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CITIES AND GROWTH

**Cities and Growth**  
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**Executive Summary**

Much of the developing world has begun to rapidly urbanize. This has led to the creation of developing cities and the emergence of mega-cities around the world. The benefits of this dense clustering of individuals have been well documented in many more developed cities. In fact, it has been observed that productivity in these urban clusters is significantly higher than in rural areas and that they do often become primary engines of economic growth. As a result, the potential effects of productive cities on economic growth in developing countries are very large. The question remains however of how to turn these rapid rates of urbanisation into effective drivers of growth as opposed to large wasted opportunities.

It is true that wages and productivity in urban areas tends to be higher than in rural areas in both developed and developing countries. The forces that are at the heart of this have been investigated, but unfortunately the vast majority of this research has focused on developed countries. As a result, a lot is known about why cities work, but less is known about how to make them work.

The wages and costs of operating in these cities are often substantially higher than in other areas, yet most of the most productive and innovative enterprises still choose to locate there. This is because these cities constitute very highly productive clusters, which stems from three main channels. The first is the deepening of local product and labour markets. As a result of the critical mass of businesses and skilled workers, the chances of firms finding the skills they need and workers finding work for which they are a good fit are significantly heightened. The same is for the analogous case of the sellers and buyers of goods. These efficient matches lead to increased levels of productivity. The second is the availability of intermediary inputs and services. In these large clusters, there develops other firms that service these large clusters. As a result, specialized firms that are complimentary to the primary clusters also develop here, adding to their productivity. The third is positive spillovers from (human) capital. Skilled and unskilled workers both complement each other and also, as they continue to come into contact, the knowledge transfer between these groups (and indeed also in between skilled workers) leads to significant increases in the overall human capital stock. These clusters of skilled workers also lead to increased technology adoption, streamlining of processes, and complexity being adopted by firms. These large urban clusters tend to be the centres of innovation and ideas generation in general.

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These agglomeration effects have also been notably observed in developing countries' cities. The literature on this topic remains thin, but from the studies that have been conducted, there is evidence that productivity increases and urbanisation are also going hand-in-hand. Little remains known about the explicit mechanisms by which these productivity increases are achieved however and it remains to be determined what the relative importance of these different economics of agglomeration causes are.

The creation of effective cities does not just generate human capital and productivity, but it can also generate significant amounts of capital and wealth by increasing property values. This leads owners to experience (sometimes significant) capital gains, allowing for the benefits of productive cities to be shared between employees who rent housing and the owners who rent them out. The increase in these valuable assets allows for them to be sold or used as collateral to raise further productive capital.

Realizing the productive potential of these cities depends on developing a large mass of skilled workers and firms. This becomes self-sustaining as skilled workers move there as they know there are jobs that are good matches and, similarly, firms move there as they know there is a base of skilled workers. It is also possible for a city to become stuck in a bad equilibrium where there are few jobs and few skilled workers, with little incentive for either firms or workers to move there. This is a primary danger for the cities growing in developing countries, where many may experience urbanisation without industrialization.

This has often led to the debate of whether or not "big push" initiatives are effective ways for bringing cities past the thresholds where a high-quality labour force and base of employers can sustain each other. These initiatives are, in practice, very difficult to get right as even the most well-meaning and well-trained policymakers will have trouble picking the companies and sectors that are the future winners. Many of the world's most productive clusters were not developed via direct policy, but have occurred naturally. In some cases, policies such as special economic zones, entitlements and tax incentives, and government sponsored research pushes (to develop industries) have been successful at drawing the necessary investments. There have been some notable successes and also some notable failures in these initiatives and their effectiveness as a tool for promoting these good equilibria in urbanisation are still very much in question. Additionally, the research on these topics either focuses on a few developing countries, such as India and China, or on past events for developed countries.

One of the primary challenges facing cities in developing countries is how to keep up with their rapid levels of urbanisation. In a world of limited resources, it is becoming increasingly difficult to provide public goods to these rapidly growing populations while also maximizing the efficiency of local governments and minimizing corruption. Slums and overcrowding are often the result in many developing cities. These lead to large portions of the urban populations living in low quality housing with poor access to (essential) services. A result of this is generally poor health and welfare outcomes for these urban populations. Additionally, the informal nature and extreme population density of many of these slums hinders the government's ability to provide the necessary projects to improve and regulate these areas.

The rise of slums and overcrowding in the absence of large-scale industrialization leads to issues with the informal sector in these cities. These sectors pose many problems for developing cities as they are difficult to monitor or regulate. Additionally, the inability to tax these sectors leads to free-rider problems and difficulties with financing adequate public services as local governments will provide for the whole populace, but only have access to the resources of the formal sector. In general, the division between the formal and informal sectors mitigates part of the benefits of the agglomeration which is the largest strengths of cities as it reduces the ability for knowledge spillovers and clustered activity.

Finally, as these cities develop, it is critical that they are structured appropriately given the global cities that they will compete with and their productive potential. It is important to discover how differing potential structures promote the agglomeration effects that make cities so powerful as engines of growth. In order to take advantage of these agglomeration effects, it is often the case that cities need to specialize to some extent. While cities often do many things, these common clusters are critical for producing many of these agglomeration effects and therefore, it is important that the structures that are most conducive to these foci are adopted. The urban structure of these developing countries themselves is also important as many countries develop what is called a “primate city”, or one really strong capital city supported by less productive periphery cities. With regards to these structures, it is becoming important to determine the relative benefits of pursuing this structure or placing a stronger emphasis on secondary cities. Additionally, providing the necessary physical and institutional infrastructures to allow for these productivity gains needs to be prioritized. These investments must also go hand-in-hand with measures to link these cities more closely to their surrounding areas.

## **1. Introduction**

Research on economic growth has traditionally focused on explaining GDP and income differences between developed economies and developing economies. However, within country differences are equally important. In most countries, the geographical distribution of economic activity is highly uneven. Urban areas tend to be characterized by significantly higher productivity of labour and higher salaries than rural areas. In many countries, rural-urban differences in salaries are as high as 700% after accounting for workers characteristics.

At the same time, there are vast differences across urban areas. In the United States, workers in metropolitan areas with the highest average labour productivity have wages more than twice as high as workers with similar skills and experience in metropolitan areas with the lowest average labour productivity. In other words, the same worker can earn vastly different nominal salaries depending on where she locates.

These differences are not specific to the United States; they exist in countries the world over, including developing countries. For example, China exhibits significant spatial differences in schooling, labour productivity, and salaries across regions. Average salaries in Beijing and

Shanghai are several times higher than those in Lhasa, Golmud, or Yumen, because workers in Beijing and Shanghai are much more productive. Average schooling achievement is also significantly different across cities, with the labour markets of highly developed coastal cities having a higher share of college graduates, and the labour markets of less developed western cities having a lower share. The gap in average salary and average schooling between Beijing and Shanghai, and rural areas in Western China is even larger.

Regional differences in India are equally striking. Metropolitan areas in poorer parts of India – like Patna in Bihar – tend to have average incomes four to five times lower than metropolitan areas in richer parts of India, like Delhi and Bangalore. Similar differences are observed throughout Latin America, and even larger differences are observed in Africa. The type and quality of employer also varies across metropolitan areas. Areas with high salaries and high productivity tend to have a larger share of employers in the formal sector. These employers are on average larger, more likely to produce goods for the international market, and invest significantly more in physical capital.

Apart from greater dispersion of economic activity within country, the other unmistakable fact about developing world today is that it is urbanising rapidly. Half the world's population is now urban and it is estimated that, in Africa alone, 450 million new urban dwellers will be expected between 2010-2040; the average African city will double in size and new cities will be built. In emerging markets many cities are driving growth. A recent McKinsey and Co study predicts that a group of 400 emerging cities will make up over 40% of world GDP growth between now and 2025.<sup>2</sup> These emerging cities are in China, Brazil, Turkey, Angola, Qatar, and other locations spread around the globe. But there are other cities experiencing rapid population growth, yet not achieving higher productivity levels or fulfilling their growth potential.

Notwithstanding the causes behind this rapid urbanisation in the developing world, this provides an opportunity to develop the efficient and competitive clusters of production observed in many of the world's more developed and fastest developing nations to promote faster economic growth and development. This rapid clustering of human and productive capital contains massive productive potential, and harnessing this potential will be critical to the future growth and development of these nations. This widespread urbanisation trend does not come without its challenges, especially due to its fast pace. In many of these emerging cities, the population has increased faster than the capacity of local businesses to provide jobs and of city planners to provide houses and infrastructure. This has often led to the rise of large slums, high rates of crime, expansions of the informal shadow economy, and as a result has led some cities to fail to substantially increase the quality of life for the majority of its residents.

As Robert Lucas (1988) famously remarked about international differences in economic development “I do not see how one can look at figures like these without seeing them as

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<sup>2</sup>[http://www.mckinsey.com/~media/McKinsey%20Offices/Korea/PDFs/Urban\\_World\\_Consuming\\_Class\\_Report.ashx](http://www.mckinsey.com/~media/McKinsey%20Offices/Korea/PDFs/Urban_World_Consuming_Class_Report.ashx)

representing possibilities." The productive power of many of the globe's largest and greatest cities outlines just how far the possibilities afforded by urbanisation can stretch for economic growth. The question has become how to prevent the developing world's many emerging cities from ending up as a series of missed opportunities.

The overwhelming majority of research on cities has currently focused on cities in the developed world, especially the US. This is understandable as data availability has made information significantly easier to find on the world's developed cities. This has also been compounded by the relatively large importance of these global developed cities in the world. As a result, there is a lot of knowledge on why cities work, but relatively little on how to make them work. Most of what we can infer about developing successful cities is thus currently based upon the successes of those cities that are already relatively developed. This trend is changing however, and, with the growing importance and size of many cities in the developing world and the emergence of new sources and methodologies for collecting information (such as satellite imagery), it is becoming increasingly possible to rigorously study these new emerging cities.

As a result, the Cities Research Programme of the International Growth Centre (IGC) seeks to foster research in two broad areas. First, it seeks to understand the causes of these vast geographical differences in productivity and salaries, their effects on worker welfare and the implications for regional development policies. Second, it seeks to understand how best to manage urban growth with policies that are both equitable and efficient. The paper follows this structure with section 2 dealing with the economics of agglomeration and section 3 with urban management. Section 4 concludes.

## **2. The Economics of Agglomeration: Causes, Effects and Implications for Regional Development Policies<sup>3</sup>**

### **2.1 Causes**

What makes some cities more economically successful than others in terms of productivity and salaries? This question is important because if we want to understand the appropriate role of economic policy we must first understand the drivers of spatial economic differences. The growing prevalence of cities in developing nations constitutes an important opportunity for creating new drivers of growth and development in these countries. However if this urbanisation process is not properly managed, there is a possibility that these emerging cities may amount to little more than wasted opportunities.

In developed economies, productivity differences within a country are unlikely to be explained away entirely by external factors like natural resource endowments. Rather, a significant part of these productivity differences reflect endogenous factors, namely important sources of agglomeration economies. These forces ultimately determine the location of workers and companies and therefore shape the future of entire communities. In contrast, little is known

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<sup>3</sup> For more details on this topic, see Moretti (2012) and Moretti (2013).

about developing countries. Natural resources are likely to play a more important role in less industrialized countries. Despite that, agglomeration economies are probably still crucial in explaining regional productivity differences.

There are numerous examples of highly productive agglomerations. A large fraction of the Indian high tech sector is concentrated in Bangalore, where real estate costs and salaries are high compared with other Indian cities. Countries like Japan, France, and Korea exhibit even more geographical concentration, as cities like Tokyo, Paris, and Seoul effectively absorb the lion's share of their nations' most innovative activities and talent. The same is true in China, where Shanghai and Beijing have become magnets for the highest achievers from all over the country. With high wages and office rents, these are among the costliest places in China to operate a business. What, then, is so special about such cities? How are they able to compete, despite their high wages rates and property rents?

The answer to the puzzle is that workers in cities like Bangalore and Shanghai are more productive. This higher labour productivity does not reflect a better endowment of natural resources. After all, there is no silicon in Silicon Valley or Bangalore nor is there oil in Shanghai. The higher productivity of labour is mostly due to three important competitive advantages, which economists refer to collectively as the forces of agglomeration: thick labour and product markets, the presence of specialized service providers, and knowledge spillovers. Therefore, the key question for developing countries will be how to best to maximise these three forces in order to promote productivity growth within cities. It is the ability of developing countries to capitalize on these three effects that will determine whether or not these emerging cities will act as new drivers of growth and development. To fix ideas let us consider each in turn.

**(A) Labour and Product Markets:** One of the major potential advantages of cities is the ability to draw large amounts of physical and human resources close together. This produces markets that have large amounts of buyers, sellers, products, and production capacity that leads to well-functioning efficient markets; these are commonly referred to as “thick” markets. These markets are particularly attractive because they make it easier to match demand to supply and it is this “thickness” that constitutes one of the strongest advantages of urbanisation for workers and firms. As a result, well-functioning cities have the potential to become significant drivers of economic growth in developing countries as has been observed in various more developed nations.

Good quality matches matter more for highly skilled occupations than unskilled workers and it is a key reason for the existence of industrial clusters. For a biotech engineer with skills in a very specialized area, it is critical to find the firms that need them. Moving to a city like Bangalore, where many high tech firms are concentrated increases the likelihood of finding a good match. On the other hand, moving to Calcutta, a more populous city with fewer high tech firms will result in a less ideal match and a lower salary. Workers can have vastly different career trajectories depending on where they move. The advantages of a better match also accrue to employers. By locating in Bangalore, a biotech startup enjoys higher productivity

and produces more patents, because it can find exactly the kind of workers that fit its needs. A thick market appears to be win-win for workers and firms alike.

For workers in professional occupations, the economic return of being in a thick labour market, as measured by increased earnings, has been rising for the past thirty years. For example, the average wage in US labour markets with over a million workers is a third higher than the average wage in markets of 250,000 workers or less. This remains true even after worker seniority, occupation, and demographics are taken into account. Remarkably, this difference is now 50 percent larger than it was in the 1970s.

Market size is particularly important for workers with highly specialized skills, such as high-tech engineers, scientists, mathematicians, designers, and doctors. For example, Baumgardner (1988) has shown that among doctors, specialists perform a narrower set of activities in large cities than in small ones. Conversely, market size does not matter very much for unskilled workers; manual labourers and carpenters perform similar tasks in large and small cities.

The size of labour markets also affects how frequently people change their jobs. One study that followed 12,000 workers over a twenty-year period revealed that early in her career, when a worker is shopping for a good match, she changes jobs more often in a large, diverse local market than in a smaller, specialized one. Later in her career, when stability becomes more appealing, a worker changes jobs less often in large markets, because she is more satisfied with her matches (Wheeler, 2006; Bleakly and Lin, 2007).

In addition, market thickness provides a form of partial insurance against unemployment. When a layoff is caused not by a recession but by problems specific to a particular firm, market thickness reduces the likelihood that a worker will remain unemployed, because there are more potential employers. At the same time, thick labour markets reduce the likelihood that a firm cannot fill a vacancy.

The importance of market size is not just a curiosity. It has critical implications for the future of cities. The thick-market effect is one of the main reasons for the concentration of the high tech sector in a small number of cities worldwide. Because thick labour markets are better at matching workers and employers, high tech clusters have an enormous advantage in attracting even more high tech employers and workers. The flip side, however, is that those cities that do not already have a high tech cluster find it hard to create one. Eventually this exacerbates the economic differences across cities.

The creation of well-functioning thick markets is, however, not a guaranteed outcome of urbanisation. Many of the world's most successful cities do not resemble production behemoths that produce anything and everything, but rather pursue some degree of specialization. It is actually these degrees of specialisation that brings about the thickness of markets as it is the large amounts of buyers and sellers in similar markets that allow for their smooth and efficient functioning. Whether it is the giant manufacturing clusters in Guangdong province of China or the high-tech clusters in Silicon Valley, it is the clustering of similar skills

and production that allows these areas to leverage both economies of scale and economies of scope to substantially raise their productivity.

It is worth noting that in developing countries, these “thick markets” do not always emerge with urbanisation. Often large populations move into these urban areas, but the markets remain tragically thin. The welfare outcomes as a result of this remain poor as these new inhabitants end up in slums and participating in the informal sector and/or criminal activities. Health outcomes and public service provision remain low in these situations also. Its sources are varied, including imperfect matching of migrants, insufficient capacity to absorb all of the supplied labour, and imperfect markets. It is becoming increasingly important to understand not just the advantages of these thick markets, but also what can be done to both encourage and maximise them.

Increasing economic density of cities has major implications for developing countries. For example, high-quality public services are far more cost effective in dense cities than provided to a dispersed population: it costs almost three times as much to provide piped water in sparsely populated areas. The potential advantages of density to the private sector are widely documented (World Development Report on Economic Geography, World Bank 2009). The challenge for developing countries remains how to best use the growth of their cities to maximise these advantages.

**(B) Intermediate Inputs:** A second advantage of large metropolitan areas, especially those that sustain large industrial clusters, is the presence of highly specialized intermediate service providers. These vendors supply specialized services that are important to companies such as advertising, legal support, technical and management consulting, shipping and repair, and engineering support. Such services enable firms to focus on what they are good at, without having to worry about secondary functions. Simply by moving into a large cluster of similar firms, a company effectively becomes larger overnight because it can draw on specialised local expertise.

The larger the cluster, the more specialized the service providers can be. As a result, firms within a large cluster become more productive and more successful. A small software developer in Seattle does not need an in-house lawyer, because there are already plenty of local law firms specializing in intellectual property, licensing, and incorporation of startups. A pharmaceutical company in Mumbai can buy specialized services for its labs from local vendors, and a hardware company can find specialized shipping services.

Many intermediate inputs are non-tradable services. Geographical proximity to clients is required to deliver the service. Legal services, for example, require a lot of face-to-face interaction between client and attorney. Even when they are tradable, geographical proximity to clients helps in delivering successful products, as providers often need to be close to potential clients to assess their needs and show how they can help. This matters less for mature products, but is critical when a product is completely new. The presence of

intermediate input providers strengthens the attractive power of cities that have successful clusters at the expense of cities that do not.

On a related note, entrepreneurship increases quite substantially in more urban areas, with a higher number of small startup firms and enterprises appearing.<sup>4</sup> This shows that in addition to the power of clustered demand to support auxiliary industries, urbanisation and clustering can also promote the expansion of industries due to creating a more dynamic business environment with a higher turnover of new startups. The cornerstone of this will undoubtedly be the concentration of capital, labour, demand, and industry knowledge. These increases in entrepreneurship with urbanisation are another factor that allows for the increase in intermediate goods, clustering, and general productivity as a result of the urban clusters.

This constitutes quite a powerful opportunity for developing countries that are experiencing growth in their cities. As discussed above, it is important to establish clusters of similar workers and productive enterprises in these cities in order to allow them to become productive drivers of growth. These clusters not only act as means of production, but can also act as relatively thick markets, allowing for the development of these auxiliary services. For example, a shipping cluster in a port city will provide the opportunity to sustain profitable practices of shipping lawyers, repair services, machinery, and when the clusters get significantly large, services such as catering, entertainment, housing etc. As these clusters allow for the development of these auxiliary services, it will not only allow for the development of these sectors in areas of these developing countries where they may not have been viable previously, but will also allow for positive productivity feedback effects as these services further increase the productivity of these clusters.

**(C) Externalities from Schooling:** Areas with a more educated populace tend to be richer. This is widely documented across countries as well as across regions and cities within countries.<sup>5</sup> For example, Indian states with the highest level of literacy and highest level of college graduation are the states that also have the highest income levels. Throughout the world, the presence of many college-educated residents changes the local economy in profound ways, affecting both the kinds of jobs available to residents and the productivity of workers. Cities with many college-educated residents tend to have a local economy with a great deal of innovation.

At the urban level, there is evidence that the presence of skilled workers also raises incomes of the less skilled. Moretti (2004) uncovers a clear positive association across cities between salaries of less educated workers and the share of workers with a college degree: the more college graduates there are, the higher the salaries for high school graduates are. The economic effect is quite large in the US. The earnings of a worker with a high school education rise by about 7 percent as the share of college graduates in his city increases by 10 percent.

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<sup>4</sup> Duranton (2013) pp. 16-19.

<sup>5</sup> Although the causal relationship is not always clear. See the survey by Krueger and Lindahl (2001).

Moretti (2004) argues that this relationship is not spurious. This relationship holds for all sectors, but it is particularly strong for workers with high-tech jobs.

There are three reasons for the relationship between the number of skilled workers in a city and the wages of their less skilled counterparts. First, skilled and unskilled workers complement each other: an increase in the former raises the productivity of the latter. In the same way that working with better machines increases a worker's productivity, working with better-educated colleagues increases the productivity of an unskilled worker. Second, a better-educated labour force facilitates the adoption of newer and better technologies by local employers. Third, an increase in the overall level of human capital in a city generates human capital spillovers. This concept is at the heart of modern economic growth theory, the study of what determines a country's economic success. Researchers have built sophisticated mathematical models showing that sharing knowledge and skills through formal and informal interaction generates significant knowledge spillovers. These knowledge spillovers are thought to be an important engine of economic growth for cities and nations. Robert Lucas (1988) argued that these spillovers may be large enough to explain long-run differences between rich and poor countries. His explanation is that when people interact, they learn from each other. This process makes those that interact with better-educated peers ultimately more productive and creative. More recent research has extended and articulated the concept.

New ideas are rarely born in a vacuum. Social interactions among workers tend to generate learning opportunities that enhance innovation and productivity. Thus the fact that workers earn more in highly educated cities is not an accident. Rather, it is a reflection of the higher labour productivity that comes from working alongside highly educated colleagues and neighbours.

Jaffe, Trajtenberg, and Henderson (1993) used patent citations to understand exactly how knowledge diffuses within a circle of friends, colleagues, or scientists in a city. When filing for a patent, an inventor is required to list all the previous inventions that her invention builds upon. These links offer economists an innovative way to track the flow of knowledge among inventors. They found that knowledge is subject to a significant degree of "home bias". Inventors are significantly more likely to cite other inventors living nearby than inventors living farther away. Because patents are freely available, citations should not necessarily display geographical favouritism. An inventor in, say, Durham, North Carolina, should have the same awareness of products or ideas generated elsewhere as he does of those generated in Durham. And yet an inventor in Durham is much more likely to cite a previous invention patented by someone else in Durham than one patented in another city. The magnitude of the home bias is substantial. Excluding citations that come from the same company, citations are twice as likely to come from the city of their citing patent as from other places. This means that scientists and inventors are more familiar with knowledge produced by those that work near them, presumably because they share ideas and information through informal conversations and interactions. These interactions take place both inside and outside the workplace, including casual settings like local cafés and social events.

Thus, geography matters for the spread of knowledge, and knowledge quickly dies with distance. Citations are highest when the citing inventor is located between zero and 25 miles from the cited inventor. Citations are significantly lower when the citing inventor is more than 25 miles from the cited inventor, and the effect completely disappears beyond 100 miles.

Geographical distance seems to impede the flow of ideas even within the boundaries of a firm. This alone should discourage companies from outsourcing any part of the innovation phase to low-cost countries. Take the high-tech company Cadence, with about two thousand employees in San Jose, one thousand workers in India, and another thousand scattered around the world. An Indian software engineer at level T4 makes about a third of what a similarly qualified software engineer in San Jose makes. When I asked Cadence's executive senior vice president, Nimish Modi, why the company does not move more R&D to India, given the potential savings, he told me that proximity and personal interaction matter to the creativity of its engineers. "We have sophisticated videoconferencing facilities, and we use them all the time to communicate with India. But it is not the same as face-to-face interaction. Nothing replaces a group of engineers sitting together and arguing in front of the whiteboard," he said.

Being around smart people tends to make us smarter, more creative, and ultimately more productive. The smarter the peers are, the stronger the effect is. Azoulay et al. (2011) focus on what happens to medical researchers when they work with an academic superstar. It is difficult to establish the causal relationship here because of self-selection: superstars tend to work with strong researchers, so the fact that their collaborators are especially prolific may just happen because they are better, not because they are benefiting from knowledge spillovers. To control for this, the researchers focused on what happens to the productivity of a superstar's collaborators when the superstar dies unexpectedly (they identified 112 such deaths). Although nothing changed in the collaborators' own circumstances following the superstars' deaths, they experienced "a lasting 5 to 8 percent decline in their quality-adjusted publication rates."

It is not just that people publish more when they are close; the quality of their research is better. When a team of Harvard Medical School doctors analysed all medical research articles published at Harvard and correlated their data with the distance between the authors' offices, they found that being less than one kilometer away raised the quality of research, as defined by how many other researchers cited the article. The effect was even larger if the authors were in the same building or used the same elevator.

Thus innovative firms have an incentive to locate near other innovative firms. In the same way that having a good colleague next door affects my creativity, having good neighbours—even competitors—improves the creativity of companies and workers. This in turn helps explain why workers in cities with many well educated residents earn higher salaries than identical workers in other areas. By clustering near each other, innovators foster each other's creative spirit and become more successful. These effects have not faded over time. While many people think that e-mail, cell phones, and the internet have made physical proximity less

important to the creative process, in reality the opposite is true. Location is more important than ever, in part because knowledge spillovers are more important than ever.

A large number of highly educated workers in a city are also associated with more creativity and a better ability to invent new ways of working. One way to see this is to look at what Jane Jacobs called “new work,” novel occupations that did not exist before. The economist Jeffrey Lin (2011) has studied which cities are the most creative, in the sense that they generate the most “new work” as measured by jobs that did not exist ten years earlier. Between 5 and 8 percent of workers are engaged in new work at any time in the US, but this number is much higher in cities that have a high density of college graduates and a diverse set of industries. Lin (2011) also found that creativity pays off: for the first few years after a new kind of job is created, workers in those positions earn significantly higher wages than identical workers in old jobs.

Drawing high numbers of educated workers into growing cities in developing countries is typically quite a challenge. It is well-documented that few educated expatriates from developing countries repatriate themselves later in life. That being said, the potential benefits from drawing in educated workers (both repatriates and those from other developing countries) are immense. The reality is that many of these educated individuals are drawn to other urban clusters around the world that offer higher standards of living and career opportunities. However, if effective product and labour clusters can be developed in the emerging cities of the developing world, it is possible that, perhaps with some government help, they can begin to compete with the more developed global clusters for drawing in these educated individuals. As many developing countries suffer from a relatively small educated population, it will become imperative to structure and develop their urban centres in such a way that they can both retain their educated populace and compete for the educated individuals from other countries. This will eventually involve the development of sufficiently lucrative employment opportunities, reliable and effective public service provision, security and rule of law, production and consumption technologies, and urban infrastructure. The emerging cities of these developing countries must be the primary tool used for this purpose.

**(D) The developing country evidence:** The mechanisms outlined above combine to give larger cities – in developed nations at least – high levels of productivity. A consensus estimate is that doubling city size raises productivity by 5-8% (Rosenthal and Strange 2004). The mechanisms are potentially universal, but little is known about how the importance of each (or their combined effect) varies with income levels, economic structure, specialization, institutional quality, or the quality of the urban fabric. There are a few studies of the impact of urban scale on productivity in developing countries, many of which are reviewed in Duranton (2008), Overman and Venables (2005), and Henderson (2005). These surveys report evidence that agglomeration effects are present, lament the paucity of work estimating effects in developing countries, and call for more work to be done. Duranton (2013) writes ‘six years after the last of these surveys was written, this call is yet to be heard. There are only a handful of recent studies not reviewed in these surveys. They largely confirm earlier findings for Turkey (Coulibaly, Deichmann, and Lall, 2007), China (Bosker, Brackman, Gerresten, and Schramm,

2012, Combes, Démurger, and Shi, 2013), India (Chauvin, Glaeser, and Tobio, 2013), and Colombia (Duranton, 2013a).’

Turkey has been going through a rapid urbanisation process since the early 1980s at a pace beyond the world average<sup>6</sup>. Coulibaly, Deichmann, and Lall (2007) assess the impact of this urbanisation on the country’s sector productivity using data up to 2000. Their estimation results suggest that both localization and urbanisation economies, as well as market accessibility, are productivity-enhancing factors in Turkey, although the causation link between productivity and these agglomeration measures is not clearly established.

Combes, Démurger and Li (2013) evaluate the magnitude of agglomeration economies in China using individual data gathered for 14,590 wage workers in 83 cities over 16 Chinese provinces for the year 2007. They find huge wage gaps across cities, with the ratio of the highest average to the lowest being above five. They also find a large geographical dispersion in terms of both city size (employment density as well as land area) and wages – In 2007, the average employment density is 414 workers per square km but the ratio of the ninth to the first decile is 36.9. They also find that location matters for productivity in China – being located in a twice as dense city in China increases wages by 8.7%. Finally, their results suggest that in addition to agglomeration effects, internal migration further increases productivity through both the increase of employment density it leads to, and because migrants exert a positive externality on local workers’ wages. Their estimates support Henderson’s statement on “too many cities with too few people” (2009) in China based on evidence for the mid-1990s and indicate that there is still room for urban areas in China to further expand.

Bosker, Brackman, Gerresten, and Schramm (2012) study possible consequences of relaxing China’s *Hukou* system for its internal economic geography. The *Hukou* system is equivalent to an internal visa arrangement in China that is meant to regulate migration since the 1950s. They find that increased labour mobility leads to more pronounced core–periphery outcomes. Beijing, Shanghai, Guangzhou, and Chongqing in particular will further strengthen their dominant place in China’s urban hierarchy.

## 2.2 Incidence and Inherent Wealth

The section above discussed the elements of the economics of agglomeration that lead successful cities to be successful drivers of productivity and growth. Beyond boosting domestic productivity and capacity, the development of cities also provides another avenue for significant wealth creation: property values. This is a knock-on effect of the clustering of workers and production. The wealth created by making the necessary investments and developing the appropriate local markets that are conducive to raising property values can be immense and provide enormous benefits to the local population.

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<sup>6</sup> A World Bank study qualified this process as “the strongest socio-economic force that has changed peoples’ lives since the foundation of the Turkish Republic in 1923” (World Bank 2004).

An increase in the labour demand in a city has two effects. On one hand, it raises employment and local wages. On the other hand, the increase in employment raises the cost of housing. Cities where labour demand is strong tend to have higher costs of housing than cities where labour demand is weak, making differences in salaries adjusted for cost of living (real salaries) smaller than differences in unadjusted salaries (nominal salaries). An interesting implication is that a significant part of the wealth created by the dynamism of cities with a strong labour market accrues not just to workers through the labour market but to homeowners through the housing market, in the form of capital gains. These capital gains are an important channel through which some residents of an area benefit from the strength of their local economy. For renters, however, the effect of a strong labour market is tempered by the increase in their monthly housing costs.

The change in real estate prices effectively redistributes the wealth created by job growth from one group to another. The exact split depends on how accommodating the supply of housing is and how mobile workers are (Moretti, 2011, Kline and Moretti, forthcoming). It is important to recognize that local governments have the power to affect the split. Policies that allow for increases in the housing stock in a locality following increases in local employment tend to keep housing prices in check, thus favouring workers who do not own a house. By contrast, policies that limit growth in the housing stock tend to result in housing costs increases, thus favouring existing homeowners (Glaeser and Gyourko, 2005). Consequently, land use regulations are an important mechanism that local governments can use to redistribute the wealth created by job growth between homeowners and renters.

In many developed countries with an established middle class, the value of their property constitutes a substantial portion of their total wealth. This wealth can then be used as collateral to secure loans, sold to make investments, or further developed – the important aspect is that it is a way to increase the wealth of the general populace. This allows for urban residents to also benefit from the development of these clusters without having to be explicitly employed as a result of the clusters. In order for this to provide an avenue of wealth creation, it is critical that local governments establish the necessary prerequisites for this development. Strong and enforceable property laws, public service provision, rule of law, business opportunities, construction and maintenance sectors, and national stability will play a key role increasing the value of urban property and facilitating a functioning market for its purchase and sale.

### **2.3 Regional Development Policies**

In a world with vast disparities in income levels across localities and with significant agglomeration externalities, what is the proper role of economic policy? In particular, to what extent should the existing spatial distribution of economic activity in a country be modified to maximise agglomeration economies and improve productive efficiency? Should national or local governments seek to redistribute economic activity from relatively rich areas to relatively poor regions? Or should they foster success, and favour rich areas?

The economy of a successful city is based on a remarkable equilibrium between labour supply and demand: innovative companies (the labour demand) want to be there because they know they will find workers with the skills they need, and skilled workers (the labour supply) want to be there because they know they will find the jobs they are looking for. The economy of a struggling city is the opposite. Even if real estate is dirt cheap, skilled workers do not want to be there, because they know there are no jobs; innovative companies do not want to be there either, because they know there are no skilled workers. It would be in the interest of one group to move if the other did, but neither wants to go first. It is a Catch-22 (Moretti, 2012).

How to create cities that are characterised by these good equilibria is a question of prime importance for many developing countries, which are experiencing urbanisation at a rapid pace. They currently face the danger of urbanisation without industrialisation, where the supply of labour is increasing beyond the cities' abilities to absorb it. The danger is the creation of large slums, depression of local wages, erosion of physical capital and infrastructure, and general productivity decreases due to urban congestion that is exceptionally large relative to the productive activities. This does not mean, however, that these cities have a surplus of skilled labour; exactly the opposite may be true, where an emerging city lacks both productive enterprises and skilled labour and becomes filled with relatively less-skilled labourers. Unfortunately, it is not yet clear as to how policy can be crafted to promote the emergence of these highly productive clusters in developing cities.

One theorized way to move a city from a bad equilibrium to a good one is with a big push: a coordinated policy that breaks the impasse and simultaneously brings skilled workers, employers, and specialized business services to a new location. Only a government can initiate these big-push policies, because only they have the ability to coordinate individual actors – workers and employers – to get the agglomeration process going. The idea is to provide public subsidies or public investment in infrastructure for those who are willing to move first but then stop the subsidies after the process becomes self-sustaining.

The first and most important big push ever attempted in the history of the United States was the Tennessee Valley Authority (TVA), created in the midst of the Great Depression to lift a desperately poor region out of poverty. In practice, this meant investing in large-scale infrastructure programmes, particularly electricity generating dams, whose power was used to electrify the region and boost local productivity, an extensive network of new roads, a 650-mile navigation canal, schools, and flood control systems. A smaller portion of the funds was devoted to malaria prevention, reforestation, educational programmes, and health clinics. The scale of the programme was enormous, far beyond anything attempted before or since. Between 1933 and 1958, \$30 billion from U.S. taxpayers poured into the region. At the programme's peak, in 1950, the annual federal subsidy to the region was \$625 per household. After 1958 the federal government began to scale back its investment, and the TVA became a largely self-sustaining entity.

The TVA is not unlike regional development economic policies currently adopted by many developing countries. This approach to economic development is based on the intuitive notion

that public money can jump-start a local economy trapped in poverty. Critics on both the right and the left have lambasted such initiatives, either as big government overreach or top-down control of local communities. In an influential 1986 article in the *New York Review of Books*, the progressive urban thinker Jane Jacobs wrote a scathing critique of big-push policies, including the TVA, arguing that it is an unnatural way to foster local economies and concluding that “in practice, they work miserably.”

How can we assess place-based policies in a rigorous way? The real test is not whether they create jobs during the push. The fact that an inflow of money temporarily increases economic activity in an area is hardly a sign that the money was well spent. Instead we need to look at whether the publicly financed seed can eventually generate a privately supported cluster that is large enough to become self-sustaining. The idea is that the government-provided investment carries the local economy past the tipping point but not any further. At that point the forces of agglomeration take over, continuing to attract businesses and workers well after the subsidies end.

A recent study of the TVA initiative found that the programme was successful in generating an industrial revolution in an area that had been largely rural up to that point (Kline and Moretti, 2012). During the big-push years of 1933 to 1958, manufacturing jobs in the region grew much faster than they did in the rest of the country, as companies found the cheap electricity and easy transportation attractive. Manufacturing jobs kept growing faster after the federal subsidies dried up. Even in 2000, more than forty years after the end of the federal transfers, manufacturing jobs in the region were growing faster than those in comparable parts of the South, though the effect is now slowing down and will probably disappear soon. While the programme was successful in moving the region from a low-productivity sector (agriculture) to a high-productivity sector (manufacturing), it did not succeed in raising local wages in any significant way. The reason is simple: as more jobs were created, workers moved in from the rest of the South to take advantage of improved economic conditions. This increase in the supply of labour effectively offset the increase in demand.

The fundamental challenge with this type of place-based policies is that for them to be successful, local policymakers must be able to pick promising companies and sectors to invest in. They need to be a little like venture capitalists. Should a developing country spend all its money attracting solar panel factories or medical equipment facilities? Should it focus on computer farms or heavy manufacturing? Even professional venture capitalists have a hard time predicting which industries and companies will succeed. For local policy makers, this challenge can prove insurmountable.

Overall, the track record on industrial public subsidies in the United States and Europe is not great. It is simply too difficult for policymakers, even the brightest and best-intentioned ones, to identify winning industries before they become winners. Even if it were clear which industries would drive future growth, it would still be difficult to pick winning companies within those industries.

Indeed, looking at the map of America's most successful industrial clusters, it is hard to find an example of one that was spawned by a big push. No local politician set out to create Silicon Valley. In the cases of Seattle, Austin, and San Diego, the success of an original anchor company was typically the seed that grew into a high-tech or life science cluster. The same is true for smaller, more specialized clusters, arguably a more realistic goal for struggling communities. Consider Portland, Boise, and Kansas City; three small high-tech hubs anchored by semiconductors, general high tech, and animal health and nutrition science respectively. Although small, these are dynamic centres: Portland and Boise produce almost as many patents per capita as Boston. None of these hubs were planned. The opening of Intel's semiconductor facility in 1976 jump-started Portland's high-tech sector. The seed for Boise was planted in 1973, when Hewlett-Packard moved its printer division there. Life science R&D in Kansas City can be traced back to the 1950s, when Ewing Marion Kauffman started his pharmaceutical lab. Little of the high-tech presence in these cities resulted from aggressive recruitment of companies by local governments. (Moretti 2012)

Other parts of the world have seen some success. Ireland used a deliberate big-push policy to build up human-capital-intensive sectors that previously did not exist. Through aggressive tax incentives and other enticements, it created important clusters in high tech and finance. However, the country's recent financial crisis throws the sustainability of such policies into question. Israel's high-tech cluster, one of the most dynamic in the world, is highly dependent on the country's military. Although the Israeli government did not set out to create a local high-tech sector, its need for innovative defense technologies and specialized human capital indirectly fostered a private sector that later became globally competitive.

Perhaps the clearest example of big-push success is Taiwan, which transformed its rural economy into an advanced one with a dynamic innovation sector through a large-scale policy of government-sponsored research in the 1960s and 1970s. The programme succeeded in bringing top Chinese scientists back from the United States, establishing a cluster of publicly supported R&D that eventually became thick enough to sustain private companies. This is one of those rare instances in which policymakers turned out to be good venture capitalists. While they did bet on several failed technologies, they also bet on semiconductors very early on. Semiconductors quickly became the core of Taiwan's high-tech sector and arguably one of its engines of prosperity. More recently, Taiwan's high-tech cluster has been embracing newer technologies, including life sciences. But Taiwan might just be the exception that proves the rule.

A version of spatially targeted development policy that has been widely adopted by many developing countries is represented by Special Economic Zones (SEZ). SEZ are areas within a country that enjoy particularly liberal economic restrictions and low taxation with the goal of attracting foreign investment and fostering production of export goods (Shah 2008). The SEZ system was first tried in China's southern Shenzhen region in the 1970s (Wang 2013) and has since become a model for many other countries (World Bank 2011). Many SEZs have been successful in generating exports and employment, and appear to have marginally positive cost-benefit assessments (Chen 1993; Jayanthakumaran 2003; Monge-Gonzales, Rosales-

Tijerino, and Arce-Alpizar 2005).<sup>7</sup> The number of SEZs globally has risen from 25 in 1975 to over 130 in 2006 with most of the growth occurring in developing economies (Boyenge 2007).

The majority of evidence on special economic zones has concentrated on China. Prasad and Wei (2007) and Feenstra and Wei (2010) find that SEZs have increased the total amount of foreign direct investment (FDI) into China. The introduction of an SEZ increases the per capita FDI in a region by as much as 21.7% (Wang 2013). This rise in FDI does not come at the cost of crowding out local investments. However, SEZs in neighbouring regions do divert FDI (Wang 2013). Additionally, Head and Ries (1996) analyse location decisions of international firms in Chinese cities and find that SEZs have positive effects. Alder et al. (2013) find a 12% permanent increase in the GDP of Chinese cities that support SEZs.

There is some preliminary evidence on what kinds of SEZs are the most effective at increasing local growth. For example, setting up SEZs as exclusive enclaves for foreign firms appears to be less effective than integrating them more deeply into the region's local labour market (World Bank 2011). In addition, SEZs that leverage a region's comparative advantage are more successful than those that try to inject a new industry. For example, Bangladesh's first wave of SEZs was targeted towards high-tech firms. It was only when this strategy failed that the focus shifted to low cost garments, an area where SEZs have thrived (World Bank 2011).

Outside of China, there is limited empirical evidence on agglomeration economies in developing countries. The World Bank highlights the role of a first mover advantage, arguing that for countries that have not yet established economic zone programmes, such programmes may no longer work (World Bank 2011). The massive labour and scale advantages offered may have mostly been arbitrated away by early adopters. Despite some evidence that there are heterogeneous effects across municipalities belonging to different waves of SEZ reforms in China (Wang 2013), this is still an area for exploration.

At a more fundamental level, the aggregate impact of these policies for the entire country must be considered. Even when these policies make economic sense for a particular community, they do not always make sense for the country as a whole, as competition among municipalities can turn out to be a zero-sum game for the nation (Glaeser and Gottlieb, 2008). It is even possible that these policies have a *negative* impact on aggregate economic activity. Just like any other example of government intervention, SEZs might simply redistribute economic activity within the country rather than create 'new growth'.

### **3. Managing Rapid Urban Growth in Developing Countries**

The growth of urban areas through the developing world raises not only questions of productive efficiency, but also questions of quality of life, cost of living, income distribution,

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<sup>7</sup> A recent version of Special Economic Zones is represented by "Charter Cities", an idea promoted by the economist Paul Romer. The idea of a charter city is an extension of the idea of "special economic zones". Unlike the typical special economic zone, the political and legal institutions in Romer's charter cities are not the ones of the host country, which is often corrupt and inefficient. Rather, they are the institutions of some external, well-functioning country.

and equitable delivery of public services. How can local governments best manage rapid urbanisation in order to make cities healthier and more livable? The urbanisation process poses difficult challenges to local governments: fast population growth, lack of basic services, lack of affordable housing, uneven supply of education and health services to children, etc. Managing urban slums and newly urbanized areas in ways that are both efficient and humane requires creative policies. The Cities programme of the IGC seeks to foster research on two related set of questions: first, what are the most efficient and equitable ways to deliver local public goods in large urban areas? Second, what economic and political conditions maximise efficiency on the part of local governments and minimize corruption?

There are many challenges that are more specific to developing countries. Many of the world's most developed cities were built and developed over large periods of time; even the growth of many of the major cities in North America is slow relative to what is currently being observed across much of the developing world. Mass expansion and modernisation of cities has been observed in places such as India and China over a matter of decades. New megacities are emerging in regions throughout the world with populations in the tens of millions. Emerging major and minor cities seem to be growing at rapid paces, partially due to but in turn also fueling, economic growth in the developing world.

Furthermore, the challenges posed by rapid urbanisation are different in different developing countries. This is because of the different nature of the urbanisation process in these places. Traditionally cities grow when aggregate growth takes off. This reflects the combination of agricultural productivity growth combined with industrial productivity growth, thus drawing workers out of rural areas into urban areas. Provided this urban growth is properly managed, it results in all the agglomeration economies discussed above. The challenge of many developing cities is to manage the urban growth that comes from this phenomenon.

However, the challenges that developing cities are facing have varied substantially. For example, the experience of some Indian cities is different from say Lagos or Abidjan. What has been different about the last 30 years is that many countries have had tremendous urban growth without any aggregate growth. This phenomenon is new in world history. The result is "mega cities" that are dysfunctional and largely "mega slums". It is not really known why such mega cities have appeared, but perhaps one explanation is that these are more akin to a "refugee city" than to cities where people move to because of growing opportunities. That is, refugee cities are ones that grow because of disaster in the agricultural sector. While this conjecture needs to be tested with evidence, it is obvious that dealing with a refugee "mega city" is vastly more challenging than dealing with an urban explosion like Mumbai or Delhi where businesses are growing and full of opportunities (and resources).

These trends are bringing with them a new set of challenges and problems associated with the rapid urbanisation of large populations in countries with relatively little capabilities to absorb them. Unfortunately, due to the nature of the current literature on urbanisation, little research has been conducted on how to effectively manage many of these challenges.

### 3.1 Dealing with Slums and Overcrowding

A consequence of rapid urbanisation in developing countries is the proliferation of slums marked by informal or unplanned and under-serviced settlements. As large numbers of people migrate to the cities, the housing capacity and labour demand often fails to keep up with the growing urban populations in these emerging cities. As of 2010, there were almost a billion people living in slums across the world (UN-Habitat 2012). Some scholars argue that slums are merely transitory phenomena that occur while countries transition into more industrial, urban centric economies that will eventually give way to formal housing (Glaeser 2011). Others see slums as more permanent features of the urban landscape. There is a burgeoning literature detailing the mechanisms through which ‘poverty traps’ operate. Spatial poverty traps have mostly been studied in rural settings (Jalan and Ravallion 2002), but there is a recent literature suggesting that poverty traps might be operating in urban settings due to political neglect and bad policies (Marx, Stoker and Suri 2013b). Regardless, there is almost universal consensus that slums create unique problems in the provision of public goods, maintenance of formal property rights and the urban political economy.

Slums are characterized by extremely high population density, small dwelling size and low rates of state recognized titling – the population density of Abidjan, Cote D’Ivoire is as high as 34,000 per square km (UN-Habitat 2003 p. 200). These factors, coupled with low income levels and low levels of human capital tend to make the provision of basic public goods and services quite challenging. For example, WaterAid (2007) finds that most cities are stretched beyond capacity in their ability to deliver these basic services. Extreme overcrowding results in insufficient provision of sewage, sanitation and health amenities. The lack of clean water and sanitation introduces tremendous volatility into existing urban slums (UN-Habitat 2003). A survey of over 5,000 slum dwellers in Delhi (Banerjee et al., 2011) shows several deficiencies in basic services. Over 44% of those surveyed faced water scarcity, 90% reported overflowing drains and 99% reported that neighbourhood dumpsters were emptied less than once a month. There are very few public latrines and those that exist are almost always infected. In addition, less than a quarter of survey participants had soap or other sanitary fluids. There is very rarely any provision of private water (World Bank 2009) or any form of garbage collection (Marx, Stoker and Suri 2013b). Bad sewage and sanitation systems give rise to health issues through direct exposure, contamination of water (Duflo, Giliani and Mobarak 2012).

The lack of adequate public good provision leads to poor health outcomes, especially among children. In fact, life expectancy at birth is significantly lower among slum dwellers versus comparable groups in rural and more formal urban areas (Bradley, Stephens, Harpham and Cairncross 1992). The lack of clean water often leads to diarrhea (Evans 2005) which accounts for almost a quarter of under-five mortality in developing countries (Kosek et al. 2003). Poor sanitation leads to an increased diffusion of pathogens. Outbreaks of cholera in developing countries have been linked to poor sanitation (Sasaki et al. 2008). Stunting and malnutrition are common and much starker in slums than other areas inhabited by urban poor (Marx,

Stoker and Suri 2013b). Additionally, solid waste can easily contaminate groundwater (Hogrewe et al. 1993).<sup>8</sup>

Linked to the problem of public good provision is the fact that a majority of the urban poor in developing countries' slums do not enjoy any formal tenure over the land that they occupy. Most settlements are on vacant government land without formal approval. In one study based in Kenya, 10% of households were evicted due to the lack of property rights (Marx, Stoker and Suri 2013b). Less than 40 percent of inhabitants in Senegal and Kenya report that it is easy to transact housing in their area (Gulyani, Basset and Talukdar 2012).

There is evidence that African cities are not only failing to provide decent housing or adequate public services for poor people, but also failing to raise worker productivity. The visual expression of this double-failure is the slum near the centre of a city (Collier and Venables 2012). Such slums are crowded without providing economic density, implying huge losses of potential wellbeing and output.

The informal nature of slums renders many of them ineligible for urban upgrading projects (Fox 2013). They are also typically undercounted, due to bad census figures, and even less weight is placed on improving these areas (Sabry 2010). The lack of formal title makes slum dwellers reluctant to improve the quality of their homes and neighbourhoods (de Soto 2000). Formal titling might encourage investments in poor urban areas (Field 2005; Galiani and Schargrodsky 2010).<sup>9,10</sup>

Related to the question of how best to deliver public goods and services there is the question of how to improve local governments. There is growing evidence that the quality of local governments – whether cities or states – varies dramatically across jurisdictions within countries. The Cities programme of the IGC is interested in research that measures differences in the quality of local governments, especially at the city level; identifies national or regional policies that are effective at improving local governance; and estimates the effect that improvements in local governance have on local economic growth, delivery of public services, cost of living and income distribution.

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<sup>8</sup> Some progress has been made in addressing these problems. Solutions such as providing uncontaminated, chlorinated water to households can reduce the chance of diarrheal disease by up to 95% (Fewtrell and Colford 2004). However, there seems to be a surprisingly low willingness to pay for clean water (Duflo, Giliani and Mobarak 2012). This may arise due to households not being informed about the importance of good quality water.

<sup>9</sup> On the other hand, Lanjouw and Levy (2002) find that property rights exist in practice in some cases even without formal titles. Additionally, blanket titling may create more problems than it solves. Granting formal tenure can reduce security because it creates the potential for slum dwellers to be lawfully evicted (Durand-Lasserve, Fernandes, Payne and Rakodi 2007). Governments have to walk a fine line in determining when granting housing rights will actually benefit inhabitants.

<sup>10</sup> The lack of public good provision and formal titling in urban slums has resulted in a uniquely private, entrepreneurial bureaucracy that supplants traditional 'government'. Davis (2006) estimates that fewer than a hundred individuals control all vacant land in Mumbai. These slumlords have considerable political power and often collude with local administration (Joireman 2011). In many cases, rent is extracted through private gangs that enforce their own rules (Marx, Stoker and Suri 2013a) or drug cartels (Ferraz and Ottoni 2013). Even more worryingly, it was found that the majority of slumlords in Nairobi were government officials (Syagga, Mitullah and Karirah-Gitau 2002).

### 3.2 The Informal Sector

Just as slums develop because housing capacity cannot keep up with the influx of residents, labour demand also tends to fall behind supply. As a result, many of these potential workers end up employed in the informal shadow economy instead of the formal economy. As Duranton (2013) points out, the coexistence of the formal and informal sectors in developing cities has been well documented.<sup>11</sup> This does complicate policymaking, however, as it makes it difficult to tax, regulate, and monitor these segments of the population. There is also the added complication that some of these activities are related to crime. While a fair amount has been written on the nature of many of these informal sectors, it will become important to investigate how best to try and regulate these sectors and how to promote their transformation into the formal sector again.

The nature of the informal sector itself means that it makes it more difficult for policymakers to try and raise the welfare outcomes of its constituents. For example, laws strengthening business and contract rights or providing rebates on capital investments will largely only be of benefit to those in the formal sector. In a similar vein, it is harder to enforce taxation and regulation on these sectors as their income is undeclared and they are largely unregistered. This further complicates service provision in large urban areas, however, due to the nature of many of these services as public goods. The government will be trying to provide effective service provision for the urban populace, but will only have access to the resources and information from the formal sector portion of the population. Therefore, in cities with a strong informal sector, this has the potential to cause another Catch-22 situation where there are insufficient public resources to provide effective public service delivery, but increases in taxation to rectify this may actually push more people into the informal sector, which further shrinks the tax base.

There also exists little research on the effects of a strong informal sector on the agglomeration effects of cities. The importance of harnessing these agglomeration effects has been discussed previously; it is one of the greatest advantages of urbanisation. Overman and Venables (2010) point out that relatively little is known about this topic despite its importance and that there are feasible narratives for both positive and negative effects roles of the informal sector in terms of increasing productivity by encouraging agglomeration.<sup>12</sup> It is possible that the crowding into cities by individuals engaged in the informal sector would restrict the productivity of cities as they would not participate in the more productive formal sector, but would still make use of the cities' infrastructure and amenities. Additionally, it is unlikely that many individuals in the informal sector would interact with most of the more educated citizens in the formal sector, hindering the potential knowledge spillover effects of agglomeration. On the other hand, it is very possible that the informal sector adds to or at least supplements agglomeration economies. There are various studies which document the benefits which the informal sector provides to agglomeration economies. These studies document how the informal sector fill in gaps in formal sector production processes and add

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<sup>11</sup> Duranton (2013) p. 25.

<sup>12</sup> Overman and Venables (2010) p. 9.

value to formal sector firms by providing essential inputs and services.<sup>13</sup> In reality, it is likely that both of these effects exist and counteract one another.

The reality is that little is known about these informal sectors relative to what is necessary to tackle these issues. Therefore it is of utmost importance that research is undertaken on this topic in order to understand how the informal sector works and what its advantages and disadvantages are. Understanding of the informal sector will be critical to the formulation of effective policies to encourage formalization or to regulate activities in the informal sector.

### 3.3 City Structures

As urbanisation continues to accelerate in many developing countries, it is becoming increasingly important to think about how to structure these emerging networks of cities. Unfortunately, little is known about how to guide the development of these cities beyond anecdotal success and failure stories in the developed world or in the significantly more modern developing cities, such as those found in China and India. What is clear is that in order for these emerging cities to eventually compete globally with the world's other great cities to attract the most productive firms and workers, governments need to act strategically to decide where they want their cities to go. Once it is established where these cities should be headed, it will be necessary to conduct extensive research on these topics so that policymakers can then be shown how to get there.

What is still yet to be seen, but is actually quite important, is just how important city structures are for inducing agglomeration effects and in turn, economic growth. It is likely true that there are many different ways to effectively structure a city for each desired outcome. It also remains unclear how to best go about promoting the optimal city structures once they are determined. What is key is deciding what the ideal economic activity of a city will be and to try and promote clustering in these areas. As Duranton (2013) notes, failing to specialize and allowing big cities to do everything reduces their agglomeration effects and holds back the productivity and dynamism of these cities – the key is that different cities play different interconnected roles.<sup>14</sup> It is obviously impossible to try and pick “winning industries” ex-ante, but more general sectors such as textiles can be helpful. This will be helped along by also identifying each emerging city's potentially feasible export markets. Once these foci are determined, policy and the necessary public investments can be made to try and develop the city to focus on these areas. In order to secure these emerging cities as drivers of economic growth in developing countries, it will be necessary to pick the structures that are most conducive to growth given each country's unique economic context and then determining how to effectively bring these structures about. Conducting effective research of this type will be no easy task, but the benefits of creating this knowledge for policymakers would be potentially immense.

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<sup>13</sup> Overman and Venables (2010) p. 9.

<sup>14</sup> Duranton (2013) p. 30.

In order for these emerging cities to be effective, it is necessary to provide them with the necessary infrastructure to be competitive. Large scale infrastructure investments, such as highways for example, often prove very expensive. In most developing countries where resources are inherently limited, it is extremely important to target these investments so as to maximise their returns to growth. These investments are necessary to the smooth operation of cities as deficiencies, such as inadequate highways or power outages, can significantly hinder the competitiveness and productivity of a city and reduce the welfare outcomes of its inhabitants.

It is also critical to link these cities to their surrounding areas and nearby cities and trading hubs. As different cities may seek to specialize, it will become increasingly important to link them together so that they can trade and benefit from each other's activities. This is similarly true for surrounding rural areas as many goods (especially food) will need to be imported into these urban centres and proper transportation infrastructure into these major urban markets will allow for more efficient agricultural markets and allow for the potential further development of these agricultural sectors to satisfy the large urban demand. The costs of these investments may be high, but there is little doubt that they do also provide potentially large returns.

Finally, it is important to address the issue of the "primate city", which is a trend observed in some developing countries where there emerges just one major city which receives a disproportionate amount of government attention and development. This leads the primate city to become unnecessarily large and burdensome and for the other secondary cities to receive a disproportionately small amount of public investment given their tax liabilities.<sup>15</sup> There is a danger here that this will restrict the ability of these secondary cities to develop into their own productive clusters. If too much focus is made on the primate city, then other surrounding secondary cities will be used just to try and catch portions of the population that want to move to urban areas, forming a sort of "overflow lot" for the primate city. Meanwhile, this can potentially lead the primate city away from specializing into what is observed in many developing cities, where they produce everything, but not very efficiently. It is therefore necessary to investigate how to offset this bias towards primate cities in developing countries.

#### **4. Conclusions**

One of the transitions that occur during the process of development is a spatial transition - from low population density to high density, and from rural to urban living. It is important to understand all aspects of this because it is both a symptom of and a contributor to development. Urbanisation is a particularly important area in which research can feed into policy. Urbanisation is 'policy intensive', requiring public investment and regulation to be successful. Heavy investment in infrastructure and the provision of public services are necessary for cities to work. Market failures are rife, both in the positive externalities that

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<sup>15</sup> Duranton (2013) p. 29.

create increasing returns and agglomeration economies, and in the negative externalities of congestion and that arise with cheek by jowl living.

The modern literature on urban and regional economics has created a framework for thinking about broad drivers of local and regional growth both theoretically and empirically. The vast majority of this work focuses on developed economies. The IGC Cities Research Programme seeks to fill this void.

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