



Population change as a key consideration for megacity economic development strategies

Authors: **Rongxi Peng, Yunxia Zhuo, Yingzhi Qiu,
Guangzhong Cao and Tao Liu**

Peking University

Editor: **Francisco Obando**

This brief highlights the value of considering population change in economic development strategies for megacities, in relation to ongoing development and future competitiveness. Pathways are identified based on the analysis of known economic development and population change trends, using a case study of Beijing. The result is a series of steps for other cities to carry out similar analyses.

Population is a basic component of regional economic development. The size, age and education of a population determine the quantity and quality of labour supply and are associated with economic growth and industrial transformation.

Worldwide, urbanization has propelled the industrialization of developed countries. In East Asia, rapid economic growth has been germinated by the demographic dividend – the shifts in age structure, for example, that result in the share of the working age population being larger than its non-working-age counterpart. While in Japan, where the large aging population and economic bubble burst – mainly due to inflated real estate and stock market prices – has caused long-lasting economic decline.

Many cities have disproportionately focused on industrial upgrading, rather than on the relationship between economic development and population change. Consequently, these cities have not met intended economic goals, largely due to an insufficient and inadequately trained labour force. In the case of China's capital Beijing, one of the country's most populated cities, population control and industry transformation are important government objectives, promulgated by a series of related policies, albeit with limited success. The forced eviction of inadequately skilled immigrants is one example of the negative social implications from the approach.

Current Chinese urban planning separates industrial and population planning, and are often carried out by different institutions, failing to capitalize on possible synergies. Increasing awareness among policymakers of this critical relationship between population and economy has led them to invite scholars to investigate. This brief outlines well-established population and economic development trends of global cities, and lays out a path to achieving future development while avoiding limitations from human capital shortage or mismatch.

Economic policymaking is closely linked to population change. Only by analysing trends of population change, can governments make effective and sustainable economic development strategies. Policy that focuses on the optimization and upgrading of industries alone cannot clearly identify strengths and weaknesses of cities, particularly those that relate to availability of human capital. Policymakers must consider the population and economy in tandem when making strategic plans to achieve sustainable growth and a more robust industrial transformation.

What are the general patterns of population change in global cities?

Understanding the general trends and problems of population change within advanced global cities provides useful insights for strategic planning in emerging cities of developing countries. Based on the historical population data of three prominent global cities – London, New York, and Tokyo – patterns of population growth and spatial distribution were assessed.

The gathering-dispersing-regathering process of megacity population growth

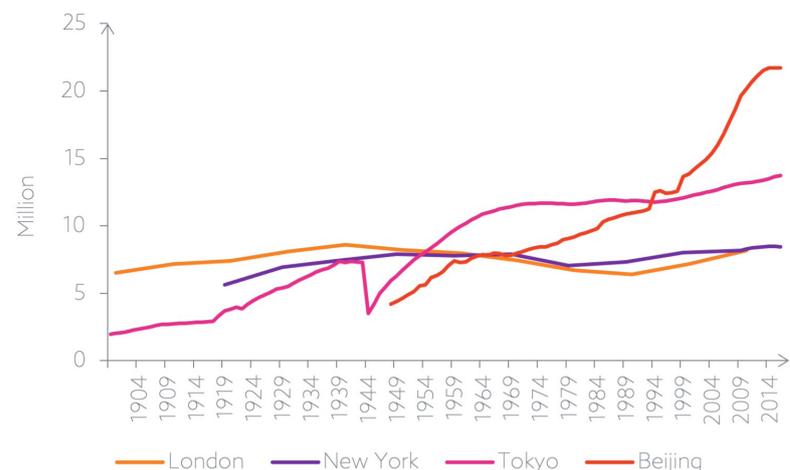
Population aggregation and dispersion patterns are influenced deeply by modes of production globally and changes in regional trade relations. The experience of developed global cities, however, shows that population growth is overall relatively stable, with few exceptions. For example, London at the turn of the 20th century was the largest city in the world and carried on growing in the early decades, but witnessed significant population declines in the mid 20th century. This was reversed in the last quarter of the 20th century and early years of the 21st, with rapid population growth driven by high- and low-skilled migration and ‘return to the inner city’ linked to processes of gentrification.

