describes much of how global society already operates… where growth and innovation have been most successful, a hybrid public-private, domestic-foreign nexus lies beneath the miracle'.

3.6 Summary and Conclusions

The process that was described in the preceding paragraphs described a process of urbanisation and entrepreneurship going together, like a horse and carriage. But like love and marriage, the relationship is neither linear nor certain. There is nothing inevitable in the rise and development of any particular city. Cities do not only generate, they also degenerate: think of many great world cities of the past that have risen and fallen[15] and lost their entrepreneurial splendour—Alexandria, Angkor, Detroit, Glasgow, etc. Cities also differ in economic structure, some cities tend to specialise (like London in finance), while some are more diverse (like Shanghai) depending on its entrepreneurs. For some cities, three million people may be the optimal size, while others seem to be functioning well with 20 million.

There are many questions for researchers and policymakers as to the future of entrepreneurship in cities. Compared to Asia, Africa has few megacities at present: where will these be located in a hundred years from now? Will London decline if the UK exits from the EU? Will the architecturally stunning cities of the Gulf States be sustainable in a post-oil era? How will China's responses to clean up the natural

Box 3.1 Entrepreneurship and City Decline: The example of Glasgow
The rise and fall of its city of Glasgow illustrates the centrality of entrepreneurship (and luck) in the fortunes of cities. As Frisby (2014) chronicles, Glasgow rose during the eighteenth and nineteenth centuries through

[14] The government of Estonia introduced an e-residency scheme in 2014 in terms of which is 'a state-issued secure digital identity for non-residents that allows digital authentication and the digital signing of documents' (see https://e-estonia.com/e-residents/about/).

[15] Reba et al. (2016) has published 'the first spatially explicit dataset of urban settlements from 3700 BC to AD 2000, by digitizing, transcribing, and geocoding historical, archaeological, and census-based urban population data'. See: http://www.nature.com/articles/sdata201634.

entrepreneurs sizing on its favourable location as a harbour and seafaring hub (exploiting the trade winds) and the inventions of the industrial revolution, to become by 1900 the second city of the British Empire. It was considered the best governed city in Europe. It adapted innovatively to many changes in external circumstances: when it lost its position in the tobacco trade after American Independence, it moved on to cotton; when steam ships made its position on the trade winds irrelevant, it became a major producer of ships, producing one fifth of the worlds ships between the 1890 and 1914. But after 1914, its long and slow relative decline set in. By 2014, it had, as reported by Frisby (2014), a 30% unemployment rate, the UK's highest homicide rate and, moreover, the lowest life expectancy in the UK. Its 'entrepreneurship', which helped it to buffer many changes and shocks in the eighteenth and nineteenth centuries, was powerless to prevent its decline. -*Taken from* Naudé (2016b)

environments of its cities influence its role as manufacturer of the world? Will the rise of robotics, networked production and the age of industry 4.0 put a break on the speed of urbanisation that we have seen over the past century? Will entrepreneurs from Silicon Valley (or elsewhere) create their own floating city-states in the Pacific?

The heterogeneity, serendipity and context-specificity that shape the patterns of global urbanisation (no one city is alike) imply that there is much that is still unknown about the specifics of the relationship between cities and its entrepreneurs. After all, urbanisation is a relatively recent phenomenon in human history, considering that in 1800 only 3% of the world's population was urbanised. The most interesting period in the world's urbanisation is clearly still to come.

References

Baumol, W. J. (1990). Entrepreneurship: Productive, unproductive and destructive. *Journal of Political Economy, 98*, 893–921.

Bezerra, R., Nascimento, F. M. S., & Martins, J. S. B. (2015). On computational infrastructure requirements to smart and autonomic cities framework. *2015 IEEE First International Smart Cities Conference (ISC2)*, 25–28 Oct 2015, Guadalajara

Burgis, T. (2016). *The looting machine: Warlords, tycoons, smugglers and the systematic theft of Africa's wealth*. London: William Collins.

Christiaensen, L., & Todo, Y. (2014). Poverty reduction during the rural-urban transformation – The role of the missing middle. *World Development, 63*, 43–58.

Ciccone, A., & Matsuyama, K. (1996). Start-up costs and pecuniary externalities as barriers to economic development. *Journal of Development Economics, 4*, 33–59.

Collier, P., & Venables, A. J. (2016). Urban infrastructure for development. *Oxford Review of Economic Policy, 32*(2), 391–409.

Derex, M., Beugin, M.-P., Godelle, B., & Raymond, M. (2013). Experimental evidence for the influence of group size on cultural complexity. *Nature, 503*, 389–391.

Duranton, G., & Puga, D. (2000). Diversity and specialization in cities: Why and where and when does it matter? *Urban Studies, 37*(3), 533–555.

