

Chapter 2

The secrets of successful cities

This chapter analyses the characteristics of successful cities along three dimensions: population growth, economic performance and a functional organisation. First, it describes the role that location, agglomeration economies and the designation as a capital city play in determining population size. Second, it explores the impact of human capital on economic performance, investigates the relationship between city size and productivity, and shows the importance of good governance arrangements. This chapter also contains an overview of recent patterns of economic performance in cities across the OECD. Third, important factors determining the functional organisation of a city are discussed. Among the topics mentioned are appropriate governance structures, smart transport solutions and balanced land-use regulations that carefully consider the costs of restricting land use.

Chapter Synopsis

Successful cities typically both have high levels of economic activity that allow their residents to make a good living, and function well. What are the secrets behind the success of these cities?

The economic performance of a city is influenced by a complex set of policies on the national and local level that complement each other – or not, as the case may be. But one can identify some broad patterns regarding economic performance that hold across most cities. For example, the productivity levels of cities (and thus their gross domestic product – GDP) depend on their population size, and larger cities are generally more productive. Recent OECD studies suggest that for each doubling in population size, the productivity level of a city increases by 2-5%. This is due to several factors, such as greater competition or deeper labour markets (and thus a better matching between workers and jobs) in larger cities, but also due to a faster spread of ideas and a more diverse intellectual and entrepreneurial environment.

The share of highly educated people also has important implications for productivity levels. This is partly due to more educated people being more productive themselves. But in addition there are important spillover effects: the productivity of less educated people increases with the share of university graduates. And the benefits of size partly reflect that individuals with high human capital are themselves even more productive in the presence of other highly skilled residents. City size and human capital factors reinforce each other.

Finally, the fragmentation of a city's administration and the quality of its governance structure is directly reflected in its economic strength. Cities with fragmented governance structures tend to have lower levels of productivity: for a given population size, a metropolitan area with twice the number of municipalities is associated with around 6% lower productivity. This effect is mitigated by almost half by the existence of a governance body at the metropolitan level.

Well-functioning cities require a combination of a multitude of factors. Some are similar to those that make societies and countries function well, but a large number of factors are specific or at least have a particular relevance for cities. For example, the benefits of adequate governance structures may be particularly high in cities. This is because the very density of opportunities for contact and exchange that makes cities so dynamic and productive also implies that the actions of households and firms, as well as the interactions among different strands of public policy, typically have larger positive or negative spillover effects in cities than in less dense places. In this context, it is especially important that governance structures take the functional realities of metropolitan areas into account. Often, administrative boundaries are based on centuries-old borders that do not correspond – if they ever did – to patterns of human settlement and economic activity. Getting administrative structures right typically allows for better outcomes in most dimensions that make cities function well.

These prominently include transport planning and land-use planning, as well as the co-ordination of both processes. In particular, land-use regulations need to find the right balance between protecting existing neighbourhoods and green spaces and allowing new construction. Also, the quality of public transport provision usually increases when services are integrated. In the context of transport, it is particularly important that the incentives for car use reflect the true costs of driving a car. In most cases, this implies imposing higher taxes on driving into a city in order to account for so-called externalities such as air pollution and congestion.

Introduction

Successful cities come in many shapes and sizes. Just as human tastes and preferences differ, the success of a city can be defined along many dimensions. Some cities are economically successful, some provide a particularly good environment to raise children, others offer beneficial conditions for the urban poor and even others are especially environmentally friendly.

As moving into a city is a way for people to vote with their feet, population growth is a good indicator of the success of a city. However, cities can also be successful without attracting people and conversely, large cities can fail. In order to give a balanced account of what makes cities successful, this chapter focuses on three different aspects. First, it provides insights on the factors that make cities grow in population; second, it analyses factors that affect economic success; and third, it looks at issues that concern the functioning of cities.

What makes cities big?

Population growth is one of the clearest indicators that a city is thriving. By moving into a city, people show that they prefer living there over wherever they lived before. Often this is due to economic opportunities, such as the availability of good jobs. In other cases, a better quality of life, for example because of a warmer climate or a more child-friendly environment, motivates people to move. Entirely personal considerations, such as the place of residence of a partner, play important roles, as well. In some cases, people move into cities for refuge because they are forced to flee violence or persecution elsewhere. However, even then, most people move into cities rather than to another part of the rural countryside because cities typically offer more opportunities.

When studying the history of a city closely enough, it is in most cases possible to explain fairly exactly what made people move. It is the outcome of a chain of historical developments that shaped the city as it exists today. Within this chain, each development is the consequence of previous events or actions. Consequently, the current population size is the result of those events and actions. Yet while such close-up historical examination helps to understand an individual city, it can also obscure the systematic forces that are active in shaping cities globally.

This section focuses on the systematic factors and common causes that explain why people move into some cities but not into others. It aims to discuss the mechanisms that are relevant for city size beyond individual historical episodes. A brief overview of recent growth trends of cities in OECD countries is given in Box 2.1 at the end of the section.

Location

The most straightforward explanation why a city grows is its location and the geographical characteristics associated with it. There are several reasons why location matters. One of them is environmental conditions and the availability of resources. As outlined in Chapter 1, the first cities emerged in the floodplains of the Euphrat and Tigris rivers. This region is very fertile and has ideal conditions for primitive agriculture. It was only because of this locational advantage that the agricultural techniques of the time were able to produce a food surplus that was sufficient to sustain cities.

Today, food can easily be transported over long distances and agricultural yields within a region play little role in determining the location of cities. Nevertheless, for historical reasons many cities are still located near prime agricultural land. When those

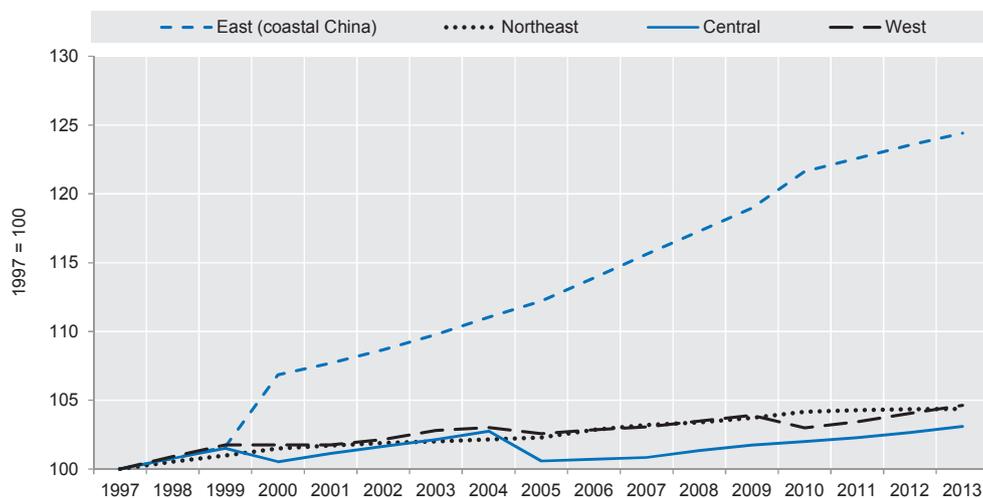
cities expand, it can create tensions on the urban-rural fringe because the agricultural land is built over with new developments.

Cities still form near sites with abundant resources. Coal mines played a crucial role in the urbanisation of many regions in the late 18th, the entire 19th and early 20th centuries. Even today, there are large cities, such as Antofagasta in Chile, that mostly owe their existence and their size to nearby mining activities.¹ Many more, such as Perth in Australia, are to a large degree dependent on it. Similarly, there are cities and even entire states whose population growth in recent decades is largely due to crude oil extraction.

In contrast to earlier centuries, cities based on resource extraction no longer attract much secondary industry. In the 19th century, industries such as textile and iron smelting located next to coal fields to avoid the costs of transporting coal. Today, costs of shipping raw materials are so low that there are often few incentives for other industries to locate nearby. Furthermore, the price levels in cities that rely on resource extraction are often higher than in other cities, making it unattractive for industry to move there.

Cities have long benefited from being located on a shore. Coastal locations often provide a higher quality of life and also offer economic opportunities related to shipping and tourism. In the People’s Republic of China (hereafter “China”), coastal regions have been booming since the economic opening of the country in the 1980s (Figure 2.1). Economic growth has been far higher there than in other Chinese regions and in turn has attracted millions of people. Easy access to seaports from where manufactured goods could be shipped to customers is an important reason for this phenomenon. Manufacturing companies, which form the backbone of the Chinese economy, depend on cheap, reliable and swift transport of their goods to customers overseas. As air transport is too expensive for the vast majority of goods, shipping is currently the only practical alternative. Being close to a seaport from which the goods can be shipped provides a competitive advantage by saving on the costs and time required to transport goods over land to the next port.

Figure 2.1. **Population growth in China, 1997-2013**



Source: OECD calculations based on CEIC (2014), “Macroeconomic databases for emerging and developed markets”, www.ceicdata.com.

The attraction of coastal locations is not limited to ease of international freight transport. In the United States, for example, 39% of the population lives in counties on the coastal shoreline despite the fact that these counties cover less than 10% of the country's surface.² In contrast to China, contemporary economic factors play a lesser role behind the strong population imbalance in favour of coastal locations. Rather, it appears to be due to a mix of historical reasons and the attraction of the coast as an amenity.

Another natural amenity had a big effect on population levels of cities in the southern United States. Warm climate has attracted people to places such as Phoenix and Atlanta. Although there is some controversy how much of their population growth can be attributed to the climate and how much to other factors, such as economic policies, it appears likely that the climate is at least partly responsible. For example, economic policies and the pleasant climate may have acted as complementarities and the strong population growth would not have occurred in the absence of either of them.

Man-made location characteristics (such as being close to good transport infrastructure) are obviously also important. However, in contrast to naturally occurring characteristics, it is often much less obvious to what extent they are the cause or the effect of a nearby big city. For example, the world's busiest airport in Atlanta certainly contributed to the fast growth of the city, but it would not have been built there in the late 1970s if Atlanta had not been a big and growing metropolitan area at that time. It is difficult to determine the airport's exact contribution to the subsequent population growth of Atlanta. Nevertheless, studies show that better connected cities grow faster.

Geography was an influential factor in determining the location of cities and it still plays an important role. In many cities' history, location mattered at some point. However, more often than not, location alone is not sufficient to explain why a city has reached its current size. New York, for example, is located at the site of a natural harbour, which is also the mouth of an important navigable river. Both factors probably played an important role for the city's initial growth. However, they cannot explain why New York grew so strongly during the 20th century, when neither factor was no longer of much economic importance. During that time, rail transport had made inland waterways practically obsolete. Similarly, advances in construction methods have made natural harbours as preconditions for large ports largely irrelevant.

It is even more difficult to explain the size and location of Los Angeles, the United States' second largest city, with locational fundamentals alone.³ In the late 19th century, the city had about 50 000 inhabitants and good rail connections. It was one of the more important cities on the United States' west coast, but not comparable to San Francisco, which had even better rail connections, a large natural harbour and several times as many inhabitants. In contrast to San Francisco, Los Angeles was located above oil fields that were economically important in the late 19th and early 20th centuries. However, there were many other oil fields in the United States that had similar or higher outputs and none of them gave rise to a city nearly as large as Los Angeles. While the oil industry might have had some influence on the early growth, there must be other factors that explain why Los Angeles developed into an urban agglomeration with more than 15 million inhabitants.

Agglomeration economies

An explanation why Los Angeles grew to its current size can be given by theories summarised under the label "New Economic Geography".⁴ These theories try to explain the dynamics that make people move from one place to another and in the end determine why cities exist and how big they become. Generally, they are the most complex theories

discussed in this section and involve many assumptions and simplifications, some of which are obviously not realistic. Nevertheless, they are helpful to illustrate the key mechanisms that explain why a city of more than 15 million people develops within little more than a century at a fairly unremarkable coastal location.

New Economic Geography explains the size of cities by explaining why individuals move to them. It is based on the idea that for each city, there are factors that make it attractive and factors that make it unattractive to live there. Typically, these factors are assumed to be economic, but they can also include any other aspect that affects the quality of life. Jointly, they determine the overall attractiveness of a city. Obviously, the more attractive a city is, the more people want to live there. But there are two more mechanisms that determine the population of cities. First, it is not only the attractiveness of a city itself, but also the attractiveness of all other cities in a country that determines where people move. Second, the attractiveness of a city depends directly on its size, i.e. it changes when a city grows or shrinks.

Cities exist because there are economic factors that make it beneficial for firms and households to be located close to each other. For example, transport costs are lower if businesses operate within short distances. For this reason, it can be often observed that suppliers cluster around large manufacturing plants. Of course, the incentive for a supplier to move to a particular location increases if there are more manufacturing plants at the location. As a consequence, large cities that already have many businesses attract more and become even larger in the process. Incentives to minimise distance can arise from other factors than transport costs, e.g. businesses might locate close to each other because it makes face-to-face meetings easier. The mechanisms that make it beneficial for businesses and workers to be located close to each other are often summarised under the name agglomeration economies.

If there were only reasons to be located close to each other, one should expect that over time everybody would live in one giant city. As this is not the case, there must be forces that counteract the mechanisms described above. The predominant economic factor in this respect is the price of land. The higher the demand for land in one city, the more expensive it will become. At some point, the higher costs for land will offset the economic benefits of being located in the city and businesses will stop moving there.⁵ Furthermore, factors such as air pollution or congestion increase when cities become larger and also offset the benefits of being close to each other.