Specifically, population change exhibits a ‘gathering-dispersing-regathering’ process. The gathering stage is due to the rise and development of the manufacturing industry in urban areas, which triggers massive rural-urban migration. The dispersing stage is mainly the result of suburbanisation, urban overcrowding, and the relocation of manufacturing from cities to outskirts. The regathering stage follows measures to address urban overcrowding, globalization, and the emergence of information industries, which reverses the dispersion trend of population.

Additionally, many cities are implementing urban renewal projects and experiencing inner-city gentrification, which revitalize these cities, at least economically. Opening cities to the world and globalization makes them attractive destinations for flows of people and capital, alleviating or even reversing population loss. Emerging industries such as the information industry, as a typical example, often drive population growth in urban areas, as they prefer to locate in cities within proximity to universities to access talent and technology.

The dispersion stage is not necessary and can be avoided or minimized. For example, the dispersion stage of Tokyo could not be clearly identified, which is likely due to certain key characteristics. On one hand, the territory of Tokyo is geographically large; thus, the outer areas could absorb the dispersed population. On the other, the processes of de-industrialisation, globalization and informatisation have overlapped in time. Population loss driven by relocation of manufacturing and population gathering induced by high-tech industries and globalization have taken place simultaneously, minimizing the level of population dispersal during the second stage.

Figure 1. Population changes of four global cities



The predominance of a younger population, including young immigrants, is characteristic of global cities

In-migration is another prominent feature of global cities, especially that of young working-age people. The age structures of three major global cities show similar characteristics: the proportion of middle-aged and young people is higher, while that of teens and the elderly is lower (See Figure 2). Comparing the age structure of a given city and its country-level average makes this trend evident. The constant in-migration of young working-age people helps sustain the

vitality of world-class cities. Noticeably, though the share of 0- to 5-year-olds in selected cities is like that of the country-level average, the share of those aged 6 to 20 is lower (See: Figure 2). This phenomenon may be due to the behaviour of the high proportions of people of childbearing ages, who have children in urban areas but move away when the children reach school age. Families are forced to leave due to, among other things, the high cost of education.

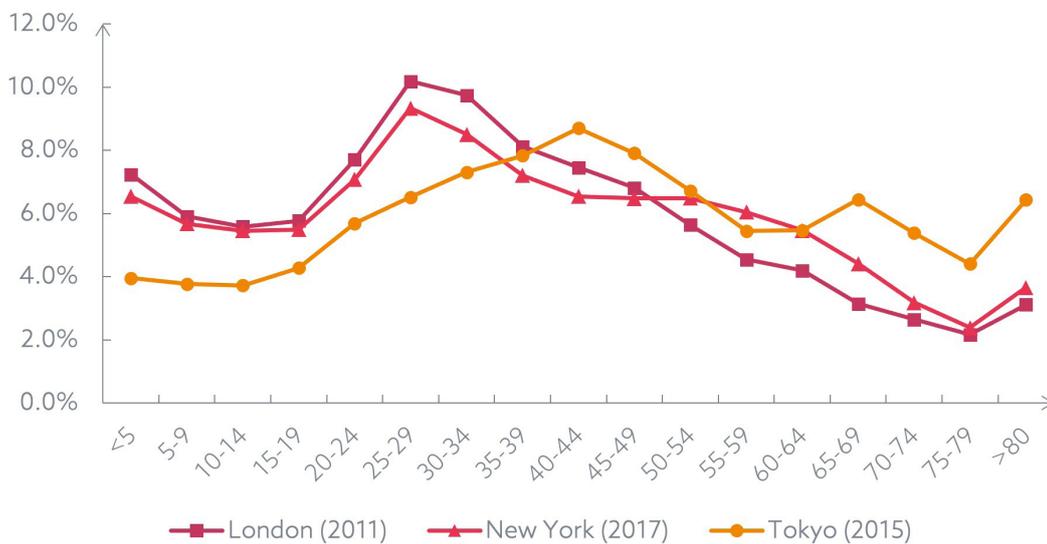
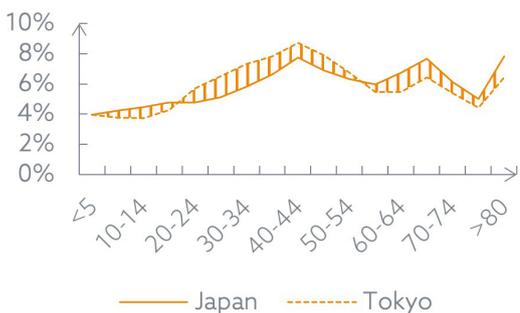
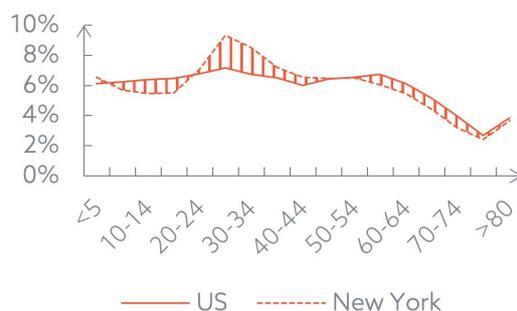