Florida, R. L. (2002). *The rise of the creative class*. Basic Books.
Florida, R. L., & King, K. M. (2016). *Rise of the global startup city*. Martin Prosperity Institute. Toronto.
Frisby, D. (2014). Glasgow: The rise and fall of a start-up hub, Virgin Entrepreneur, 1 August 2014, at: http://www.virgin.com/entrepreneur/glasgow-the-rise-and-fall-of-a-start-up-hub
Gibson, J., & McKenzie, D. (2012). The economic consequences of 'brain drain' of the best and brightest: Microeconomic evidence from five countries. *Economic Journal, 122*, 339–375.
Glaeser, E. L. (1998). Are cities dying? *Journal of Economic Perspectives, 12*(2), 139–160.
Glaeser, E. L. (2003). The new economics of urban and regional growth. In G. Clark, M. Feldman, & M. Gertler (Eds.), *The Oxford handbook of economic geography* (pp. 83–98). Oxford: Oxford University Press.
Glaeser, E. L. (2007). Entrepreneurship and the City'. *NBER Working Paper No. 13551*. National Bureau for Economic Research. Cambridge, MA.
Glaeser, E. L. (2011). *Triumph of the City: How our greatest invention makes us richer, smarter, greener, healthier and happier*. London: McMillan.
Gries, T., & Naudé, W. (2010). Entrepreneurship and structural economic transformation. *Small Business Economics Journal, 34*(1), 13–29.
Henderson, J. V. (2010). Cities and development. *Journal of Regional Science, 50*(1), 515–540.
Hirschman, C., & Mogford, E. (2009). Immigration and the American industrial revolution from 1880 to 1920. *Social Science Research, 38*(4), 897–920.
Isenberg, D. (2010). The big idea: How to start an entrepreneurial revolution. *Harvard Business Review*. June, pp.1–11.
Jones, G. (2010). Multinational strategies and developing countries in historical perspective, *Working Paper 10–076*, Harvard Business School.
Khanna, P. (2013). The end of the nation-state?. The New York Times, 12 October
Lewis, W. A. (1954). Economic development with unlimited supplies of labour. *The Manchester School, 22*(2), 139–191.
Manes, E., Schneider, F., & Tchetchik, A. (2016). On the boundaries of the shadow economy: An empirical investigation. *IZA Discussion Paper no. 10067*. Bonn: Institute for the Study of Labor
Naudé, W. (2016a). Entrepreneurship and the reallocation of African farmers. *Agrekon, 55*(1), 1–33.
Naudé, W. (2016b). Is European entrepreneurship in crisis?' *IZA Discussion Paper 9817*. Bonn: Institute for the Study of Labor
Naudé, W., Marchand, K., & Siegel, M. (2017). Migration, entrepreneurship and development: Critical questions. *IZA Journal of Migration, 6*, 5.
Olsson, A. R., Westlund, H., & Larsson, J. P. (2015). Entrepreneurial governance for local growth. In K. Kourtit, P. Nijkamp, & R. Stough (Eds.), *The rise of the city: Spatial dynamics in the urban century* (pp. 135–159). Cheltenham: Edward Elgar.
Ottaviano, G. I. P., & Peri, G. (2006). The economic value of cultural diversity: Evidence from US cities. *Journal of Economic Geography, 6*(1), 9–44.
Ovanessoff, A., & Purdy, M. (2011). Global competition 2021: Key capabilities for emerging opportunities. *Strategy & Leadership, 39*(5), 46–55.
Reba, M., Reitsma, F., & Seto, K. C. (2016). Spatializing 6,000 years of global urbanization from 3700 BC to AD 2000. *Science Data, 3*, 160034. https://doi.org/10.1038/sdata.2016.34
Rijkers, B., Söderbom, M., & Loening, J. L. (2010). A rural-urban comparison of manufacturing Enterprise performance in Ethiopia. *World Development, 38*(9), 1278–1296.
Schnurer, E. (2014). Welcome to E-Stonia. *US News,* 4 December.
Schnurer, E. (2015). E-Stonia and the future of the cyberstate. *Foreign Affairs*, (28 January).
Söderbom, M., & Teal, F. (2004). Size and efficiency in African manufacturing firms: Evidence from firm-level panel data. *Journal of Development Economics, 73*(1), 369–394.
Stam, E. & Spigel, B. (2016). Entrepreneurial ecosystems', *Discussion Paper Series 16–13*, Tjallings C. Koopmans Research Institute.

Van Biesebroeck, J. (2005). Exporting raises productivity in sub-Saharan manufacturing firms. *Journal of International Economics, 67*(2), 373–391.

Woolthuis, R. K., Hooimeijer, F., Bossink, B., Mulder, G., & Brouwer, J. (2013). Institutional entrepreneurship in sustainable urban development: Dutch successes as inspiration for transformation. *Journal of Cleaner Production, 50*, 91–100.

Zhang, J. (2002). Urbanization, population transition, and growth. *Oxford Economic Papers, 54*, 91–117.