Because the forces that make cities attractive or unattractive can be self-reinforcing, even a small initial change might have large consequences. A single business that moves into a city can make it more attractive for others to follow. If other businesses move in, this might induce still more to follow and so on. In the case of Los Angeles, it appears likely that the construction of transcontinental railways and the discovery of oil in the late 19th century started a virtuous circle that created a metropolitan area with 15 million inhabitants.⁶ If the agglomeration economies behind this virtuous circle suddenly stopped working, estimates suggest that almost 80% of the jobs in Los Angeles would eventually disappear.⁷

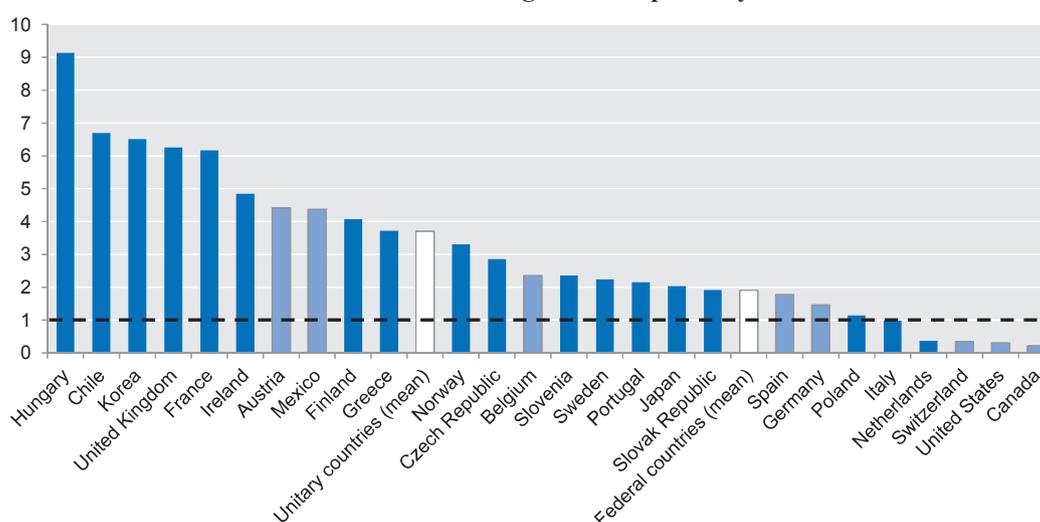
Capital cities

Another characteristic that strongly influences the population of a city is role of administrative and political centre of a country. Five of the 10 largest cities within the OECD are capitals and in 26 of the 34 OECD member countries, the capital is also the largest city (Figure 2.2).⁸ Abstracting from the fact that governments often choose big

cities as capitals, there are several reasons why the designation as a capital makes a city grow. First, governments are big employers that provide many well-paid jobs in the public administration. They also attract other organisations, such as newspapers and lobby groups, which also provide jobs. Of course, many of the employees will bring their families with them, which further increases the number of people who live in a city because it is the capital. In addition to those people are the people who provide services for government workers, for example in schools and restaurants. Taken together, the presence of these people partly explains why capitals are larger than comparable cities.

To some degree the size of capital cities is also due to what economists call rent seeking. Rent seeking consists of legal or illegal activities that benefit businesses or individuals without adding to the overall amount of wealth that is produced. Typical examples are the lobbying for favourable regulation or the bribing of an official to be awarded a contract at excessive prices. Even though rent seeking behaviour can be unrelated to government activities, in practice it is very common that it focuses on the government.

Figure 2.2. **Ratio of the population of the capital city of a country relative to the largest non-capital city**



Note: This figure shows the population of the capital city divided by the population of the largest non-capital city. Most capital cities are more than twice as large as the largest non-capital city in the country and sometimes more than six times as large. Federal countries are shown in light blue.

Source: OECD calculations.

Rent seeking is especially strong in authoritarian countries. Non-democratic regimes have relatively more resources to disburse because they do not face the checks and balances present in democracies. Because the population in the capital often forms a power base of these regimes, disbursement of rents is especially concentrated in the capital city. This attracts more people to the capital and is reflected in the data by the fact that the share of the population of a country that is living in the main city is approximately 50% larger in non-democratic countries than in democratic countries.⁹

In democratic countries, evidence suggests that capital cities are particularly large whenever the political system is strongly centralised. Figure 2.2 shows that unitary countries tend to have capitals that have larger relative populations than federal countries (light blue bars). While it could be that federal countries place their capitals in smaller

cities, the pattern is consistent with the explanation that capitals that host more powerful governments tend to become larger.

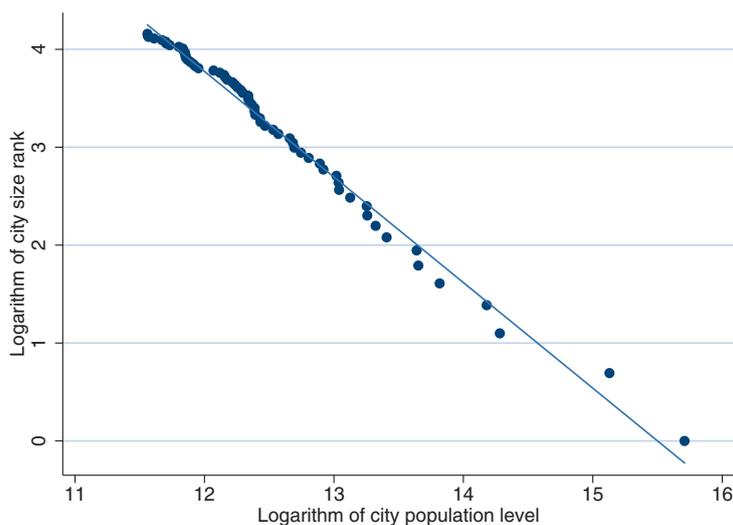
Just as any other factor that determines population size, designating a city as the capital does not affect its population levels instantaneously. Rather, it will take several decades until the full effect is realised. After the German reunification, Berlin became once again the capital of Germany in 1998. Nevertheless, population levels were nearly stagnant over the following decade. Although Berlin's population is increasing again, its population growth rate is still below that of some other German cities, for example Munich. This might also be due Germany's federal system and the political importance of the different state governments.

Random growth

A very strong statistical regularity called Zipf's law motivates another explanation for city growth. In the context of cities, Zipf's law predicts that the largest city of a country has twice as many inhabitants as the second largest, three times as many as the third largest and so forth. From this, the relation of population levels of all other cities to each other follows. For example, the tenth-largest city must have one-tenth less inhabitants than the ninth-largest city; the eleventh-largest city must have one-eleventh less inhabitants than the tenth largest, and so on.

This simple relationship holds with surprising precision in most countries. Sometimes, the two or three largest cities are outliers, but generally all other cities above 100 000 inhabitants, accurately fit the described pattern.¹⁰ Zipf's law is not a recent phenomenon but holds at least for the past 100 years and maybe even longer (the lack of good population data for earlier centuries makes it difficult to verify).

Figure 2.3. Zipf's law for Spanish cities



Note: The nearly linear relation between the logarithmic population and logarithmic rank of a city is a graphical expression of Zipf's law.

Source: OECD calculations based on INE (2015) "Municipal results", Population and Housing Census 2011, Instituto Nacional de Estadística, www.ine.es/jaxi/tabla.do?path=/t20/e244/avance/p02/11/&file=1mun00.px&type=pcaxis&L=1 (accessed 18 November 2014).

The strength and universality of this statistical relationship is difficult to explain and its causes are not yet fully understood. There are few theoretical models that predict such a pattern and it is not possible to create such a regular population distribution across cities based on the explanations discussed so far.¹¹ However, it is exactly what would occur if annual growth rates for cities were determined by a random statistical process. In non-technical terms, such a process would be similar to a lottery that would occur yearly for all cities and determine their growth rates. Every year, a city would receive a new individual growth rate. While the actual rates that are randomly chosen are different for all cities, the odds of receiving a particular growth rate are identical. If such a process is simulated for all cities in a country, the pattern that emerges after some time is almost identical to the one that can be observed in reality.¹²

Nevertheless, random growth processes do not seem to be a satisfying explanation of city sizes for two reasons. First, there is no obvious mechanism that explains the existence of such processes and second, a random nature of city growth is contradicted by the many non-random explanations that can be found for city sizes.

A possibility to reconcile random growth theories with more meaningful explanations of city growth could be to assume that they matter over different time horizons. Whereas over the centuries, city growth might resemble the outcome of random processes, over shorter time periods it is driven by more tangible factors. This idea is supported by results that show that changes in population levels remain persistent long after the factors that caused them have disappeared. Thus, even events that appear from today's perspective as mere accidents of history still influence population levels.

For example, in North America during the 17th and 18th centuries, cities formed at portages along rivers. At these sites, rapids made shipping impossible and cargo had to be transported for short stretches (usually not more than a few kilometres) over land. The labour-intensive nature of portage attracted workers and the required unloading of all goods invited trading at these sites. In the early 19th century, locks were built and ships could bypass many rapids without any need for unloading. Soon after, emerging rail transport made shipping on most rivers economically irrelevant. Nevertheless, the cities along portage sites not only still exist, they are also still larger than comparable cities in other locations.¹³

Even if the reason for a population increase lasts only a few years, its effects can persist long after. In the aftermath of World War II, refugees and expellees from East Germany were only allowed to settle in some parts of West Germany. In these areas, they increased population levels by more than 20%. The restrictions to free movement only lasted from 1945 to 1949; afterwards people could move freely. Nevertheless, the difference in population levels between areas where refugees could settle and areas where they could not settle remained almost unchanged for several decades afterwards.¹⁴

The high persistence of population levels means that events long in the past still have an influence on today's city sizes. For example, the initial growth of cities at portage sites was almost certainly due to a combination of geographical advantages and agglomeration effects. However, looking back in history, it seems more like a historical accident that was essentially random. Thus, it could explain why a population pattern can be observed that – despite the obvious importance of locational fundamentals and agglomeration effects – resembles the outcome of a random process.¹⁵

One of the implications of random growth explanations would have been that policy makers have little control and hence little responsibility for the development of cities. The argument above shows that this is not necessarily true. It implies that random

growth patterns dominate only over very long time periods. Over time horizons that matter for most people (i.e. a few decades), other factors are at work, which can be influenced by policy. Thus, at least over such time horizons, city size is not only determined by good fortune but also by good policy.

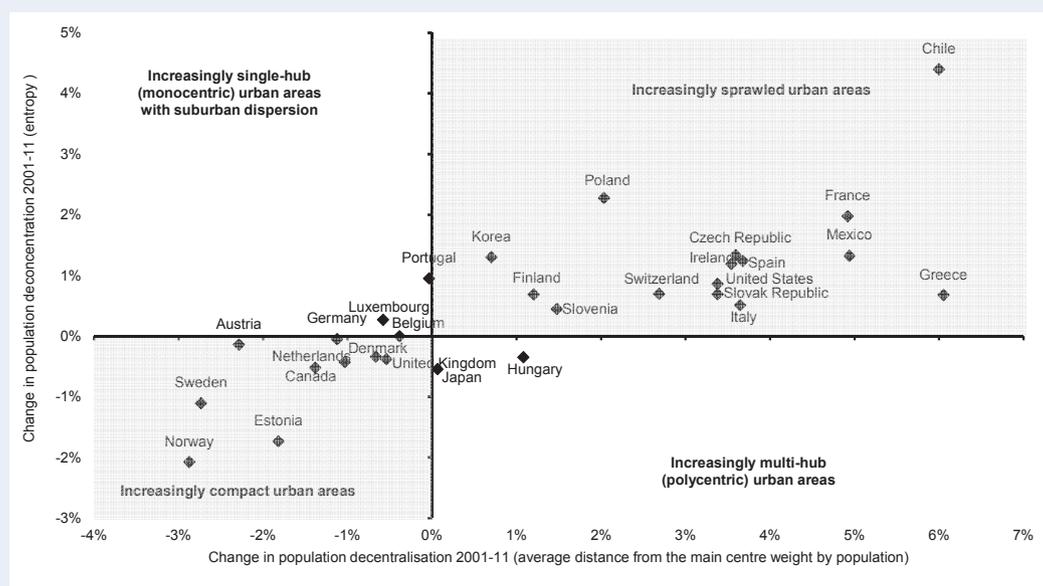
Box 2.1. Population growth and urban form in OECD countries

Large cities have become more attractive in the last 10-20 years. This is reflected in accelerated population movements into large urban agglomerations since 2000. Since then, most metropolitan areas with more than 500 000 inhabitants have had stronger population growth than the countries they are located in. Especially the disproportionate population growth of the very largest urban agglomerations is a reversal compared to earlier decades. From 1970 to 2000, the share of population living in metropolitan areas above 5 million inhabitants declined. In contrast, between 2001 and 2011 it increased by 2%.

No common trend regarding urban form can be observed between 2001 and 2011. Across the OECD, population growth was on average stronger in the commuting zones of the metropolitan areas than in the urban cores (especially in Chile, Poland, and France). Nevertheless, a number of countries observed the opposite trend (Norway, Estonia, and Sweden) and had stronger population growth within the urban centre.

A similar picture emerges when looking at concentration and centralisation indicators. No clear trend is visible across the OECD. Concentration indicators measure whether people live in dense settlements or widely dispersed throughout an urban agglomeration. Centralisation measures the degree to which people cluster around a single centre in a metropolitan area. When concentration and centralisation both increase, a city becomes more compact, whereas a decrease in both measures points to urban sprawl. An increase in concentration together with a decrease in centralisation suggests that cities become more polycentric. The figure below shows the average changes to concentration and centralisation in different OECD countries.