Figure 2. The age structure of London, New York, and Tokyo



How could policymakers recognise major barriers to development and take effective action?

Depict, compare, and interpret population dynamics.

City-level economic development and population growth policymaking should reflect local population dynamics. Relevant considerations include population size, age structure, migration levels and expected population growth trends. Examining these four key population indicators based on time series data can help to understand the development stages of cities, identify key population characteristics, and avoid facing significant development and competitiveness issues, such as labour shortage. Using the global cities and domestic megacities as references is helpful in recognising existing weaknesses and potential development paths.

Assess past policies and their performance.

The effectiveness of past policies can be evaluated by comparing previously set targets with the current situation. Effective policies are those that have achieved targets or goals. Accounting for the merits and shortcomings of past policies when developing or revising existing policies is critical. For example, lessons learned help avoid making past mistakes and prioritize investing in successful initiatives. The exercise should include a sober analysis of the current situation facing the city and result in setting achievable and reasonable goals.

Identify the gap between intended economic goals and human capital.

Human capital is essential and supports the realization of urban economic goals. Thus, as mentioned, it is necessary to consider the current and future population trends when setting those goals. Once a city's strategic plan is determined, policymakers should evaluate and compare the current developmental situation, such as the industrial structure and labour force, to other domestic and foreign cities with similar goals and higher development levels. The exercise helps to ascertain the gap between the current situation and the target, which can be used to identify the conditions needed to achieve the target. Human capital plays a crucial role in this assessment. After identifying issues related to population size and structures—such as the lack of certain professions, including medics and engineers, for example—policymakers could set population and economic development policies to guide administrators in adopting relevant measures. Namely, that includes attracting and training required professionals, thereby meeting human capital needs to support economic development.

City-level economic development and population growth policymaking should reflect local population dynamics.

The effectiveness of past policies can be evaluated by comparing previously set targets with the current situation.

Thus, as mentioned, it is necessary to consider the current and future population trends when setting those goals.

After identifying issues related to population size and structures—such as the lack of certain professions, including medics and engineers, for example—policymakers could set population and economic development policies to guide administrators in adopting relevant measures.

The case of Beijing

With Beijing, the process would work in the following way. First, the population change and growth rate of Beijing is reviewed. As Figure 3 indicates, the population of Beijing has declined significantly since 2010, which could be regarded as a shift from population gathering to dispersing. Specifically, this decline is mainly caused by a decline in the influx of domestic immigrants.