Change in centralisation and concentration of population in metropolitan areas, 2001-11



Source: Veneri, P. (2015), "Urban spatial structure in OECD cities. Is urban population decentralising or clustering?", *OECD Regional Development Working Papers*, OECD Publishing, Paris, forthcoming.

What makes cities rich?

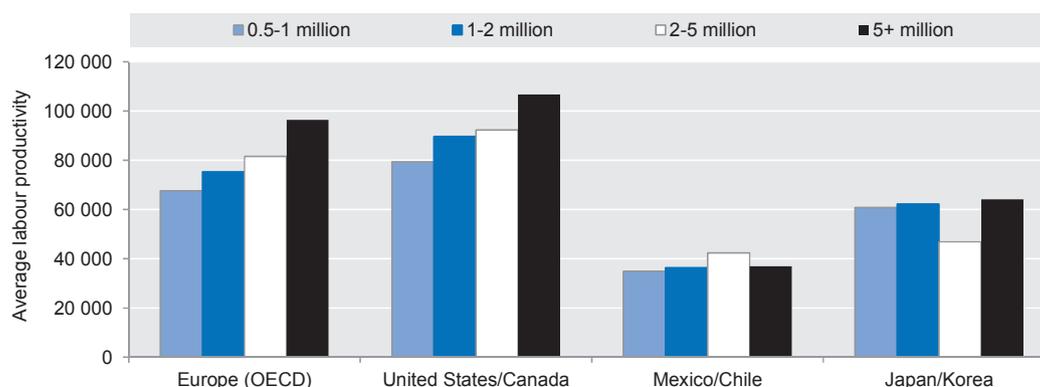
“Some places will, however, be left behind. Not every city will succeed, because not every city has been adept at adapting to the age of information, in which ideas are the ultimate creator of wealth.” (Edward Glaeser, 2011)

Economic prosperity and population growth are linked in a multitude of ways, many of which are discussed throughout this volume. Yet, the underlying causes and the processes that make cities rich and that make them big still have certain distinct features.

Productivity is the most important determinant of economic success. If two cities have the same number of workers, invariably the more productive city will be the richer one. Therefore, this section starts out examining economic productivity levels in cities. Most importantly, it provides insights into the fundamental reasons underlying the existing patterns of economic strengths across cities, both within and across countries. Thereafter it looks at recent economic growth in cities, disentangling its drivers. Within limits, this should allow the reader to form some idea about future economic developments in the cities she or he cares about. This section focuses exclusively on economic outcomes; the equally important question of how economic strength translates into well-being is examined in Chapter 3.

Productivity depends on a multitude of factors. Some are related to national policies, such as labour market regulations or tax systems. Others are due to local characteristics, such as the quality of infrastructure, the sectoral composition of the economy and the quality of local institutions. Even though those characteristics are specific to individual cities, one can observe important regularities as regards their impact on productivity. In particular this section shows that larger cities tend to be more productive.

Figure 2.4. **Larger metropolitan areas are more productive, 2010**



Source: OECD calculations based on OECD (2014a), “Metropolitan areas”, *OECD Regional Statistics* (database), <http://dx.doi.org/10.1787/data-00531-en> (accessed 30 October 2014).

Productivity and human capital

Human capital levels in a city are a strong determinant of its productivity. More educated people tend to be more productive – which is reflected in higher wages.¹⁶ As people with higher education levels tend to live in larger cities, these cities are usually more productive. A high share of well-educated residents benefits a city not only because

highly educated people are, on average, more productive themselves. A higher share of educated people also raises the average productivity levels of less educated residents.

Box 2.2. What are the benefits of attracting highly educated people?

The attractiveness of cities for specific groups of the population has many facets. While some of them – including weather and location – are beyond the control of policy makers, many others are closely connected to policies, and as such amenable to change. Having good quality higher education institutions can help, as graduates often stay on after their studies if there are job opportunities. There are also likely policy complementarities here, as higher education institutions are more likely to benefit the economic performance of a city if students consider it attractive to stay in the city (or at least do not perceive the city as particularly unattractive) and can find adequate jobs there.

An influential study finds that for a ten percentage point increase in the share of university educated population, the productivity of non-university educated residents rises by 5-6% (Moretti, 2004). Other studies estimate the effect to be somewhat smaller, but few doubt its overall existence and general importance. A recent OECD study argues that it is in the range of 3-4% (Ahrend et al., 2014). These results were widely popularised in the early 2000s and provided an argument for cities to improve their economic fortunes by trying to attract highly educated professionals.¹

However, more recently, mounting evidence suggests a more complex picture. Although a higher share of highly educated workers raises the wage of less educated workers, it also leads to an increase in cost of living that can outweigh the increase in wages (see Chapter 3 for a further discussion of this argument). On the one hand, policies to attract highly educated professionals increase overall productivity levels of cities and will foster economic growth. This benefits highly educated workers, but also leads to more opportunities for poorly educated workers. On the one hand, not every poorly educated worker benefits from improved economic opportunities and the rising costs of living will be a burden to them.

Note: 1. See for example Florida (2003) as one of the best-known works in this context.

Sources: Ahrend, R., E. Farchy, I. Kaplanis, A.C. Lembcke (2014), “What makes cities more productive? Evidence on the role of urban governance from five OECD countries”, *OECD Regional Development Working Papers*, No. 2014/05, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jz432cf2d8p-en>; Florida, R.L. (2003), *The Rise of the Creative Class: And How it's Transforming Work, Leisure, Community and Everyday Life*, Basic Books; Moretti, E. (2004), “Workers’ education, spillovers, and productivity: Evidence from plant-level production functions”, *American Economic Review*, Vol. 94, No. 3, pp. 656-690.

Productivity and city size

Agglomeration economies, which were already mentioned in the previous section, tend to make larger cities more productive. Importantly, agglomeration economies are independent from effects due to a different composition of the workforce in different cities. As mentioned above, larger cities tend to attract more educated workers and this tends to raise their productivity levels compared to smaller cities. However, on top of this effect, other mechanisms exist that increase productivity levels in larger cities even further.

In order to clarify the point, it is useful to provide a hypothetical example. If it were possible to pick a random person from a small city and relocate that person to a larger city without changing his or her characteristics, the person would, on average, be more productive in the larger city. This is not dependent on the individual characteristics, such as the occupation, of a person. The effect would occur no matter whether the randomly picked person worked in a high-skilled or in a low-skilled occupation. This is primarily

due to two reasons. First, more jobs exist in larger cities, which allows individuals to find positions that better match their personal strengths. Second, firms in larger cities tend to be more specialised and more innovative, which raises the productivity of their workers. The mechanisms behind these agglomeration economies are described in more detail in Box 2.3.

Box 2.3. Understanding agglomeration economies

The mechanisms that create agglomeration benefits can be broadly split into three groups: sharing, matching and learning. The outline below follows Duranton and Puga’s contribution to the *Handbook of Regional and Urban Economics* (2004) and builds on a long history of research, with early discussion of the concept of agglomeration benefits ranging back to the 19th century economist Alfred Marshall and his “Principles of Economics” (Duranton and Puga, 2004; Marshall, 2009).

Sharing of facilities or inputs by a large number of firms is one way of creating critical mass. The provision of certain goods or facilities requires a critical mass of beneficiaries. For example, branching a river to provide a constant stream of fresh water for an industrial site involves large fixed costs that are only worth paying if there are enough firms benefiting from this investment. A similar argument applies to the provision of specialised goods and services. Specialisation creates gains, but also requires a large enough demand to sustain the business model.

Larger labour markets result in better matches between employers and employees. A better match means that the person who is hired for a job is better suited for his or her position and hence more productive. Most people tend to look for jobs primarily within their city. In larger cities, they have more choice between different potential employers and are more likely to find a matching one.

Another cause that is often considered to be relevant are so-called technology spillovers. Businesses tend to learn from other nearby located businesses about the latest production methods. In larger cities, more businesses that are similar to each other exist. Therefore, there are more opportunities for them to learn about the most efficient production methods and to adapt accordingly.

In addition to these main mechanisms, agglomeration benefits are often thought to also be related with higher “connectivity” of individuals in larger cities, and to possibly arise in the context of higher levels of “knowledge-based capital” (intangible assets) in enterprises located in larger cities.

Lastly, a larger number of businesses also increases the level of competition within a city. Fiercer competition ensures that unproductive businesses leave the market, which increases the average level of productivity within a city and raises its GDP.

Sources: Duranton, G. and D. Puga (2004), “Micro-foundations of urban agglomeration economies”, in Henderson, J.V. and J.F. Thisse (eds.), *Handbook of Regional and Urban Economics*, Vol. 4, Ch. 48, pp. 2 063-2 117; Marshall, A. (2009), *Principles of Economics: Unabridged Eighth Edition*, Cosimo, Inc.

Jointly, agglomeration economies can have large effects. Recent OECD estimates suggest that productivity increases by 2-5% for a doubling of population size, which is in line with comparable studies for individual countries.¹⁷ While this figure may not seem large, it implies that, on average, productivity increases by more than 20% when comparing urban agglomerations of 50 000 inhabitants with a metropolitan area such as Paris. Such effects are particularly relevant for today’s rapidly urbanising countries, where urban growth at such a scale is occurring in several instances.

In the context of agglomeration economies, the connectedness of cities also plays an important role. In addition to own population size, proximity to nearby populous cities

affects positively the productivity of a city, implying that cities benefit from the agglomeration economies of their neighbours. If the population within 300 kilometres (weighted by distance) doubles, the productivity of a city increases by 1-2%.¹⁸ This is important for European cities, which are often smaller than cities in the Americas or Asia. While US cities, for example, are larger and may therefore benefit from higher agglomeration benefits, cities in Europe might benefit from agglomeration spillovers from nearby cities because they are close to each other. Put differently, the density of the European urban system, which may well be a factor in explaining the relatively small size of European cities, may thus help offset any economic disadvantages associated with smaller city size.

Figures 2.5 and 2.6 show city productivity premiums for four countries based on Ahrend et al. (2014). As it is impossible to observe productivity directly, it is approximated using the wages of workers (this is a standard procedure in the literature on productivity). For each city, the effect of the workforce composition is estimated using individual-level data that contains information on the jobs of workers and their education. The differences in wage levels between cities in the same country that cannot be explained by the jobs and the education of workers can be interpreted as an estimate of the agglomeration economies that occur in cities. The vertical axis plots the estimated productivity premium due to agglomeration economies against city size on the horizontal axis. These figures confirm that for all of these countries, productivity is higher in larger cities. In contrast, countries differ in the extent to which productivity varies across cities of similar size.

In the United Kingdom, city productivity premiums in London are larger than would be expected given its size. In contrast, after abstracting from London and its surroundings, productivity in the United Kingdom barely increases with city size. Together with human capital levels, proximity to London appears to account for much of the performance of the positive outliers. Bracknell, Wokingham, High Wycombe and Guildford – all with high levels of tertiary education – are all within a 50-kilometre radius of London, while Basingstoke is less than 80 kilometres from London. In contrast, there is no specific geographical pattern among the negative outliers, although all have education levels below the UK average.

In the United States, the productivity premium in Washington, DC and San Francisco is higher than would be expected given the size of these cities. By contrast, underperforming cities, including Chicago and Los Angeles, are often relatively sprawling cities with low employment densities and relatively fragmented labour markets. Other negative outliers include cities close to the US-Mexico border.

In Germany, the most noteworthy feature is probably the strong east-west divide, with city productivity premiums in East German cities being, on the whole, significantly below the levels found in West German cities of comparable size. It is also noteworthy that a number of mid-sized German cities have city productivity premiums at levels similar to Munich, Stuttgart and Frankfurt – the most productive large agglomerations. This probably reflects a number of highly productive small and medium-sized enterprise (SME) clusters in the manufacturing sector that – often for historical reasons – are located in these smaller agglomerations.

In Mexico, there is a clear north-south divide. Negative outliers are mostly agglomerations in the south of the country, whereas positive outliers are generally located in the north, on or close to the US border. (In contrast, as noted above, some of the negative outliers in the United States are located on or close to the Mexican border.)

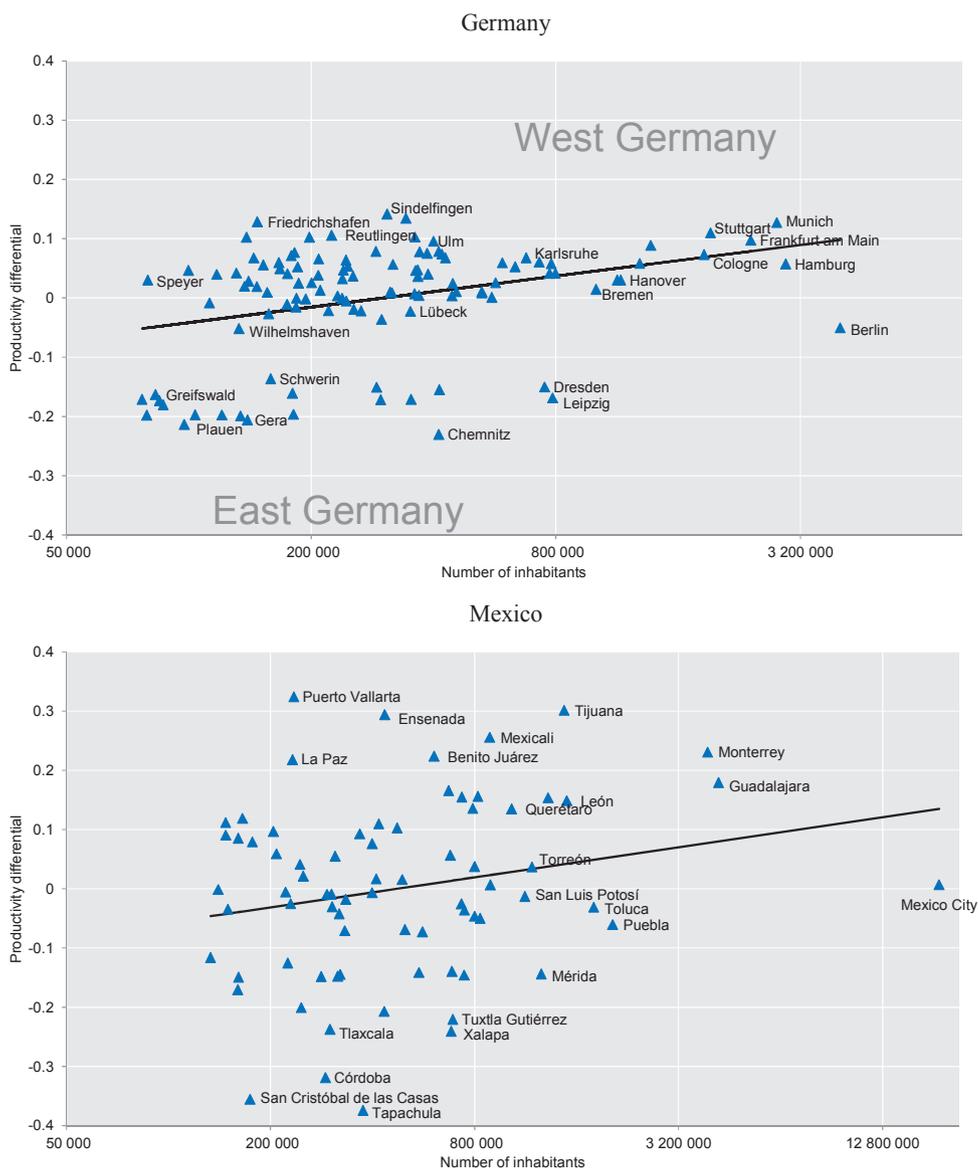
Figure 2.5. Productivity and city size: United Kingdom and United States



Notes: City productivity is defined as a wage premium associated with each city once the characteristics of the city workforce are taken into account. Individual wage regressions are estimated with controls for the individual characteristics of the workforce, in order to account for sorting of individuals to cities. The city is defined at the functional urban area (FUA) level, so that it allows comparison of meaningful spatial entities based on functional economic criteria rather than on administrative boundaries.

Source: Ahrend, R., E. Farchy, I. Kaplanis, A.C. Lembcke (2014), “What makes cities more productive? Evidence on the role of urban governance from five OECD countries”, *OECD Regional Development Working Papers*, No. 2014/05, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jz432cf2d8p-en>.

Figure 2.6. Productivity and city size: Germany and Mexico



Notes: City productivity is defined as a wage premium associated with each city once the characteristics of the city workforce are taken into account. Individual wage regressions are estimated with controls for the individual characteristics of the workforce, in order to account for sorting of individuals to cities. The city is defined at the functional urban area (FUA) level, so that it allows comparison of meaningful spatial entities based on functional economic criteria rather than on administrative boundaries.

Source: Ahrend, R., E. Farchy, I. Kaplanis, A.C. Lembcke (2014), “What makes cities more productive? Evidence on the role of urban governance from five OECD countries”, *OECD Regional Development Working Papers*, No. 2014/05, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jz432cf2d8p-en>.

Poorly organised cities can forfeit potential agglomeration benefits, as demonstrated by Figure 2.5 and Figure 2.6. Mexico City, for example, could have higher levels of productivity given the size of its population. London’s productivity premium is outstanding, but more striking still is the weak performance of most other UK metropolitan areas. Few of them appear to benefit from agglomeration economies.

Cities as centres of trade

Larger cities are more likely to be hubs or service centres through which trade and financial flows are channelled. These flows typically require the provision of high value-added services, in fields such as law and finance. Therefore, businesses specialising in the provision of these services tend to locate in large cities, which leads to higher income levels in these cities. Businesses that target the same markets abroad tend to cluster in the same urban agglomerations. This is especially relevant for businesses that target challenging international markets. Among Spanish exporters, businesses that act in markets that are characterised by language barriers, currency risks or institutional fragility tend to be located in close proximity.¹⁹

In addition to the economically desirable activities related to trade flows and financial flows, cities that are hubs for them also attract businesses that specialise in rent extraction. As mentioned above, rent extraction are activities that enrich the actor but do not provide any value added. They can increase the income levels within a city, but do nothing to contribute to the prosperity of the overall economy of a country.

General trends

Different sectors in an economy have different productivity levels. Some sectors such as research and development provide a lot of value added per worker, whereas others add comparatively little value per employed worker. The sectoral composition of the economy in a metropolitan area has strong effects on its productivity level and hence on its average per capita income.

The economy of some cities is specialised in very well-performing sectors that provide a lot of value added per worker. Typical examples of such sectors are information technology and finance, but also advanced manufacturing. Ulsan in Korea has one of the highest per capita GDP levels of all cities in the OECD because several advanced manufacturing plants are located there. Other cities are burdened with a specialisation in a sector that once performed well but is now unproductive.

The determinants of the success of individual sectors are mostly beyond the control of local policy makers. What matters in the longer term is the capacity of a city to adapt. In the short term, cities' fortunes may be influenced by basic economic trends. For example, cities in fast-growing countries are likely to grow faster, too. Similarly, cities with a larger share of activity in well-performing sectors are likely to do better than those with large productive capacities in declining sectors. However, given that fast-growing sectors usually mature and eventually decline, at least in relative terms what matters in a long-term perspective is the capacity of a city to transform itself. This depends, in no small part, on its institutions.

Specialisation versus economic resilience

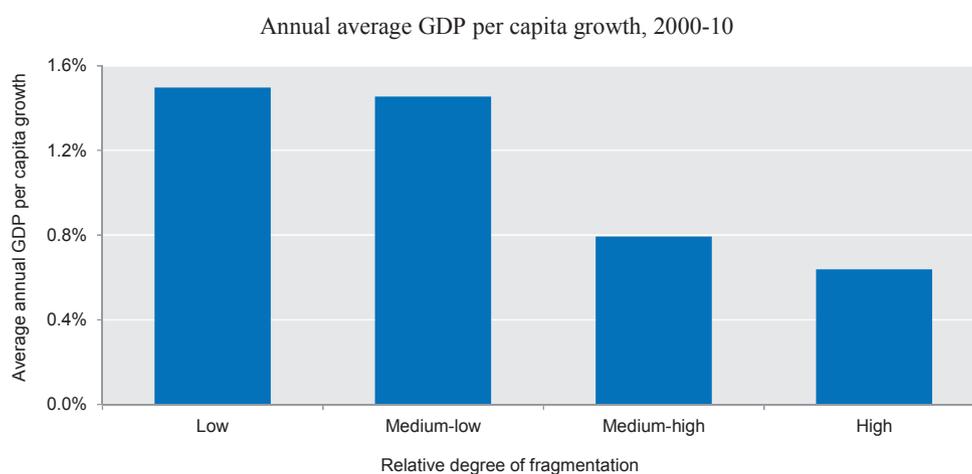
Cities may experience a trade-off between reaping agglomeration benefits and economic resilience. Economically more diversified cities are likely to be more resilient to sector-specific shocks. However, unless they have critical mass in certain sectors, they may not be able to reap benefits from clustering. Such a trade-off may be less acute for metropolitan areas of several million inhabitants, which typically can have economic activity of sufficient scale in many different sectors. In contrast, smaller cities may, out of necessity, become more specialised, implying a greater vulnerability. Consequently, institutions allowing for a quick transformation of industrial structure may be particularly

important in mid-sized metropolitan areas, as they are sufficiently large to make structural change difficult but often too small to have a sufficiently diversified economic structure.

Fragmented governance

Political administrative fragmentation may affect the economic growth of metropolitan cities. This could, for example, arise if municipal fragmentation, together with insufficient co-operation, leads to sub-optimal provision of transport infrastructure. This is not just a theoretical possibility; there are numerous cities where certain transport modes – for no apparent economic reason – end at administrative borders. The results are tangible; OECD work shows that, indeed, OECD metropolitan areas with a higher level of governmental fragmentation are less productive and have experienced lower growth of GDP per capita over the last decade (Figure 2.7). The problem of fragmented governance is discussed in further detail in the following section.

Figure 2.7. **Less fragmented metropolitan areas have experienced higher growth**



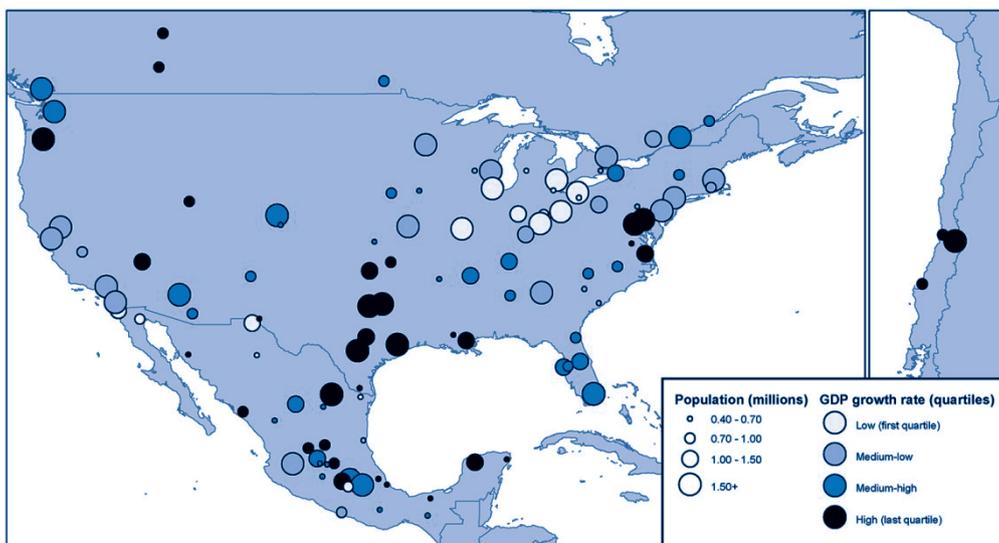
Source: Ahrend, R. and A.C. Lembecke (2015b), “Economic and demographic trends in cities”, *OECD Regional Development Working Papers*, OECD Publishing, Paris, forthcoming.

Observed economic growth paths

Over the last decade, economic performance has greatly differed among cities of comparable sizes. Unsurprisingly, the GDP growth of metropolitan areas has been higher in faster growing countries, but there has also been significant variation in growth across metropolitan areas within countries. For example, in the United States – with the exception of some coastal cities – north-eastern cities have been among the slower growing OECD metropolitan areas, while southern and south-western cities have been among the faster growing ones.

While city performance depends on many factors idiosyncratic to each city, some general trends can be established. Economic convergence (i.e. initially less-productive cities growing faster than more productive ones) was observed among the largest cities. Mirroring economic convergence across countries, metropolitan areas in richer countries experienced slower per capita GDP growth than those in countries with lower levels of per capita GDP. Also, though this effect was weaker, there was some convergence of metropolitan areas within countries, as richer (in terms of per capita GDP) metropolitan areas experienced slower growth, this effect being mainly driven by a particularly strong growth performance of cities between 750 000 and 1.5 million inhabitants.

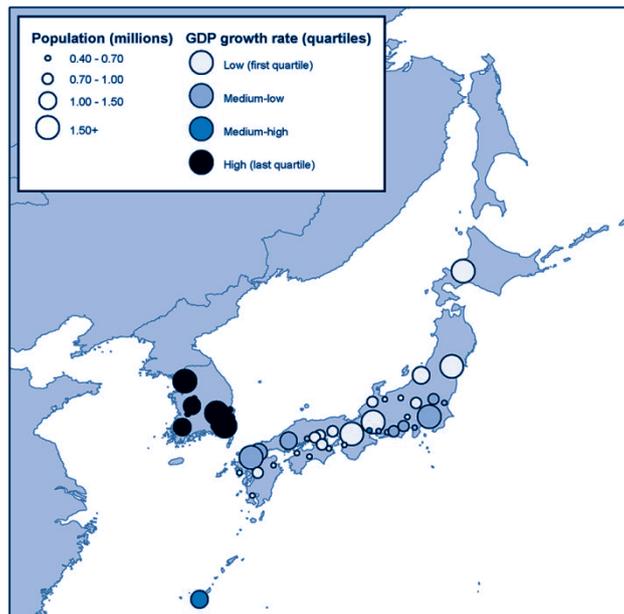
Figure 2.8. GDP growth by city: North and South America



Note: This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

Source: OECD calculations based on OECD (2014a), “Metropolitan areas”, *OECD Regional Statistics* (database), <http://dx.doi.org/10.1787/data-00531-en> (accessed 30 October 2014).

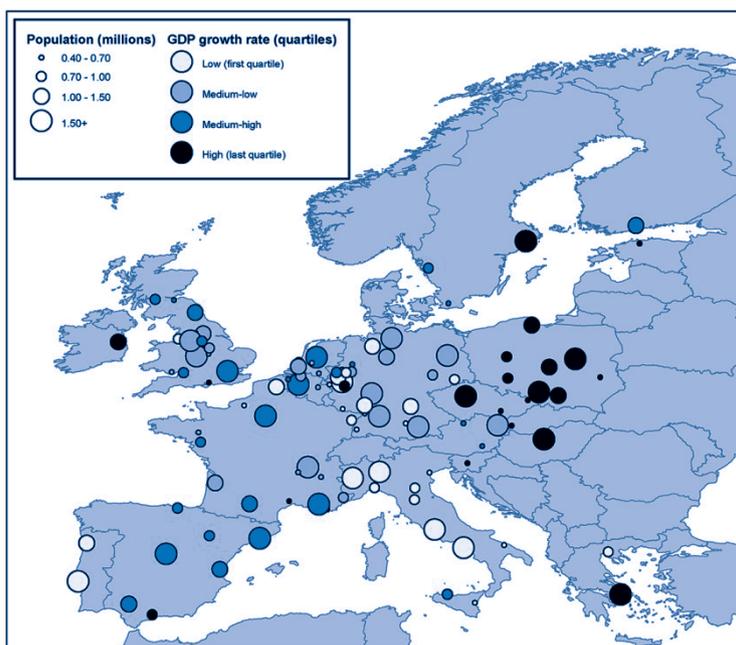
Figure 2.9. GDP growth by city: Japan/Korea



Note: This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

Source: OECD calculations based on OECD (2014a), “Metropolitan areas”, *OECD Regional Statistics* (database), <http://dx.doi.org/10.1787/data-00531-en> (accessed 4 November 2014).

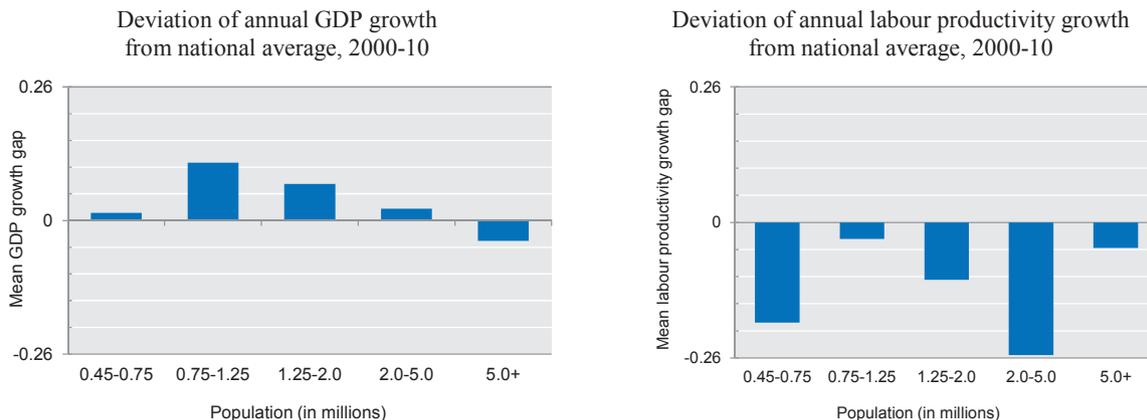
Figure 2.10. GDP growth by city: Europe



Note: This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

Source: OECD calculations based on OECD (2014a), “Metropolitan areas”, *OECD Regional Statistics* (database), <http://dx.doi.org/10.1787/data-00531-en> (accessed 30 October 2014).

Figure 2.11. Decomposition of economic growth trends of metropolitan areas



Source: OECD calculations based on OECD (2014a), “Metropolitan areas”, *OECD Regional Statistics* (database), <http://dx.doi.org/10.1787/data-00531-en> (accessed 30 October 2014).

Even though productivity levels in metropolitan areas are far above country averages, over the last decade the large contribution of these cities to national economic growth has not come from above-average increases in productivity. Figure 2.11 shows that labour productivity in metropolitan areas generally grew substantially below the average of their

country, the exception being cities with around 1 million inhabitants and with above 5 million inhabitants, where labour productivity grew only marginally below the country average. The growth contribution of cities hence resulted from their sheer size, and often through strong increases in population, as those migrating to larger cities are, on average, more productive there. Strong population increases may also partly explain the unexceptional productivity growth of metropolitan areas, as the productivity of those moving to them – while higher than in other places – is (at least initially) often below the average city level but increases with time.²⁰ In other words, very dynamic cities may appear to perform less well on per capita and per worker measures of productivity even though they are helping to lift national productivity levels substantially.

What makes cities function well?

“The more successfully a city mingles everyday diversity of uses and users in its everyday streets, the more successfully, casually (and economically) its people thereby enliven and support well-located parks that can thus give back grace and delight to their neighbourhoods instead of vacuity.” (Jane Jacobs, 1961)

Urban living is the dominant lifestyle in all OECD countries and shapes today’s societies. Cities are mirrors of societies and often magnify the problems that they face. As a consequence, almost everything that contributes to well-functioning societies also contributes to well-functioning cities.

It would be impossible to present everything of importance in this respect in one brief chapter. Therefore, this section has a different aim. It tries to highlight some of the factors that contribute to making cities function well. It focuses on areas that are particularly important for many cities, but does not intend to present an exhaustive overview of everything that matters. Depending on the particular challenges that cities face, some of the presented factors are more important than others. The section has an implicit focus on OECD countries. While many of the issues mentioned in it are also relevant for cities in developing countries, they are typically not the most pressing problems for them.

NOTE: Good governance of urban agglomerations is essential for their functioning. Readers with an interest in the topic might want to consult the OECD publication *Governing the City* (OECD, 2015a) for an in-depth analysis of metropolitan governance and several case studies that analyse particular examples of different governance arrangements.

Limited administrative fragmentation

Prerequisite for well-functioning cities are effective governance arrangements that fit the situation in a city and its surrounding areas. Good governance structures form a foundation that helps policy makers to make the right decisions. They ensure that policy makers have the necessary information, the required powers and the proper incentives to make decisions that are best for a city. While good governance structures are no guarantee for good policies, it is very difficult to design and implement good policies without them.

Urban agglomerations are defined by their physical characteristics (such as population densities and the developed land) but also by their functional relations that are expressions of the daily lives of their inhabitants. People live in one area, commute to another and go for dinner in even another. Friends might live in the same neighbourhood, but the shopping centre is located across town and business trips begin at the airport

outside the city. For a single citizen, this is just a pattern of daily life. Taken together across all residents, these patterns make up the functional relations that define a city.

For several reasons, administrative borders in metropolitan areas rarely correspond to these functional relations. Often, they are based on historical settlement patterns that no longer reflect human activities. Due to population growth and improvements in transport technologies, formerly well-delimited villages have become part of the suburbs of a city or might even be fully integrated in the urban core. Often, no corresponding changes to administrative borders have occurred. Common reasons for the persistence of administrative borders are strong local identities and high costs of reforms, but also vested interests of politicians and residents.

Even if policy makers try to reorganise local governments according to functional relations within urban agglomerations, it is often difficult to identify unambiguous boundaries between functionally integrated areas. Urban agglomerations are not defined by a single functional relation, but by many overlapping ones. Generally, they are not identical in their geographical extent. For example, the functional relation defined by typical shopping patterns is different from the one defined by commuting patterns.

The mismatch between functional boundaries and administrative boundaries is well known and policy makers have long been aware of the co-ordination problems it might cause. In response, a wide range of metropolitan governance arrangements has emerged. While some countries have chosen to shift administrative boundaries to match the new urban form (e.g. via municipal mergers), others are encouraging municipalities to build partnerships, within a more or less institutionalised framework.

The degree of administrative fragmentation is difficult to compare across countries because their institutional frameworks vary strongly. For example, on average 0.4 municipalities per 100 000 inhabitants exist in metropolitan areas in the United Kingdom whereas the figure in the Czech Republic is 24.3 municipalities per 100 000 inhabitants. This corresponds to a 50-fold difference and obviously suggests that important differences in fragmentation exist in both countries. Nevertheless, it would be wrong to conclude that fragmentation is 50 times worse in the Czech Republic than in the United Kingdom. Differences in the institutional arrangements imply that municipalities in both countries operate very differently from each other. Therefore, their raw numbers give only limited information regarding the extent to which fragmentation poses a problem.

Despite the institutional differences between countries, it is possible to provide quantitative evidence on the effects of administrative fragmentation within metropolitan areas. Metropolitan areas have different levels of labour productivity for several reasons. Part of the difference is due to national policies, such as labour market regulations and tax systems. Some of it also depends on a different composition of the workforce because workers with different characteristics move into different cities. Another part is due to observable characteristics of the metropolitan area, such as size and governance structure. In order to analyse the role of these, an OECD study used econometric techniques to distinguish observable characteristics from other factors that affect productivity and analyse only them.²¹ This analysis shows that for each doubling in the number of municipalities per 100 000 inhabitants within a metropolitan area, labour productivity in the metropolitan area decreases by 5-6%.

Governance bodies as tools for co-ordination

How to respond to the mismatch between functional relations within a city and administrative borders has been subject to a long-standing debate. On the one side, proponents of public choice theories favour informal co-ordination between autonomous local authorities.²² They argue that the most effective co-ordination mechanisms are those developing from the bottom up and that few economies of scale exist in public service provision at the local level. On the other side, proponents of centrist approaches argue that effective co-ordination among local authorities will not occur. According to this approach, municipalities within large urban agglomerations should thus be merged with each other or, alternatively, lose some of their functions to an authority that is responsible for the entire urban agglomeration.²³

In order to provide insights on this issue, the OECD has conducted a survey of governance structures in metropolitan areas. The OECD Metropolitan Governance Survey aims at providing a representative overview of the governance structures that exist in metropolitan areas (see Box 2.4). It focuses on organisations in charge of co-ordinating policies in metropolitan areas – called governance bodies hereafter. The survey includes only organisations that have a clear focus on metropolitan issues and a broad mandate in terms of policy fields. It does not include single-purpose authorities such as school districts or transport authorities.²⁴

A total of 263 metropolitan areas with more than 500 000 inhabitants were surveyed across 21 OECD countries. More than two-thirds of all metropolitan areas have a governance body formally responsible for co-ordinating policies within the metropolitan area. They exist in 17 of the 21 surveyed countries, but only in 6 of them do they cover all the metropolitan areas of the country. The survey confirms that metropolitan governance arrangements differ strongly from each other, not only across countries but also within them. It is not unusual to have some large urban agglomerations in a country that has very stringent governance arrangements and others that do not have any formalised governance structure at all.

Responsibilities of governance bodies depend on the institutional context of a metropolitan area and the country in which it is located. In many cases, the bodies have few formal powers and serve mostly as institutionalised forums to exchange information and to propose non-binding policy initiatives. However, going beyond these relatively basic approaches, a wide range of other arrangements exists with regard to institutionalised co-operation.

The most common next step towards further integration is a transfer of selected powers to the governance body. In some cases, these are very specific powers, such as the drafting of a particular land-use plan or narrow environmental regulations. In other cases, they are broader and may include many policy instruments or cover several policy fields. Sometimes, not only powers to regulate are transferred to governance bodies but also responsibilities for service provisions. Again, the scope varies from minor tasks, such as the provision of transport services for the elderly, to broad public services, such as waste disposal and the management of all public housing.

Most governance bodies have in common that they cannot be considered fully fledged local governments because they are not a legal tier of the government of a country. Although they tend to be institutionalised through national laws (or state laws in the case of federal countries), they often emerged bottom up through local initiatives. When national governments imposed governance structures on metropolitan areas, this was

generally done on a case-by-case basis and not as a systematic reform of local governance (exceptions are, for example, the city-regions in the Netherlands, which are scheduled to be abolished in 2015).²⁵

Box 2.4. The OECD Metropolitan Governance Survey

Systematic studies of governance arrangements in metropolitan areas have been hampered by a lack of representative data. The OECD Metropolitan Governance Survey aims to solve this problem for the first time by collecting representative data of governance arrangements in almost all OECD metropolitan areas with more than 500 000 inhabitants. It focuses on so-called governance bodies – organisations that have the task of co-ordinating policies within the metropolitan area. Any definition of metropolitan area governance body has to consider two aspects. On the one hand, it needs to be broad enough to capture the variety of organisations that exist across the OECD and should include local solutions that differ from mainstream approaches to metropolitan governance. On the other hand, the definition needs to be narrow enough to remain meaningful.

Four criteria were used to identify governance bodies:

- Geographical scope: The organisation must cover the central city and a large share of the remaining parts of the metropolitan area. If its geographical scope extends beyond the metropolitan area, the metropolitan area must constitute the predominant part of its sphere of responsibility.
- Involved actors: National or sub-national governments must be dominant actors within the organisation or, alternatively, the organisation itself has to have the status of a sub-national government.
- Thematic focus: The organisation must primarily deal with issues that are directly and predominantly relevant to metropolitan area governance.
- Thematic width: The organisation must have a mandate that allows it to work on more than one issue that is related to metropolitan area governance.

In order to capture the variety in approaches to metropolitan governance, the definition does not put any restriction on the legal powers that an organisation must have in order to be considered a governance body. Metropolitan governance arrangements vary greatly in this respect both across and within countries. In some cases, governance bodies are powerful organisations but in many other cases, they work primarily through collecting and disseminating information and by organising regular forums for policy makers to meet.

The survey was conducted during the second half of 2013 and covered 263 metropolitan areas with more than 500 000 inhabitants. For further details see also OECD (2015a) and Ahrend, Gamper and Schumann (2014).

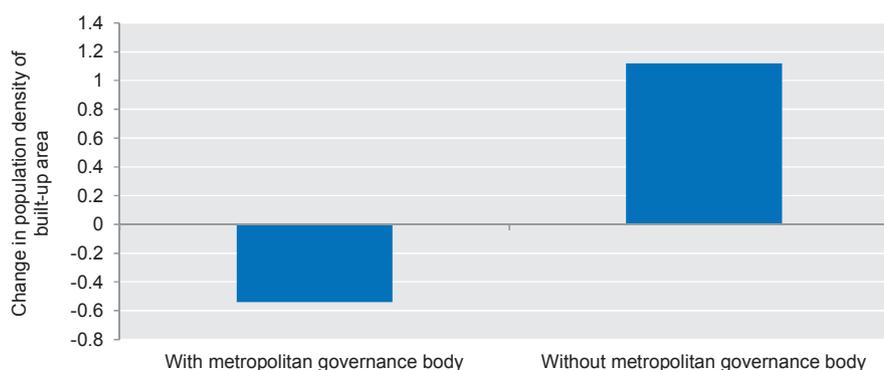
Sources: Ahrend, R., C. Gamper and A. Schumann (2014), “The OECD Metropolitan Governance Survey: A quantitative description of governance structures in large urban agglomerations”, *OECD Regional Development Working Papers*, No. 2014/04, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jz43zldh08p-en>; OECD (2015a), *Governing the City*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264226500-en>.

Over 80% of metropolitan governance bodies work on regional development, over 70% on transport and over 60% on spatial planning. More than half of the metropolitan governance bodies are active in all three fields. This is probably due to the fact that in these fields, the demand from residents for a metropolitan-wide approach is highest. Furthermore, the positive consequences of working together are most obvious in these

areas. Transport in particular has a special status in metropolitan governance that is reflected by the fact that more than half of all metropolitan areas also have dedicated transport authorities. These are also common in countries that have otherwise no tradition of sectoral authorities or special-purpose districts.

Governance bodies can be effective tools for co-ordination within metropolitan areas. Where they exist, outcomes along two important dimensions are better than in places where they do not exist. One of the most common fields of works for metropolitan governance bodies is land-use planning. As urban sprawl is often mentioned as one of the consequences of fragmented land-use planning, it is perhaps not surprising that metropolitan areas where governance bodies exist experienced a decline in sprawl between 2000 and 2006.²⁶ In contrast, those metropolitan areas where no governance body exists experienced an increase in sprawl.²⁷ At the same time, metropolitan areas with a governance body seem to be more attractive. Their average population growth rates were 0.28 percentage points higher between 2000 and 2010 than those of metropolitan areas without governance bodies.

Figure 2.12. **Change in sprawl**



Notes: This figure shows estimates of the impact of a metropolitan governance body on economic sprawl over a six-year period. Sprawl is defined narrowly as the population density of the built-up area of a city. The estimates are based on a linear regression that controls for country-specific effects and population levels using 204 observations. The difference in sprawl between cities with governance bodies and cities without governance body is significant at the 99% confidence level.

Source: Ahrend, R., C. Gamper and A. Schumann (2014), “The OECD Metropolitan Governance Survey: A quantitative description of governance structures in large urban agglomerations”, *OECD Regional Development Working Papers*, No. 2014/04, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jz43zldh08p-en>.

Metropolitan areas without governance bodies have, on average, higher levels of air pollution, as measured by the amount of particulate matters in the air (PM_{2.5}). Possibly, this is the result of more efficient transport policies in combination with better land-use planning, both of which are central fields of work for most governance bodies.

The existence of metropolitan governance bodies might reduce problems related to administrative fragmentation. Estimates show that where they exist, about half of the correlation between fragmentation and the loss of labour productivity disappears. This is an indication that they are effective in co-ordinating fragmented local governments.²⁸ Several possible transmission channels can explain this positive effect. Synergies between different policy fields, and in particular related to spatial planning, can lead to a more efficient urban form over time. Furthermore, economies of scale in the provision of some

public services imply that these can be more effectively provided at the metropolitan level. An organisation co-ordinating the provision of these services across a metropolitan area could also improve their quality or reduce their costs, which in turn should affect productivity positively.

Integrated sectoral policies: Land-use planning and transport planning

The previous sections have discussed administrative fragmentation between municipalities within metropolitan areas and the role that governance bodies can play in overcoming possible co-ordination problems associated with it. A related issue concerns excessive sectoral fragmentation between policy fields. On a sub-national scale, this occurs frequently if different sectoral authorities or special-purpose districts are responsible for different policy fields or if responsibilities are divided between different vertical levels of government. Policies in different fields benefit from co-ordination whenever they affect each other. In practice, this means that complementarities between policy fields have to be identified. The stronger they are, the greater the need for co-ordination between the policy fields.

In the context of large urban agglomerations, land-use planning and transport planning are often the fields where the need for co-ordination is greatest. They are typical examples of complementary policy domains, where the effectiveness of policies in one field depends strongly on the decisions taken in the other field. Housing and commercial developments need to be well connected to other parts of the urban agglomeration and public transport in turn relies on a minimum population density to operate efficiently. In the absence of proper co-ordination, residential areas might be planned without appropriate provisions for public transport and without regard to the strains on the road network that they impose in the rest of the urban agglomeration. Similarly, it can be difficult to develop public transport systems if it is not assured that residential housing or commercial property along public transport lines will reach the densities required to operate an efficient public transport network.

Transport and land-use planning are frequently the responsibilities of different levels of government or of different agencies within the same level of government. Furthermore, funding for transport often comes from different public sources. The levels of government in charge of planning transport and land use are routinely not the ones providing the majority of funds for transport infrastructure. Co-ordinating policies in such constellations is difficult and governance gaps occur frequently.

Co-ordination between land-use planning and transport planning is important for all cities, but it matters especially for cities that expand in size. Generally, transport infrastructure can be provided much more cost effectively if it is built on undeveloped land rather than in already built-up areas. By co-ordinating transport and land-use planning, the required space for public transport infrastructure can be protected from other development. If this is done, the construction of new transport infrastructure can be timed to meet demand. If it is constructed at a later point in time, existing planning approval can ease the political process and the protected undeveloped space will reduce the costs of construction.²⁹

Integrated land-use and transport planning also make it easier to develop mechanisms designed to recoup some of the costs of public infrastructure investments – so-called land-value capture tools. Public spending for infrastructure increases the price of adjacent land. Often, this price increase provides a publicly funded windfall profit to land owners

or developers. Land-value capture tools aim at recapturing these windfalls from developers in order to (partially) fund the infrastructure investment.

Tools for land-value capture differ greatly depending on the legal context of a country and the particular circumstances of individual cases. They can include land taxes, fees, pre-emptive purchase rights for local governments at discounted prices and co-development of the improved land. Often, land-value capture regulations and agreements are combined with terms and regulations regarding the characteristics of new developments. Across the OECD, the availability of land-value capture tools varies strongly depending on the national legislative framework. Where they exist, they are important instruments for local governments to finance infrastructure investments.³⁰

Integrated public transport provision

A well-functioning public transport system is crucial for every large city. Integrated transport and land-use planning facilitates the design of an effective public transport network. While this is an important precondition for a good public transport system, it is not sufficient to guarantee effective transport services. It is also important that the existing public transport infrastructure is efficiently operated.

The term “integrated public transport” refers to systems where all aspects of the public transport provision are co-ordinated with each other. Among the advantages offered by integrated public transport systems are optimised routing and synchronised timetables between different lines and modes of transport. Other advantages are universal fare schemes with tickets that are valid across different modes of public transport and real-time itinerary information systems. All of the advantages increase the mobility within metropolitan areas by lowering travel times and improving accessibility.

Integrated public transport systems are typically managed by a single authority. In some cases, this authority is also responsible for the operational transport provision, whereas in other cases the task is delegated to sub-contractors.³¹ The OECD Metropolitan Governance Survey has found that the share of residents who are satisfied with the public transport provision in their cities is 14 percentage points higher if a transport authority exists (Figure 2.13).³² It appears likely that this is at least partly due to the better integration of public transport in these cities.

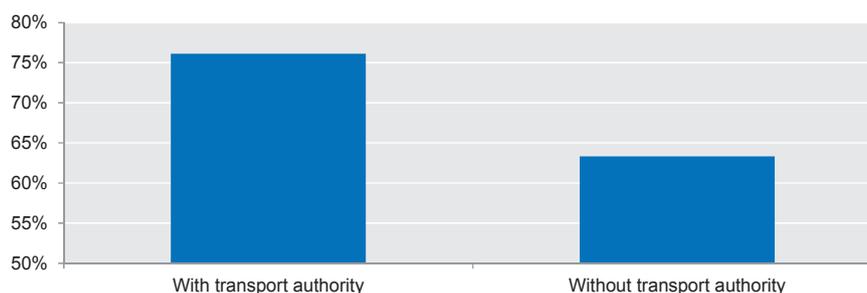
In order to be able to integrate the entire public transport system, transport authorities need to be supported by local governments and have to be responsible for all modes of public transport in a metropolitan area except for long-distance transport. In particular, they need the power to influence where and how frequently transport lines operate. If they are not operating the actual transport provision itself, they also need the power to regulate subcontractors with respect to fares and other characteristics of transport provision. Transport authorities with these powers exist in many OECD countries but are especially common in Germany, where every large urban agglomeration is covered by one.

Smart road transport

Besides public transport, individual road transport is the other major pillar of an efficient transport system in urban agglomerations. Congestion is a major problem in virtually every large city and attempts to mitigate it are ongoing almost everywhere. A mix of policies from different sectors has to be employed to fight it effectively. Some important strategies focus directly on a reduction of road traffic or an improvement in road capacity. Others aim at preventing congestion indirectly through interventions in

other policy fields. Previous sections have discussed how some of these indirectly related policies, such as requiring minimum densities for new developments, can have positive effects on congestion. This section discusses several possible interventions to limit congestion, which aim directly to decrease road traffic.

Figure 2.13. Share of population satisfied with public transport provision



Note: Estimates are based on the share of respondents from 37 cities in the Urban Audit Perception Survey who state that they are either “satisfied” or “very satisfied” with the public transport provision in their city. The difference between the two groups is statistically significant at the 95% confidence level.

Source: Ahrend, R., C. Gamper and A. Schumann (2014), “The OECD Metropolitan Governance Survey: A quantitative description of governance structures in large urban agglomerations”, *OECD Regional Development Working Papers*, No. 2014/04, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jz43zldh08p-en>.

One of the most efficient methods to reduce congestion is the introduction of a congestion charge. Congestion charges ensure that motorists driving in cities pay a compensation for the negative consequences that this has for residents and other road users (for example air pollution and congestion). It also discourages some potential road users from driving and thereby reduces congestion. Congestion charges often face fierce political resistance but have nevertheless been successfully introduced in several major cities (such as London, Singapore, Milan and Stockholm) in recent years.

To be effective, congestion charges need to be sufficiently high. The exact level depends on how motorists react to the congestion charge and has to be decided on a case-by-case basis. If cities are very congested, the charge required to fully ease congestion can be substantial. Despite London’s congestion charge of GBP 11.50 per day, it is still the 9th most congested city in Europe with an average delay of 36 minutes per peak hour of driving.³³

Setting congestion charges to such or even higher levels can be politically difficult because poorer people and those who have no alternative to commuting by car are disproportionately affected by them. To some degree, the political backlash can be mitigated if congestion charges are implemented in a revenue-neutral way with the extra funds being used to reduce other taxes or fees. In contrast to developed countries, congestion charges in developing countries are progressive because car owners tend to have above-average incomes.

Congestion charges can be varied according to the time that a car enters a city or the amount of pollution it emits. In Stockholm prices vary over time and are highest during the peak rush hour, but are completely free at night. In Milan, no charges are applied to low-emission vehicles, whereas high-emission vehicles are charged up to EUR 10 a day. Both types of variation in the pricing schemes are effective because they target

externalities related to entering a city by car. In the case of Stockholm it is the congestion effect on other road users and in the case of Milan it is the polluting effect on residents.

Much more widespread than congestion charges are parking charges. While they primarily affect parked cars, they also have the effect of reducing the number of cars that are driven into the city. Politically, it can be easier to increase already existing parking charges than to introduce congestion charges.

Besides congestion charges and parking charges, local governments can take other measures to limit congestion. Technological innovations, for example, can increase the traffic volume that can operate on existing road infrastructure. Adaptive traffic flow control systems that regulate traffic lights, open and close lanes, adjust speed limits and change direction signs are already used in many cities. They are efficient measures to increase road capacity and reduce congestion. They are usually much more cost effective than the construction of new roads.

In Frankfurt, for example, traffic control centres steer traffic on all major roads in and around the city. Traffic flows are monitored by cameras and sensors and reported to the control centres. Most traffic lights in Frankfurt are connected to a control centre and can respond flexibly to traffic volumes by modifying the timing of green phases. Besides ensuring smoother traffic flows, the traffic lights also limit the inflow of vehicles into the city if the maximum road capacity is reached. Thus, traffic jams occur predominantly outside the city where their negative consequences (such as air pollution) are less pronounced. Furthermore, the traffic lights automatically grant priority to buses and trams. Throughout the city, the number of free parking spaces in different neighbourhoods is displayed on signs to prevent motorists from driving around in search of a parking spot. On main routes into the city, variable direction signs are used to steer traffic flows in case of large public events and traffic accidents. On motorways around Frankfurt, it is possible to remotely open the emergency lane for regular traffic in case of high traffic volumes and to close it in case of accidents or breakdowns.

Smart technologies are paving the way for other innovations related to transport in many other cities. Individually, they often have only small impacts, but taken together they can make the transport system of a city much more effective. San Francisco, for example, is pioneering smart parking meters that adapt prices to demand. When available parking spots are scarce, prices increase to discourage people from driving into the city centre. Similarly, Madrid has introduced smart parking meters that charge varying prices according to the emissions of a car.

Cities should also pay close attention to the development of automated driving technology. Once fully developed, these technologies will allow cars to move without human input and are likely to have drastic effects on cities. Street side parking might disappear, because cars could drive autonomously to large parking lots. Innovative car sharing of autonomous vehicles could replace taxi services and compete heavily with public transport due to low prices and higher comfort. The urban form might change because autonomous cars will make long commutes less strenuous, which could increase sprawl and congestion.

Currently, prototypes exist that can drive autonomously in normal traffic under human supervision. While all major car manufacturers are working on the technology, it is too early to predict when it will be ready for widespread adaptation. Nevertheless, it appears likely that it will be within a few decades, i.e. well within the lifetime of most large infrastructure projects planned today.

Despite the potential of new technological breakthroughs, low-tech solutions still offer great potential in many cities to reduce congestion. One of the simplest solutions is to encourage people to carpool. Currently, large majorities of people commute alone to work. In the United States, for example, only 16% of commuters who commute by car share it with another person, a figure that is similar to that of most other OECD countries (AASHTO, 2014). People can best be encouraged to carpool by direct incentives, such as reduced tolls on toll roads. A solution that is particularly common in the United States is high-occupancy vehicle lanes. These lanes are reserved for cars with more than one occupant. High-occupancy lanes make carpooling attractive because they are less congested and allow for faster commutes.

Another innovative solution to urban traffic is bicycle sharing schemes that have been adapted in many cities around the world in recent years. These schemes are typically based on annual subscription that allow for unlimited free short-term rentals of shared bikes located around the city. The largest scheme within the OECD, in Paris, has approximately 20 000 bicycles distributed over more than 1 200 stations throughout the city. They are used for more than 30 million rides per year. Bicycle sharing schemes offer a fast and flexible transport option that can substitute cars for short trips. Perhaps more importantly, they also offer an uncomplicated way to start cycling for people who have not done so before. Thereby, they can contribute to an increased acceptance of cycling and help to initiate a broader shift towards it.

Balanced land-use regulations: Green spaces and conservation vs. the cost of housing

Construction in cities is heavily regulated. Typical regulations vary from place to place but often concern building height, floor space, lot sizes, built-up surface, usage and external appearance. In many cities, entire neighbourhoods are protected to preserve their character. Almost all land-use regulations are imposed for comprehensible reasons, but they always have unintended consequences, primarily in the form of higher housing costs. It is important to acknowledge the benefits and downsides of land-use regulation and to find a careful compromise between too much and too little regulation.

In order to illustrate the intended and unintended consequences of building regulations, it is useful to discuss two hypothetical scenarios. The first scenario assumes that no new construction is permitted and the supply of housing in a city is fixed. The second scenario assumes the opposite case, in which construction is permitted everywhere without restrictions.

In the first hypothetical scenario, the protection of existing neighbourhoods and of green spaces dominates all other concerns. If a strict ban on any new construction is imposed, house prices are exclusively determined by demand. As the supply of housing space cannot increase, the population of a city is essentially fixed. If more people wanted to move into the city, prices would increase until demand equals supply. The more people want to move into the city and the more they are willing to pay for it, the higher the resulting prices.

In the second case, house prices are the only concern and construction is assumed to be completely unrestricted. This is the more complex scenario. If there were no regulations at all, construction would occur as soon as the cost of building additional floor space fell below the price of the existing floor space.³⁴ In the city centres of large urban agglomerations where little free space exists, construction would occur primarily by building upwards. In contrast, in smaller urban agglomerations and in the peripheral parts

of large urban agglomerations, growth would occur not only through higher densities but also through the build-up of undeveloped land.

Box 2.5. Challenges for cities in developing countries

While cities in developing countries face many of the same problems as those in developed countries, they often also face other challenges that have largely been solved in OECD countries. Among the problems that are specific for cities in low-income and lower middle-income economies are a lack of access to water, sanitation and electricity; a lack of systematic urban planning; and the spread of informal settlements. Insecure and unclear land tenure in those informal settlements hinders further development and makes it difficult for both inhabitants and the administration to improve living conditions in them. Public transport is often delivered privately without any formal co-ordination. Although it works surprisingly well in many instances, it cannot efficiently provide the capacity required for cities with many millions of inhabitants.

Some of the challenges can be solved by new technologies. Whereas the percentage of households with landline telephone connections is in the single digits in sub-Saharan African cities, stable cell phone connections are available even in Mogadishu in Somalia. However, technology can only go so far without improvements in governance structures. Most of the problems of cities in developing countries are at least partly due to a lack of institutional capacities and ineffective governance structures. Among experts on African cities surveyed by UN Habitat (2013), by far the most consider poor governance the most important impediment to prosperity.

Well-known economist Paul Romer proposes the establishment of so-called charter cities as a solution to the institutional challenges in developing countries. The idea behind charter cities is to create new cities on uninhabited land in developing countries and to put them under the complete political, legal and administrative oversight of an independent third-party body. By building new institutions from scratch under the supervision of external experts, supporters hope that many of the problems associated with current institutional structures in developing countries can be avoided. To implement the idea, developing countries would need to give up sovereignty over a small part of their territory. If charter cities work, they would in return benefit from having a well-run and economically powerful city nearby that could serve as a driver of growth for the entire country. However, the idea of charter cities is far from being uncontroversial. Opponents of charter cities question the political feasibility and worry about their democratic legitimacy. They also argue that it will be nearly impossible to set up an independent third-party body that is effective in running a large city. While discussions about the creation of charter cities have occurred in a few countries (i.e. Honduras and Madagascar), so far the idea has not been tested in practice.

Source: UN Habitat (2013), *State of the World's Cities 2012/2013: Prosperity of Cities*, United Nations Human Settlements Programme.

In a city without building regulations, competition would ensure that the price of floor space was about as high as the cost of building it. Perhaps surprisingly, land prices would not play a major role in determining it, because it would not be a limiting factor in determining how many people can live in a city. Land owners competing with each other would build more floor space as long as its price was higher than the cost of construction. Supply would increase until the price of floor space falls to the point where it equals construction costs. Because the cost of adding one more floor to a new building is roughly constant for buildings that have between 7 and 30 floors, there would be more than enough space for additional construction in the centres of all cities without significant increases in construction costs.³⁵

The difference between construction costs and actual prices is therefore a measure of the impact of building regulations on cities. For the centres of the most expensive cities, such as London and New York, estimates suggest that building regulations are

responsible for prices that are two to eight times higher than they were without regulations.³⁶ Even in the centres of smaller cities, regulation increases prices by more than 50%. Similar considerations apply also to more peripheral areas of large cities, but the costs of regulation are more difficult to calculate because land prices and site preparation costs play a bigger role for less dense developments.

Although neither of the two hypothetical examples is realistic, they illustrate the consequences of housing policies. The first example would make housing more expensive and reduce labour mobility by making it difficult to move into economically successful cities. Such a policy would not only have negative consequences on renters and prospective buyers in the city, it would also have negative effects on the economic performance of the entire country. When workers move into economically successful cities, their own productivity increases (see previous section). Policies that make it difficult or impossible for workers to move into such cities take away economic opportunities from them and also reduce the overall GDP of the country because they force workers to stay in less productive jobs.

However, the apparently free-market based opposite solution of abolishing all building regulation does not lead to efficient outcomes. It would make housing too cheap because it would not incorporate the hidden costs of additional developments and higher densities. Open spaces in and around cities (such as parks and greenbelts) are so-called public goods. They can be enjoyed by many, but it is virtually impossible to charge for them. Therefore, public goods are not provided by private investors. Furthermore, the construction of new buildings often has so-called negative externalities on nearby residents.³⁷ A very tall building in a residential neighbourhood might reduce the quality of life for nearby residents. Similarly, a badly designed modern development in a historical city could reduce the appeal of an entire city. Even when houses are built in the outskirts of a city they have negative externalities. For example, they contribute to an increase in congestion and carbon emissions due to the commutes of their new residents.

When it is possible to impose taxes for externalities related to new developments, this is usually an efficient solution. Examples in this respect are a carbon tax and a congestion charge to account for the externalities of commuting by car (see Box 2.6). If they are set appropriately, they will limit urban sprawl without any direct building regulation because they make it more expensive to live in sprawling developments.

In other cases, it is nearly impossible to use tax incentives to account for externalities of housing development. For example, it is very difficult to use a tax to counteract the negative cultural and aesthetic consequences of badly designed new developments in historical city centres. In these cases, direct building regulation remains the only feasible way to protect neighbourhood characteristics or open spaces. Without any regulations, developers would not take any of the negative externalities into account when making decisions where and what to build.

Nevertheless, it is important to remember that building regulations can impose high social costs that are often ignored by proponents of building height regulations, minimum lot sizes and greenbelt protection. Also, the opposition to any form of regulation will not lead to desirable outcomes because new construction imposes social costs that are ignored by developers. Smart urban planning policies require careful building regulations that allow new developments to keep the costs of housing low, but minimise negative side effects. Where to draw the line has to be decided by local policy makers.

Box 2.6. Land-use and transport policy simulations

Transport policies and land-use policies affect the quality of the transport system and whether people live in areas that are easily accessible by cars or by public transport. It can be interesting to use model simulations to examine the impact of these policies on city structure, traffic flows and carbon emissions. The simulations are undertaken with the General Equilibrium Model of the Space Economy (GEMSE) which allows assessing the general equilibrium effects of some urban policies in French metropolitan areas (for details, see <http://mythesis.alwaysdata.net/gemse>).

Following these simulations, in the Paris agglomeration, policies that directly affect traffic have a noticeable impact on modal shift and emissions, whereas policies that try to achieve such outcomes via land-use policies alone have basically no discernable positive impact on these variables. While the latter are, in certain situations, effective in densifying the agglomeration, the general equilibrium effects are such that the model predicts no discernible effects on transport flows, modal shift and environmental outcomes.

With respect to transport policies, a reduction in speed limits in the centre of Paris by on average 6-8 km/h would result in a reduction of the modal share of cars in the Paris agglomeration by 6%, as well as PM or carbon emissions in the order of 5.5%.

Similarly, introducing a congestion charge somewhat below the level currently applied in London,¹ with receipts being used to improve public transport in less well-served areas would lead to a reduction in car traffic by roughly 8%, with reductions in particulate matter and carbon emissions in the order of 6%. The reduction in car traffic in places where congestion charges have actually been introduced has typically been 10-30% for entering the billed zone, but usually very low for traffic outside of the zone. The simulation results for Paris, which consider all traffic, are hence roughly in line with actual experience.

In contrast, a relaxation of building height restrictions that would lead to an average increase in building heights by one floor basically would have no noticeable effects on either modal shares or emission levels. Even though such a policy would have effects on the urban form, such changes do not appear to systematically favour public transport over car use. Similarly, a policy that would penalise construction in badly connected areas by up to 15% and use the receipts to subsidise construction in better connected areas by up to 10% would have no marked impact on modal share or ecological outcomes. Improvements in congestion that would result from people moving to areas better serviced by public transport induce other people to switch to car travel because lower congestion improves the attractiveness of car use. Within the model, the only way to cause a substantive shift in the modal share towards public transport is to increase the costs of car use.

Note: 1. More precisely, the congestion charge is modelled to increase the cost of private car transport by 40%.

Finding the right balance between permissive and protective land-use regulation can be difficult because costs and benefits of regulation are not equally distributed. Land-use regulation that limits new construction benefits home owners at the expense of renters and prospective residents. Home owners tend to benefit in several ways. First, they can enjoy the amenity value of attractive protected neighbourhoods. Second, they benefit from the house price increases that regulation causes. Land-use regulation can also be used to prevent people with lower social status from moving into a neighbourhood (for example by prohibiting multiple dwelling units). In contrast, renters will suffer because they have to pay higher prices. Similarly, prospective residents lose out because they have to pay more to move to the city. It also limits labour force mobility and can have detrimental effects on the entire economy of a country.

As home owners are often the most vocal group of the three, local governments might be tempted to pay particular attention to their wishes and restrict construction strongly. This might have positive effects on the current residents of a city, but will have negative

effects on the rest of the country. If every local government pursues such a policy, it leads to a situation in which the negative effects outweigh the positive effects and most residents will be worse off.

Perhaps surprisingly, similar mechanisms can also explain the emergence of sprawl. Sprawl is often driven by building height or minimum lot-size regulation. Such regulation tends to be in the interest of current residents who benefit from preserving the character of their neighbourhoods. However, they also cause sprawling, land-intensive developments whose costs are borne by residents outside the direct neighbourhood.

House price increases can primarily be counteracted by new construction. In particular, it is unlikely that measures such as rent-control regulations have any lasting success in reducing the price of housing. When these measures are applied across entire housing markets, they tend to have two effects. First, they suppress private construction, thus worsening the problem. Second, they create excess demand. More people are interested in renting a home at the regulated price than there are homes available.

In such a situation, black or grey markets for housing are likely to emerge because there are people who are willing to pay more to rent a home than the regulated price. Furthermore, low-income residents (for whom the benefits of rent regulations are often introduced) tend to be especially disadvantaged by excess demand. If landlords have several applicants for a home, they tend to select those with the highest income and most stable jobs. Therefore, rent regulations might make it difficult for poorer people to find any apartment at all, whereas those who need it least benefit the most.

Alternative solutions to construction within a city are improvements to the transport network that make additional parts of the urban agglomeration accessible for commuting into business districts. Such a strategy can be successful in lowering housing costs, especially if the transport system has been a bottleneck to the growth of an urban agglomeration. Signs of an insufficient transport system are congestion, but also strong differences in the cost of housing between well-connected and poorly connected areas that are in close proximity.

However, there are two limitations to this strategy. First, the newly connected areas need to be able to absorb additional population. If no room for additional development is available in the newly connected areas, better transport will do little to lower prices. Second, accommodation in peripheral areas is only an imperfect substitute for accommodation in city centres. In recent years, living in inner-city neighbourhoods has become more popular in many OECD countries. If this trend is responsible for price increases in a city, making peripheral areas more accessible will have limited effects on prices in central neighbourhoods.

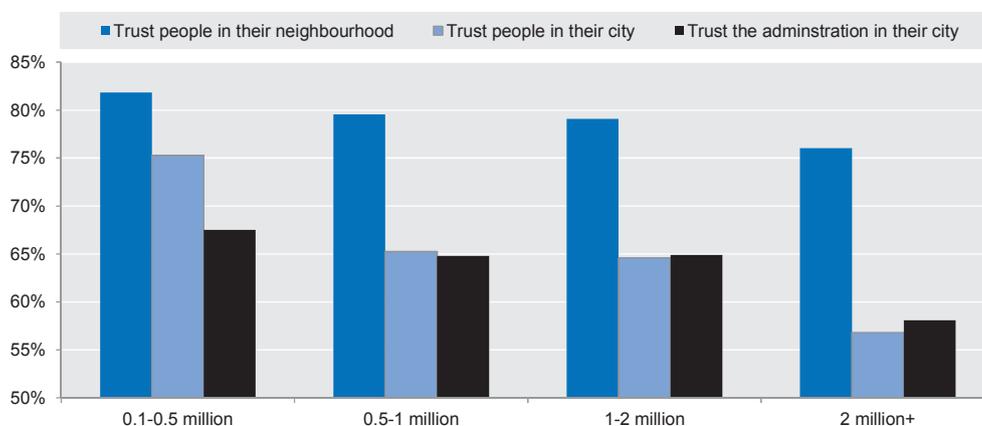
Trust

Trust is a subtle, yet important, issue for the functioning of cities. People who exhibit high degrees of trust towards others, towards the government and towards society in general tend to be happier and behave in ways that are socially desirable. In contrast, people who tend to distrust others are less altruistic and less willing to comply with rules and norms that are imposed for the common good.

Levels of trust are strongly correlated to city size. The larger a city, the lower is the degree of trust in fellow residents and the public administration. To some degree, this can be explained by objective factors such as crime rates, which are higher in larger cities. To some degree it is also due to subjective factors, such as a feeling of greater anonymity in

larger cities. Whatever the reason for this correlation, it shows that large cities especially have a lot to gain from inspiring their residents to trust others.

Figure 2.14. **Trust and city size**



Source: OECD calculations based on European Union (2013), “Quality of Life in European Cities: Annexes”, *Flash Eurobarometer 366*, http://ec.europa.eu/public_opinion/flash/fl_366_anx_en.pdf (accessed 19 June 2014).

In daily life, trust affects, for example, the behaviour when queuing to enter a bus or light rail car. In most cities, it is a convention to let people exit first before trying to enter. The benefits of this behaviour are obvious. Waiting for other people to leave a bus or train car prevents clogging the exits and saves time for everybody. Furthermore, it prevents pushing and shoving, which many people find unpleasant.

Despite the obvious advantages of letting people exit first, the convention does not exist everywhere and in cities where it exists, compliance varies. In some cities, people form actual lines to wait before entering, whereas in others people start rushing in before the last person has left. An important explanation behind the varying compliance rates concern differences in trust in fellow residents. Most people are only willing to wait in line if they trust other people not to jump the queue. After all, those entering earlier have a greater chance of getting a seat in a crowded bus. Without trusting that they are treated fairly by others, they are tempted to rush into a bus or a train car to ensure that nobody cuts in front of them. However, by doing so, they will confirm the low levels of trust that other people place in them. Thus, having low trust in other people can be a self-fulfilling prophecy because it causes behaviour that justifies low degrees of trust.

While the example of letting other people exit first might seem of minor importance, it is representative of a wide range of situations in which many strangers interact with each other. Similar situations occur, for example, in road traffic.

The aspect of trust that can be influenced most directly by policy makers is trust in government.³⁸ Trust in government is important for several reasons. If residents trust that laws and regulations are designed to benefit them, they are more likely to comply. Most laws and regulations that are imposed for the greater good affect some people negatively. Many people who are negatively affected by a law still comply with it because they believe that it is desirable if everybody follows the law. Without trusting that the laws improve society, people would stop abiding them voluntarily. Furthermore, trust in

government reduces resistance against changes initiated by the government. Higher levels of trust can facilitate reforms that might have a negative short-term impact but are beneficial in the long run, because residents are more likely to believe that a reform will affect them positively in the long run.

A special case of trust is trust in the police. Effective policing relies strongly on exchanging information with local communities. In many high-crime neighbourhoods, the police are not considered to be trustworthy because they are believed to discriminate against residents from those neighbourhoods. In these neighbourhoods, little collaboration between residents and the police occurs. As a consequence, the police might resort to tactics that further lower the degree of trust – for example ID checks and body searches without indication of a crime having been committed. As in the previous examples, an initial lack of trust reinforces behaviour on all sides that justifies the lack of trust. Thus, vicious circles can form where low levels of trust lead to even lower levels of trust.

Among all levels of government, local governments can have the strongest effects on trust because they interact most closely with residents. They have several options to influence the level of trust that the public puts in the government. Local governments are ideally placed to implement open government policies that make the decision-making process transparent and offer opportunities for residents to engage in it. Offering effective services also contributes to higher levels of trust in the government. Equally important are high integrity standards and fairness in the decision-making process. Corruption strongly reduces trust. Arbitrary decision making is equally damaging to trust.

Trust also contributes to better-functioning economies because it lowers transaction costs. These are costs that occur whenever businesses interact with each other or with customers. A typical transaction cost is the cost of setting up a contract that specifies the details of a business deal. With higher levels of trust between business partners, fewer safeguards against possible fraud and other deceptive actions have to be taken. This makes it easier to conduct business.

Resilience

In order to be considered well-functioning, cities have to respond effectively not only to daily challenges, but also to catastrophic scenarios that occur infrequently. In other words, cities have to be resilient. Resilience is a broad concept that captures several aspects and it has different definitions depending on the context. In the context of cities, it is often used to refer to resilience against natural disasters. More broadly, resilience can refer to the preparedness of a city to respond to any negative developments in the future, no matter if they are sudden events, such as natural disasters, accidents or terror attacks, or gradual developments, such as economic crises or resource shortages.³⁹

Because every city faces its own distinct set of possible catastrophic scenarios, resilience will have a different meaning for every city. Nevertheless, several common principles for boosting resilience exist that are valid for all cities. A precondition for the development of policies to increase resilience is awareness of the potential risks that a city faces. Partly, this refers to the identification of possible risks, but it also concerns information sharing between different levels of government and different government departments. It also includes informing the public, so that private actors can respond independently to risks.

Box 2.7. The effect of climate change on cities

Coastal cities are particularly vulnerable to climate change. In recent OECD work, global flood losses were estimated to be on average at about USD 6 billion per year for the largest 136 coastal cities. Forecasts suggest that losses could increase to USD 52 billion by 2050 due to socio-economic changes only. Taking into account climate change and subsidence, flood losses of large cities may reach USD 1 trillion if no action is taken.

While large cities in high-income countries are often ranked highest in terms of exposure to floods, particularly cities of low- and middle-income countries are ranked to have the highest economic losses. The “top” 10 cities of forecasted losses are: Guangzhou, Mumbai, Kolkata, Guayaquil, Shenzhen, Miami, Tianjin, New York-Newark, Ho Chi Minh City and New Orleans. More than half of them are predicted to experience a downward shift of their soil surface.

The population living in low-elevation coastal zones is sizeable, with more than 400 million dwellers living in flood-prone areas. The table below displays the countries with the greatest number of people residing in low-elevation coastal zones. High exposure is, however, not necessarily associated with high losses. The case of Amsterdam illustrates how advanced defence standards keep losses low. While a value of USD 83 billion assets is estimated to be exposed in the city of Amsterdam, economic average annual losses are not higher than USD 3 million.

Many countries have large populations living in low-elevation coastal zones (LECZs)

Country	Population in LECZs (million)	Share of total population (%)
China	143	11
India	63	6
Bangladesh	62	46
Viet Nam	43	55
Indonesia	41	20
Japan	30	24
Egypt	25	38
United States	22	8
Thailand	16	26
Philippines	13	18

Source: Bicknell, J., D. Dodman and D. Satterthwaite (eds.) (2010), “Adapting cities to climate change: Understanding and addressing the development challenges”, *Earthscan*, London; Hallegatte, S., C. Green, R.J. Nicholls and J. Corfee-Morlot (2013), “Future flood losses in major coastal cities”, *Nature Climate Change*, Vol. 3, No. 9, pp. 802-806. For more information see also: OECD and Bloomberg Philanthropies (2014), *Cities and Climate Change. Policy Perspectives. National Governments Enabling Local Action*, www.oecd.org/env/cc/Cities-and-climate-change-2014-Policy-Perspectives-Final-web.pdf; and OECD (2010), *Cities and Climate Change*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264091375-en>.

Notes

1. See OECD (2013) for a detailed review of the case of Antofagasta.
2. According to the National Oceanic and Atmospheric Administration (NOAA) of the United States (including counties located on the shores of the great lakes). See: <http://stateofthecoast.noaa.gov/population/welcome.html> (accessed 24 September 2014).
3. By some measures, the urban agglomeration of Los Angeles is even larger than that of New York.
4. Despite being called New Economic Geography, those theories have existed for more than 20 years. See Krugman (1998) for a more detailed summary.
5. The higher costs of land are not only reflected in direct land prices and rental costs, but are also transmitted through a generally higher price level in the city.
6. Another important event responsible for the growth of Los Angeles in the early 20th century was the emergence of the movie industry. This tends to support the explanation provided by New Economic Geography theories, because the emergence of such clusters is exactly what is predicted by agglomeration economies.
7. See Chatterjee (2003) for a non-technical description of the analysis behind the estimate and Chatterjee and Carlino (2001) for an in-depth technical discussion.
8. The five capital cities among the ten largest cities within the OECD are Tokyo, Seoul, Mexico City, London and Paris.
9. See Ades and Glaeser (1995) for details.
10. See Veneri (2013) for a discussion of the validity of Zipf's law across OECD countries.
11. See, for example, Hsu (2012) for a formal model that can explain Zipf's law under certain conditions.
12. See Gabaix (1999) for details.
13. See Bleakly and Lin (2012) for details.
14. See Schumann (2014).
15. See Duranton and Puga (2014) for a discussion of the possibility to reconcile the observed city-size distribution with explanations other than random growth.
16. OECD work finds, for example, that in Germany, university educated workers earn 25% more than non-university educated workers (see Ahrend and Lembcke, 2015a for details).
17. See Ahrend et al. (2014) and Combes, Duranton, and Gobillon (2011).
18. See Ahrend et al. (2014).
19. See Ramos and Moral-Benito (2013) for details.
20. See Glaeser and Maré (2001).

21. See Ahrend et al. (2014) for details. Note that fragmentation is mainly affecting productivity in cities. Recent evidence suggests that more urbanised TL2 regions are more strongly affected by the detrimental impact of administrative fragmentation (Bartolini, 2015).
22. See Tiebout (1956), Ostrom et al. (1961) and Parks and Oakerson (1989) for some of the most influential works of this school of thought.
23. See Peirce, Johnson and Hall (1993) and Savitch and Vogel (2000) for examples of this school of thought.
24. See Ahrend, Gamper and Schumann et al. (2014) and Ahrend and Schumann (2014) for details of the analysis described in this section and a formal definition of the term “governance body”.
25. See OECD (2014b).
26. No later data is available.
27. An increase in sprawl in this context is defined as a decrease in the population density of the built-up area and vice versa. It should be noted that this definition captures only one of several dimensions along which sprawl is usually defined in the academic literature.
28. See Ahrend et al. (2014).
29. See Angel (2012) for an elaboration of this argument.
30. See Smith and Gihring (2006) for a comprehensive annotated bibliography of the economics of land-value capture in the context of public transport development.
31. See Preston (2012) for a discussion of integrated public transport systems that focuses on the United Kingdom but also provides lessons also for other countries.
32. Data on public satisfaction with the transport system is collected for larger urban zones (LUZ) in Europe. The LUZs correspond to the core city and their surrounding functional urban areas.
33. See the TomTom (2014) Congestion Index for details.
34. Expressed in economic terms, construction would start if the marginal costs of constructing floor space are lower than prices.
35. See Glaeser, Gyourko and Saks (2005) for a detailed exposition of the argument for the case of Manhattan.
36. See Glaeser, Gyourko and Saks (2005) and Cheshire and Hilber (2008). The estimates in Glaeser, Gyourko and Saks (2005) refer to the early 2000s. Assuming that real construction has not increased since then and given actual house price developments, the current difference between construction costs and floor prices is likely to be even larger than the one reported for 2005.
37. See Annex A for an explanation of which externalities.
38. For example, Charron, Lapuente and Dijkstra (2014) show that “good governance”, measured by a multi-dimensional measure of quality of government, is positively associated with trust at the regional level.
39. See OECD (2014c) for a comprehensive overview of risk governance policies that increase resilience.

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