Analysing policies enacted and enforced in Beijing helps understand this phenomenon. Beijing has adopted a series of measures in recent years to restrict the entry of lower-skilled migrants, known as 'the floating population,' in so-called 'low-end industries,' such as wholesale, mining, and high-polluted manufacturing. However, these policies only took effect in 2014, and therefore do not explain the decline of population growth rate, which began as early as in 2010. To understand this decline, we look to the general laws of population change in global cities and conclude that it is the synergies of characteristics of the urban development stage and policies mentioned above that have slowed down Beijing's population agglomeration process in recent years. Like Tokyo, the period of population dispersion and re-gathering in Beijing happened simultaneously, and these two processes overlapped due to the concurrence of globalization, informatization, and suburbanization.

Comparing the employment structure and education structure of key industries in Beijing, Shanghai, London, and Tokyo (Table 1) reveals that the education level of the employed population in key industries of Beijing is similar, and in fields like finance, scientific research and technological services, superior to that of other cities. However, there is still room to optimize the employment structure further. The analysis of population change and structure would help identify the types of key industries Beijing should aim to develop and talent it should attract now and in the future, providing a reference for formulating future population and economic policies.

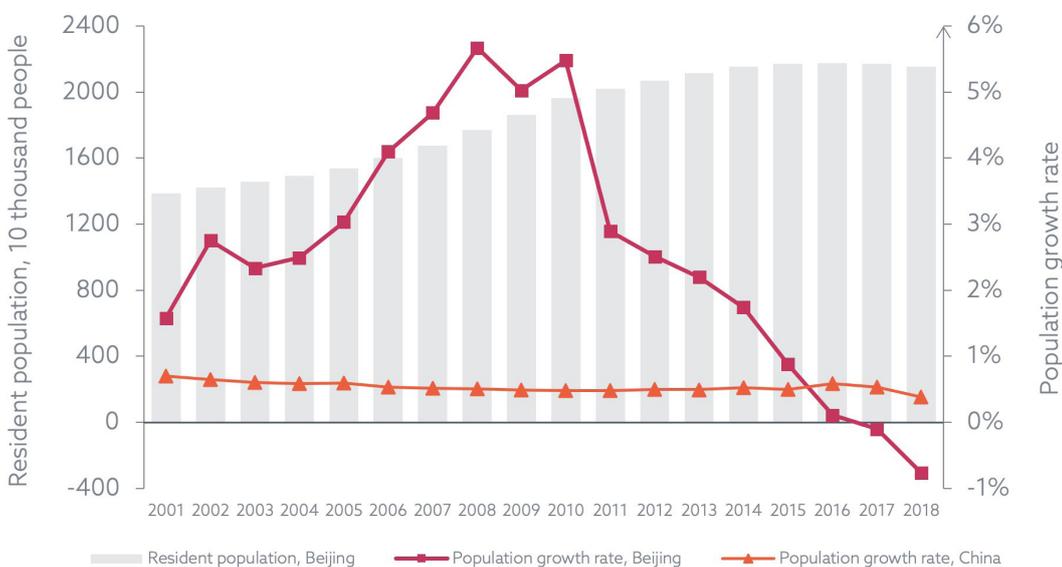


Figure 3. Population growth of Beijing and China

	Employment structure				College degree or above			
	Beijing	Shanghai	London	Tokyo (2010)	Beijing	Shanghai	London	Tokyo (2010)
Total	1	1	1	1	49.8%	37.7%	58.6%	50.6%
Manufacturing	13.6%	31.4%	3.7%	9.8%	40.5%	27.2%	47.1%	53.3%
Information transmission, software and information technology services	7.3%	3.7%	7.1%	7.0%	89.4%	83.7%	79.9%	80.6%
Finance	4.5%	4.0%	8.1%	3.7%	86.9%	84.4%	70.4%	76.8%
Scientific research and technology services	3.4%	1.8%	11.8%	5.2%	85.3%	78.4%	79.2%	78.7%
Education	5.3%	3.4%	9.7%	4.3%	81.8%	77.7%	73.3%	84.8%
Culture, sports and entertainment	3.2%	1.2%	3.7%		75.5%	50.1%	67.8%	
Public administration, social security and social organization	5.7%	3.2%	6.2%	2.7%	65.1%	63.8%	66.8%	68.4%
*High-tech enterprise	14.9%	9.8%			74.7%	63.9%		

Table 1. Employment structure of key industries (2015) in Beijing, Shanghai, London, and Tokyo

References

Shi Q, & Cao G. (2019). Urban spillover or rural industrialisation: Which drives the growth of Beijing Metropolitan Area. *Cities*. <https://doi.org/10.1016/j.cities.2019.05.023>

Shi Q, Liu T, Musterd S, & Cao G. (2017). How social structure changes in Chinese global cities: Synthesizing globalization, migration and institutional factors in Beijing. *Cities*, 60, 156-165.

Liu T, Huang D, Tan X, & Kong F. (2020). Planning consistency and implementation in urbanizing China: Comparing urban and land use plans in suburban Beijing. *Land Use Policy*, 94, 104498.

Further reading

PEAK Urban programme. (2018). **Mega-city region and metropolitan area development.**

Project: Read more online - <https://www.peak-urban.org/project/mega-city-region-and-metropolitan-area-development>

Beijing Dispersal Projects: Chinese capital invests 4.4 bln USD to address 'big city diseases', https://news.cgtn.com/news/7763544e77454464776c6d636a4e6e62684a4856/share_p.html

Shi Q J, Liu T. (2019). Glimpsing China's future urbanization from the geography of a floating population. *Environment and Planning A: Economy and Space*. 51(4): 817-819.

Liu T, Shi Q. (2019). Acquiring a Beijing hukou: Who is eligible and who is successful?. *The China Quarterly*, 1-14.

Liu Z Y. (2020). Human capital and upgrading of industrial structure: An empirical study based on the countries along the "Belt and Road". *American Journal of Industrial and Business Management*, 10, 699-710. doi: [10.4236/ajibm.2020.104047](https://doi.org/10.4236/ajibm.2020.104047).

About us

The PEAK Urban programme aims to aid decision-making on urban futures by:

1. Generating new research grounded in the logic of urban complexity;
2. Fostering the next generation of leaders that draw on different perspectives and backgrounds to address the greatest urban challenges of the 21st century;
3. Growing the capacity of cities to understand and plan their own futures;

In PEAK Urban, cities are recognized as complex, evolving systems that are characterised by their propensity for innovation and change. Big data and mathematical models will be combined with insights from the social sciences and humanities to analyze three key arenas of metropolitan intervention: city morphologies (built forms and infrastructures) & resilience; city flux (mobility and dynamics) and technological change; as well as health and wellbeing.

Contact:

Guangzhong Cao
caogzh@pku.edu.cn

PEAK Urban is managed by the Centre on Migration, Policy and Society (COMPAS)

School of Anthropology and Museum Ethnography,
 University of Oxford,
 8 Banbury Road,
 Oxford, OX2 6QS

+44 (0) 1865 274706
 @PEAK_Urban
www.peak-urban.org

Our framework



The PEAK Urban programme uses a framework with four inter-related components to guide its work.

First, the sciences of **Prediction** are employed to understand how cities evolve using data from often unconventional sources.

Second, **Emergence** captures the essence of the outcome from the confluence of dynamics, peoples, interests, and tools that characterize cities, which lead to change.

Third, **Adoption** signals to the choices made by states, citizens and companies, given the specificities of their places, its resources and the interplay of urban dynamics resulting in changing local power and influence dynamics.

Finally, the **Knowledge** component accounts for the way in which knowledge is exchanged or shared and how it shapes the future of the city.

PEAK Urban is funded by UK Research and Innovation as part of the Global Challenges Research Fund.



PEAK Urban is a partnership between:

