Chapter 15

Future Directions for Research on Residential Segregation and Inequality in China

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Abstract This chapter summarises some of the key findings and themes of the book and considers their implications for future research on inequality and segregation in China. I highlight four priority areas. First, there is a need for more research on the dynamics of residential segregation. I argue that the real story of segregation is revealed in the factors and processes that drive long-term change. Second, I emphasise the need for more research on the spatial foundations of inequality—how inequality leads to the geographical separation of rich and poor and how this segregation mediates and reinforces almost every aspect of inequality. Third, I consider the relational and psychological impacts of inequality and the imperative for them to be included in the calculus of policy planning. Fourth, I consider the implications of the Causal Revolution in research methods and argue that they potentially offer the prospect of achieving a scientific approach to policy development and evaluation. I conclude with some reflections on the implications of our findings for future policy directions in China.

Keywords Social frontiers · Segregation · Inequality · Homophily horizons · Social networks · Residential sorting · Spatial persistence · China · Spatial opportunity structures

15.1 Introduction

Our goal in producing this edited volume has been to explore the shared and contrasting experiences of segregation and inequality in Europe and China, and to further the inter-continental dialogue between European and Chinese scholars. Our work is also highly relevant to current policy priorities in China and to many of the future social challenges likely to emerge over the coming decades.

In 2014 the Chinese government announced a new phase in the country's development, involving slower economic growth and a greater focus on improving quality

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329

of life (Han et al. 2016, p. 176). Given the enormous problems of pollution and overcrowding in many Chinese cities, this new policy agenda was a welcome development. But it also raised several important questions. What are the policy changes needed to enhance human welfare? Is improving societal wellbeing only a matter of reducing pollution, overcrowding and congestion? Or are there deeper social issues that need to be tackled if the government is to improve mental and physical wellbeing?

Income inequality, as measured by the Gini coefficient, for example, has rose markedly from around 31.0 before reforms began in 1978, to around 37 in 2000 (Kanbur and Zhang 2005). These are likely to be underestimates, however. Once unreported income is taken into account, Zhang and Zhao (2019)¹ reckon that the Gini coefficient had risen to around 56.0 in 2003 and to over 58.0 in 2015. In comparison, the Gini index for income inequality in the USA rose from around 40.0 in the 1960s to around 47.0 by the late 2000s.² The question raised by this enormous rise in income inequality in China, and the associated rise in segregation (see Chap. 10), is whether it has had a negative impact on the wellbeing and quality of life of its citizens.

Certainly, there is a significant body of evidence from Europe and the USA to support the view that inequality and socioeconomic segregation, the main themes of this book, have significant negative impacts on health and wellbeing (Pickett and Wilkinson 2015; Patel et al. 2018). There is also evidence that they adversely affect educational attainment, economic growth, crime, social cohesion and social mobility (Galster and Sharkey 2017; Graham 2018; Corak 2013; Dean et al. 2019; Boterman et al. 2019).

Such findings pose a dilemma for China's move towards a market-based economy, as inequality and segregation tend to go hand-in-hand with economic liberalisation (Chap. 3; Tammaru et al. 2015; van Ham et al. 2018). This is because a competitive labour market provides the greatest rewards for the most talented, and for those who are the most educated, entrepreneurial and geographically mobile. It also means that those who have fewer opportunities to acquire qualifications and develop skills, can become impoverished. The wealth accrued by those who succeed in a meritocratic system can confer advantages that are transferred down generations. It can be used for example, to improve the life chances of their own children and erect barriers to the social mobility of their poorer peers. The better education, and higher status social networks enjoyed by children of the wealthy provide employment, business, and marriage opportunities that reinforce their social position. Excluded from these networks, resources and opportunities, the children of poorer households, on the other hand, are more likely to become locked into a life of precarious low-wage, low-skill employment. This pattern of disadvantage is then passed on to their own children.

¹ Official estimates of the Gini coefficient from the Chinese National Bureau of Statistics (NBS) show a continued rise in income inequality to around 49.0 in 2009 (Zhang and Zhao 2019). Although official estimates show the Gini coefficient falling in China to around 46.0 in 2015, Zhang and Zhao (2019) have shown that this decline is largely due to unreported income in the NBS calculations.

² See <https://www.census.gov/library/visualizations/2015/demo/gini-index-of-money-income-and-equivalence-adjusted-income--1967.html>.

Income inequality also tends to affect social geography. It becomes an additional mechanism to reinforce and reproduce these inequalities, leading to the spatial separation between rich and poor. As income inequality increases, those at the top of the income scale will have more purchasing power to facilitate residence in the most desirable neighbourhoods. As income inequality widens, affluent homeowners bid up the prices of the most desirable areas, widening the house price differentials between neighbourhoods that have low crime, negligible pollution, excellent access to employment, amenities and education, and those that do not. In addition, the wealthy are more likely to be able to own homes in such desirable neighbourhoods, thereby reaping substantial capital gains as properties appreciate (Galster and Wessell, 2019). Thus, once the power of the market to sort people geographically according to their income and wealth is unleashed, low-income households will be increasingly concentrated in the least desirable neighbourhoods. This in turn exacerbates inequalities in opportunities and life trajectories for adults and children alike. Over time, segregation and inequality become entwined, creating vicious circles of spiralling inequality and social division (see Chap. 3 in this volume, Sampson 2012; Sharkey 2013; van Ham et al. 2018; Galster 2019: ch. 7). It then becomes increasingly difficult to tackle one without addressing the other. This makes the design of effective policy programmes ever more challenging. This has certainly been the experience of Western Europe and North America (see Chap. 3).

We have sought in this volume to draw lessons from the Western experience of urban segregation and inequality. China's socioeconomic and political development over the past century has been radically different to that of the US and Western Europe, marked initially by far-reaching communist restructuring of socioeconomic and political life. There then followed a shift towards a unique form of state capitalism since the post-1978 reforms. Yet the country now arrives at a similar position to Western nations, albeit with some uniquely Chinese characteristics (see Chaps. 4–9). China once flattened the income distribution and eradicated segregation in cities through the creation of worker and residential units (Chap. 4), and a collective approach to resource allocation. It now faces income inequality on a similar scale to Western neo-liberal economies with growing evidence of residential and workplace segregation (Chaps. 4, 10, 11, 12, and 14; Sako 2020 Ch. 24).

In the remainder of this chapter, I reflect on these issues and consider the most fruitful avenues for future research. I identify four under-researched aspects of inequality and segregation in the Chinese context that are particularly important for policy development both now and in the future. The first of these is the dynamic nature of segregation and its causal processes. Most of the research on segregation in China is based on a static approach, a snapshot of how spatially separated population groups are at a particular point in time. I argue in Sect. 15.2 that an understanding of the dynamic patterns in the factors leading to segregation is necessary if we are to tackle it. The second area I recommend as an avenue for future research is the spatial dimension of inequality. In Sect. 15.3, I set out the key issues and concepts that come under this theme which we believe are vital for understanding the true challenges that lie ahead for redesigning social policy in China. The third avenue for future research, discussed in Sect. 15.4, relates to the impacts of inequality and segregation and the

need to develop rigorous evidence, based on their impacts in a Chinese context. I argue that the absence of robust quantitative evidence is a major omission when it comes to improving the quality of life of Chinese citizens. The fourth suggested area of research for prioritisation is the scientific evaluation of policy. I argue in Sect. 15.5 that for policies to be effective, there must be a rational and efficient mechanism for evaluating them. We suggest that this can be facilitated by drawing on ‘causal inference’, a relatively recent development in statistical methods that can shed light on the impact of policy interventions.

Much of the discussion in this chapter, and across the book as a whole, draws on lessons from the past, and learning from the experiences of Europe and the USA. We are mindful, however, that by doing so we risk re-fighting previous battles, rather than those that lie ahead. To avoid falling into this trap, I offer some final thoughts in Sect. 15.5 that include some reflections on issues that could dominate the direction of segregation and inequality in the decades to come.

15.2 Dynamics of Segregation and Its Causal Processes

We noted in the Introduction that much of the research on segregation in China relies on static analysis. Most of the Chinese segregation research reviewed in Chap. 4, for example, was based on cross sectional data, estimating measures that provide a snapshot of various dimensions of segregation—typically evenness using the index of dissimilarity³ (e.g. Hannum and Xie 1998; Hannum and Wang 2006; Li and Wu 2008). However, such measures do not shed light on the dynamics of the segregation process, how segregation will emerge in future or the propensity of particular neighbourhoods to become increasingly segregated. The dynamic nature of segregation is particularly relevant to China, as the country is in the process of rapid urbanisation and urban transformation. Market-oriented reforms have resulted in enormous changes in the urban residential landscape and significant socio-spatial differentiation. Static approaches cannot capture the changing nature of inequalities and segregation. Our contention is that to understand segregation, one must understand the underlying processes that generate it, which in turn means we need to quantify the nature of the dynamic process. What this means in practice will hopefully become apparent as we consider some of the core ideas below, mainly drawn from Western experience. We discuss their relevance to China which has undergone a radical transition from a centrally-planned economy to a market one.

³ For more information on the Index of Dissimilarity, its applications, limitations and statistical inference, see Piekut (Chap. 2 in this volume), Massey and Denton (1988), Massey et al. (1996), and Lee et al. (2015).

15.2.1 Market Sorting, Homophily Horizons and Budget Constraints

One of the major advances in the housing and environmental economics literatures over the past twenty years has been the development of ‘equilibrium sorting models’ (see Chap. 12 of this volume for one of the first examples of an equilibrium sorting model applied to Chinese data; see also review by Kuminoff et al. 2013). Equilibrium sorting models (ESMs) seek to capture the way markets sort people into particular neighbourhoods, depending on their preferences for various amenities, proximity to work, and their preference for living in neighbourhoods with a particular ethnic or social composition (Bayer et al. 2003; Bayer and McMillan 2005; Bayer et al. 2016). These models have their roots in the seminal work on household location choice and urban social structures by Alonso (1964), Mills (1967), Muth (1969), and Schelling (1969, 1971).

Schelling’s (1971) contribution was to illustrate the far-reaching impact of even modest levels of ‘homophily’—the tendency to be drawn to people with similar characteristics to our own (see review by McPherson et al. 2001)—on overall levels of segregation. Using a computer simulation model based on an artificial grid-square city, where each cell of the grid-square represents a residential household location, he was able to simulate the long run dynamics of urban population patterns. In this model, households are assumed to relocate in the next round of moves if they are in the minority among their immediate neighbours with respect to some essential feature such as ethnicity. Immediate neighbours are represented by the 8 grid squares surrounding the residence in question. Starting off with a random distribution of ethnic groups (e.g. Blacks and Whites) across the city, Schelling showed how, over time, this behavioural assumption resulted in almost complete segregation. The outcome of extreme segregation is surprising because none of the households in the model desired it; they simply did not want to be in the minority among their immediate neighbours.

While the Schelling model is very simple—there are no house prices or income constraints, for example, and all neighbourhoods are homogenous in all respects other than their ethnic identity—it illustrates very powerfully how seemingly innocuous levels of homophily at the micro level can have far-reaching and unintended macro consequences. More recently, research has shown that some of the apparently incidental aspects of the Schelling model have major implications for the long run trajectory of residential segregation. Bakens and Pryce (2019), for example, have highlighted the importance of the ‘homophily horizon’—the number of concentric layers of neighbours around a person’s home in which households do not want to be in the minority.

In the original model, households’ expression of homophily is limited to the single layer of grid cells surrounding their home. In reality, more distant homophily horizons may affect household location choice—that is the ethnic composition of multiple concentric layers of neighbours. Crucially, Bakens and Pryce (2019) find that increasing the homophily horizon by just one layer of concentric cells will

dramatically increase the rate at which the city converges towards complete segregation. For example, if residents seek ethnic or socioeconomic homogeneity not only among their immediate neighbours but also among their neighbours' neighbours. The authors also provide an example using data from Glasgow, Scotland, of how the homophily horizon could be measured empirically.

The estimation of homophily horizons could be a useful and important measure for policy makers seeking to understand and influence the drivers of long run segregation trajectories in Chinese cities. This is because market-oriented housing reforms have resulted in a vibrant urban real estate market. People increasingly have options to purchase commercial properties according to their preference and budget. Policy-makers could, for example, prioritise interventions that improve inter-group relations in areas that are found to have distant homophily horizons and hence are more at risk of rapidly descending into segregation. Due to its relative ethnic homogeneity—over 90% of the population are Han Chinese – China does not have ethnic and racial divisions on the scale of North American and European countries. Nevertheless, there is evidence of ethnic segregation (Tan et al. 2019; Morales 2019), ethnic tensions (Smith 2002; Roberts 2018; Irgengioro 2018) and ethnic inequality (Wang 2019; Morales 2019; Hannum and Xie 1998; Zang 2012) in China. As discussed in Chaps. 4 and 10, there is also evidence of segregation emerging along socio-economic lines, and with respect to *hukou* household residential status, and ethnicity. Ongoing research by Owen et al. (2020) as part of the ESRC Understanding Inequalities project also finds significant levels of residential segregation among migrant workers by province of origin.

Homophily is, of course, only one possible type of preference that households might exhibit concerning the socioeconomic composition of their neighbours. Some may prefer neighbours who are better-off than themselves as they may feel it reflects favourably on their own status. Others may prefer to have some worse-off neighbours to whom they can feel relatively superior. Recent research on mobility patterns in the Netherlands by Musterd et al. (2016) and in Oslo, Norway by Galster and Magnusson Turner (2017, 2019) demonstrates the importance of 'status discrepancy'—the difference between a household's income and the neighbourhood's median income—in the decisions to both move out of a neighbourhood and choose another. For example, middle- and high-income Oslo households avoid neighbourhoods with median incomes higher than their own. People in higher-income households are more attracted to places that may demonstrate the superiority of their incomes compared to the neighbourhood median. These studies also confirm the importance of homophily but with the vital nuance of threshold concentrations. Middle- and high-income Oslo households only demonstrate an aversion to a neighbourhood when the share of low-status households exceeds the average of the region (Galster and Magnusson Turner 2019). These findings suggest that simple segregation models based on universal homophily preferences across all income groups are grossly oversimplified and may produce erroneous conclusions. They also imply that although the consideration of residential income segregation related to the status of neighbours is a powerful driver, public policies aimed at neighbourhood diversification nevertheless have potential efficacy due to threshold relationships.

15.2.2 *Equilibrium Sorting Models*

The relative importance of these status preferences alongside factors such as income constraints, environmental characteristics and access to amenities remain largely unknown in a Chinese context. This is where equilibrium sorting models come into their own as they can, in principle, disentangle the influence of different drivers of household location choice. They do this by combining data on a large number of house moves with information on the economic and socio-demographics of each household. They can be used to compare the value particular groups of households place on locating near other population groups (Caetano and Maheshri 2019) compared with the value they place on the proximity of physical attributes, low crime, clean air, etc. (see discussion of revealed preference methods in Chap. 12, and Bayer et al. 2016).

This kind of research could potentially help policy makers better understand the drivers behind emerging segregation in China. To what extent, for example, is the segregation of *hukou* residents in Chinese cities (Chaps. 4 and 10) based on preference for neighbourhood homogeneity (e.g. migrant status homophily), and to what extent does it derive from financial constraints on location choice? And to what extent does prejudice among city-born residents against rural migrants drive housing decisions compared with the impact of other factors such as institutional constraints, choice of school catchment, housing quality, and proximity to family and friends?

The data requirements of full equilibrium sorting models are, unfortunately, formidable, typically requiring detailed longitudinal data following individuals and households over long periods of time and fine-grained location data. Nevertheless, Liang et al. (Chap. 12) illustrate how this can be done using existing Chinese data. More extensive and powerful models could be developed through linking existing Chinese Census data longitudinally in the same way that subsamples of the UK censuses have been linked. Given that each Chinese citizen has a unique personal id number, this might be feasible. Less data-demanding methods can, however, yield insightful results on segregation dynamics. Easton and Pryce (2019), for example, using house transactions data find that White British homeowners in Glasgow are more likely to move out the neighbourhood if Pakistani homeowners move within 50 m (see Chap. 2 and the wider US-European literature on ‘White Flight’: for example Galster 1990; Bråmă 2006; Card et al. 2008; Boustan 2010; Kaufmann and Harris 2015; Andersen 2017).

15.2.3 *Spatial Persistence*

We argue in this section that early signs of residential sorting between different population groups since the onset of China’s reforms could have a disproportionately important impact on long-term residential segregation patterns. Given that segregation in urban China was almost eliminated in the communist era, it is possible that Chinese cities are still in the early stages of the segregation process. Even so, these

emerging patterns may prove to be surprisingly prescient as indicators of future segregation trends due to the phenomenon of ‘spatial persistence’, which in turn may lead to the ‘power persistence’ (Bian and Logan 1996)—the entrenchment of inequalities and spatial stratification.⁴

‘Spatial persistence’ is *the tendency for early patterns of segregation to have a determining effect on future patterns*, leading to a form of path dependency in the geographical pattern of particular ethnic or social groups. Olnier et al. (2020) argue that standard approaches to quantifying segregation are intrinsically static, which means they are at odds with the theoretical literature on segregation dynamics. They explore the role of ‘polya processes’ to conceptualise and measure these dynamic processes. To illustrate, imagine an urn containing an equal number of blue and red balls. Polya selection would involve randomly drawing a ball from the urn, and then replacing it with the addition of another of the same colour. So, if your initial selection turned out to be red, you would return the selected red ball and add another red to the urn. In terms of the impact on future random draws, your initial selection and replacement would increase the number of red balls relative to blue ones and therefore increase the likelihood of choosing a red ball on your next draw but only marginally so. If you chose a blue ball on your next selection, you would replace it with an additional blue ball, and the odds would even up again. But as you keep on choosing balls from the urn and replacing them with others of the same colour, the chances are that at some point you will have a sufficient run of draws of the same colour to cause the replacements to tip the chances of future selection markedly towards that colour. Path dependency starts to emerge so that future selections will become more and more likely to be of the same colour and the contents of the urn become increasingly dominated by balls of that colour.

Olnier et al. (2020) suggest that this captures the process by which segregated neighbourhoods emerge. In the first rounds of migration, migrant location decisions are largely determined by financial constraints, proximity to employment and other practical considerations. This is because, even though migrants may want to locate in neighbourhoods with high proportions of their own group, no such neighbourhoods exist in the initial stages of migration. Over time, however, clusters of migrant households will emerge in particular cities, and as these clusters grow, they will exert increasing gravitational pull on future migrants seeking to locate near their own group. Using Scottish census data, the authors find very strong evidence of polya processes at work, with initial patterns of migrant destinations having a long-term impact on the geography of segregation.⁵

This kind of analysis could be used to study the emergence of segregation in China. Such an approach would reveal the extent to which the segregation dynamics of rural

⁴ The persistence of power imbalances and inequalities from the old regime to the new one is exemplified in the redevelopment of urban villages where more affluent families were able to manipulate the redevelopment processes exacerbating pre-existing inequalities (see Chap. 6).

⁵ For rather different reasons, we may also find path dependencies in terms of neighbourhood poverty and social deprivation. Zwiers et al. (2017), for example, find that ‘the original quality of neighbourhoods and dwellings seems to be an important predictor for future neighbourhood trajectories, indicating a high level of path-dependency’ (p. 363).

migrants are characterised by spatial persistence. It would quantify the extent to which the initial patterns of migrant location during the years following the opening-up of China determine the long run socio-demographic landscapes of its cities. One of the important implications of the existence of polya processes in segregation dynamics is that policy makers have much greater chances of shaping segregation patterns early in the process. In other words, there is a tipping point beyond which patterns of segregation become very difficult to remedy (Card et al. 2008).

However, in the Chinese context, these findings may need to be qualified somewhat due to the greater proclivity for radical intervention. For example, many urban villages have been subject to extensive redevelopment by local governments (see Chap. 6). This can lead to significant welfare loss for millions of migrant residents who are inadequately compensated during the redevelopment process and are forced to leave their villages and find alternative accommodation, usually further from amenities. Nevertheless, China's propensity for comprehensive intervention could, if more sensitively and strategically enacted, be used for good, particularly with respect to issues like entrenched segregation and geographical inequality.

Although much of the research on the dynamics of segregation has concentrated on residential segregation, Piekut (Chap. 2) notes how the 'increasing availability of geocoded data at the individual level, coupled with new, rich sources of (big) data, could bring further methodological and conceptual innovations for the joint study of place- and people-based segregation'. Indeed, there has been a proliferation of research exploring segregation across a variety of domains and dimensions in European research (e.g. see van Gent et al. 2019, and Chaps. 9–20 in Part II of Musterd 2020). Given the extent to which people's movements in China are routinely monitored by the government, there may be considerable research potential in the data collected to explore how different domains of segregation—residential, workplace, leisure, education, online—interact and change over time.

15.2.4 Institutional and Political Factors

The process of residential sorting is not, of course, only about mover preferences with respect to the composition of neighbours. Other factors, such as institutional context, public policy and inequality in household finances, are also key drivers. As a result, extensive residential segregation can occur even in the absence of homophily. I shall discuss the financial drivers of segregation in some detail in Sect. 15.3 as it has significant ramifications for how inequality is experienced, compounded and reproduced. First, though, it is worth reflecting on the institutional and political drivers of inequality which have particular salience in the Chinese context.

China's opening-up did not lead to the uniform emergence of liberalised markets and the rolling back of the state as liberals had hoped. Instead, the transition was idiosyncratic, complex, characterised by significant state control, with many lingering inequalities and institutional biases from the old communist system. The upheavals and peculiarities of The Great Leap Forward and The Cultural Revolution

meant that the Chinese socialist system was highly stratified. Children born to cadre parents, for example, enjoyed a range of special privileges and much more favourable life chances than those with working class parents or those born to the ‘*distrusted class*’ (Zhou et al. 1996, p. 768)—those with ‘parents or grandparents who were small business owners (*yezliu*)[...] middle peasants (*zhongnong*), ... landlords or large business owners (*zibenjia*)’. There were also inequalities among work-units depending on their political status. Those producing ‘strategic products for the state (e.g. large steel companies) or ... with higher administrative ranking (e.g. provincial level state-owned enterprises) had more bargaining powers when they negotiated with supervisory government agents for resources and investments’ (Chen and Chen, Chap. 4, p.60). Inequalities in the old system translated into new ones to some extent due to ‘power persistence’ (Logan et al. 2009). Those who enjoyed privileges under socialism because of their family or work-unit status were better placed to take advantage of the opportunities afforded by liberalisation. Persistence in socio-economic and political status associated with *hukou* (locals vs others, and insiders vs outsiders) led to a disadvantaged position for migrants in the urban labour and housing markets resulting in spatial segregation between migrants and non-migrants. Further inequalities emerged because of the reforms themselves. Wu (2004, p.401) describes the ‘poverty of transition’: new forms of urban poverty arising from the ‘disjuncture between the old and new institutions’.

Perhaps the most prominent example of institutionally-driven inequality in China is the *hukou* system of household registration (see, for example, Chaps. 4, 5, 6, 7, 8, 9, 11, 12, 14). It has origins in the household registration systems of ancient China, but was also influenced by the Soviet passbook system and other twentieth century registration prototypes (Cheng and Selden 1994). The socialist implementation of *hukou* in the 1950s,

‘decisively shaped China’s collectivist socialism by creating a spatial hierarchy of urban places and prioritizing the city over the countryside; by controlling population movement up and down the spatially defined status hierarchy, preventing population flow to the largest cities, enforcing the permanent exile of urban residents to the countryside, and binding people to the village or city of their birth; and by transferring the locus of decision-making with respect to population mobility and work from the transformed household to the work unit or *danwei*, specifically, in the countryside, to the lowest unit of the collective’. (Cheng and Selden 1994, p. 645).

Even now, the *hukou* system remains one of the most potent drivers of both inequality (Chaps. 7, 8) and segregation (Chaps. 4 and 10). By deepening our understanding of how the *hukou* system has driven the dynamics of segregation using the methods and models described above, we could potentially help policy makers become better equipped to address its long-term effects. They could explore ways to reform the system and monitor the effectiveness of different policy interventions to redress historical injustices.

One of the most marked injustices described in this volume has been the inequalities inherent in the redevelopment schemes described in Chap. 6 in relation to urban villages. ‘Families with larger residential plots and larger houses had more bargaining power and would receive both more compensation and relocation housing floor space.

Large families with a smaller residential plot and smaller traditional houses would receive less compensation and smaller flats' (Chap. 6, p.118). The impacts of these initial inequalities have the potential to cascade down generations.

Of course, the idea that institutional structures can reinforce inequalities is by no means unique to China. Sharkey (2013, 2020) has demonstrated how, even in longstanding neo-liberal countries such as the USA, a variety of legal, planning and political measures have been used to reinforce neighbourhood- and school-level segregation (see also Yinger 1999; Freund 2007; DeLuca et al. 2013). Similar issues have even arisen in the social welfare states of Scandinavia (Andersen et al. 2016). However, there are particular challenges for post-socialist countries seeking to reform institutions to facilitate the transition to market allocation (see Chap. 13). Wu et al. (2010), for example, emphasise the structural origins of neighbourhood effects rooted in public housing estates created in the socialist era that have created long-term path dependencies in neighbourhood poverty in China.

15.3 Spatial Foundations of Inequality

In the Introduction to this chapter we described the tendency for inequality in income and wealth to drive the geographic separation of households according to their level of affluence (see Chap. 3, Musterd et al. 2017, and Tammaru et al. 2015) for empirical evidence from European cities). To illustrate this point, consider a hypothetical world where every household has the same income, wealth, and preferences, and all houses have identical physical characteristics. Houses in the most desirable locations would be in greater demand, so their prices would be higher than those in the least desirable locations. But this inter-neighbourhood price disparity would be limited by what consumers were able and willing to pay for the differences in neighbourhood desirability. The outcome is that housing in the best neighbourhood would be affordable to any household who chose to live there. Moreover, all households would be equally well-off regardless of where they ultimately lived because differences in housing costs would exactly offset differences in the desirability of the location. Next suppose that this hypothetical world is transformed by allowing income and wealth to vary across households. As these individual economic inequalities increase, so does the potential for house prices to diverge more severely across neighbourhoods. The larger the inequality in household economic wherewithal, the greater the relative capacity of the most affluent to bid up house prices in the most desirable neighbourhoods, assuming a positive income elasticity of demand for the amenities in such places. In an unequal society, the outcome is that house prices in the best neighbourhoods can rise well beyond the level that poorer households can afford, so economic segregation follows.

The purpose of this thought experiment is to illustrate how inequalities in income and wealth drive the geographical separation of affluence and poverty even if households have no preference for the socioeconomic status of their neighbours. If households develop a degree of homophily with respect to affluence as income levels diverge, then these sorting effects will be amplified.

Our illustration is especially germane to former socialist countries where the gradual removal of government controls on wages and property prices are likely to awaken the leviathan of market sorting. China is a powerful example of this, having transformed from a relatively egalitarian communist country where socioeconomic segregation was almost non-existent (see Chap. 4) into one where market forces will, if unchecked, herd the poorest households into the most polluted neighbourhoods and homes with the worst access to schooling, employment, and other public and environmental amenities. At the same time it will empower affluent households to occupy the most desirable locations. Chen and Chen, in Chap. 4, describes how privatisation of land and real estate market sorting processes has allowed this inequality to be increasingly reflected in the geographical distribution of income groups.

Why, then, is segregation based on income, wealth and social position, a problem? After all, access to desirable neighbourhoods is part of the reward for talent and hard work that motivates workers to maximise their talents and opportunities. Various authors (e.g. Cheshire 2009; Merry 2013) have argued that segregation brings many benefits, not least the creation of ‘specialised neighbourhoods’ that potentially enhance the quality of life of rich and poor alike. The problem with this view is that segregation by income generates cumulative advantages and disadvantages that embed and reinforce inequalities over the course of individual lives and across generations. As in the Schelling model, left to its own devices, market forces can lead to levels of segregation beyond those originally desired by households, and beyond what is socially just (Galster 2019: ch. 9).

A key source of evidence on these issues is the ‘neighbourhood effects’ literature (Sampson et al. 2002; van Ham et al. 2012; Galster and Sharkey 2017) which explores the extent to which place matters for life outcomes and human flourishing. Where we grow up affects our life outcomes. It affects our chances of accessing the skills, knowledge and opportunities to progress in the labour market. It also affects our exposure to physical and psychological risks that potentially undermine wellbeing and our capacity to maximise our potential (Galster and Sharkey 2017; Galster 2019: ch. 8). North American and European research into the impact of place on life outcomes has burgeoned into a major strand of social science literature spanning geography, urban studies, economics, sociology and social psychology. It remains largely undeveloped in the Chinese context. Yet, an understanding of the long-term impact of geographical concentrations of poverty and affluence is essential if policy makers are to achieve their goal to improve wellbeing and life expectancy. Although the literature is much less developed in China, there is evidence that neighbourhood effects operate in similar ways to other parts of the world. For example, Wu et al. (2010, p. 134) find that ‘living in impoverished neighbourhoods increases the probability of becoming poor’ due in part to the ‘path dependency of institutionally derived inequalities’. As China’s cities become increasingly subject to the same forces that

have driven neighbourhood effects in European and American contexts, there will be a growing imperative to monitor and understand these effects in the sino-capitalist context and find effective ways of mitigating their long run consequences.

Development of the evidence base will require significant public investment in data and research capacity because of the dynamic and interconnected ways in which neighbourhoods affect life outcomes. To illustrate the scale and variety of processes at work, we now consider some of the key ways in which the geographical concentration of poverty could be a major obstacle to China achieving its new goal of improving societal welfare.⁶

15.3.1 Social Relationships and Associations

First, there are effects arising from social relationships within the neighbourhood, notably the influence of peers and role models. These relationships affect behaviour (such as the likelihood of engaging in criminal activities), and shape our aspirations, and values. Research has found that the likelihood of a person offending is strongly affected by the level of crime and the number of offenders living nearby (Livingstone et al. 2014, Santiago et al. 2014, Billings et al. 2016; Rotger and Galster 2019). Santiago et al. (2014), for example, found that teenage childbearing and fathering are significantly more likely in neighbourhoods with high crime and low occupational prestige.⁷ Similarly, Popkin et al. (2010) find that girls whose parents who move to low-poverty neighbourhoods are less likely to feel pressurised to engage in early sexual activity. The behaviour and reputation of residents can impact on other residents in the neighbourhood even without personal connection or behavioural influence. Stigmatisation of residents, because of perceived associations, irrespective of their personal attitudes and behaviours, can impose life-long limitations on housing and employment prospects (Bourdieu 1999, Wacquant 2008; Keene and Pakilla 2014; Warr 2006).

15.3.2 Risks

An additional layer of disadvantage arises from the concentration of environmental and safety risks in poor neighbourhoods. Historically, waste disposal sites and polluting industrial activities were often located in the poorest areas as the result of those communities having less lobbying power and political influence (Bryant and Mohai 1992). However, even when highly polluting activities are located in affluent or middle-income areas, proximity to these facilities will probably cause

⁶ For a theoretical and empirical review of the various mechanisms through which neighborhoods exert their influence, see Galster (2012a).

⁷ The proportion of residents working in professional and high-skill occupations.

house prices to fall as wealthy homeowners move to less risky locations. These locations may nevertheless compare favourably with the alternative housing options within their price range for low-income households, leading to disadvantaged groups ‘coming to the nuisance’ (Depro et al. 2015).

Although the relationship between air pollution and neighbourhood deprivation can be complex (Bailey et al. 2018), overall the environmental justice literature ‘has found consistent evidence that, within most metropolitan areas, different forms of environmental hazards are more common in low-income communities’ (Galster and Sharkey 2017, p. 5). There is strong evidence also of the negative impacts of contaminants and air pollution on cognitive development, mental health, physical health, and life expectancy. Exposure to other risks such as violent crime also tends to be higher in low-income areas. Massey (2004) provides a comprehensive synthesis of these effects, mapping out the causal pathways from the social environment to health and cognitive impacts. Income inequality and racial segregation interact to ‘produce concentrated poverty and its correlate, spatially concentrated violence’ (Massey 2004), leading to a higher ‘allostatic load’—accelerated biological ageing and negative health/cognitive outcomes as a result of cumulative psychological stress. Subsequent empirical findings, mainly based in the US, generally confirm this view. Sharkey (2010), for example, finds that a homicide in the neighbourhood has an acute deleterious effect on children’s cognitive performance. Research by Burdick-Will (2016, p. 133) reveals that ‘children from more violent neighbourhoods fall farther behind their peers from safer neighbourhoods as they progress through school’. Boynton-Jarrett et al. (2008) find that exposure to violence in childhood is associated with lower health outcomes in adulthood.

Research on these effects in the Chinese context remains relatively undeveloped and is an important avenue for future investigation. Lei (2018) draws on China Family Panel Studies to find a statistical association between the socioeconomic status of the neighbourhood and children’s verbal and mathematical test scores. However, the study does not draw on longitudinal analysis to establish causation⁸ and does not explore the impacts of specific effects such as violent crime or pollution. There is a well-established Chinese literature on the incidence and effects of domestic violence towards children (Liao et al. 2011) but not of exposure to neighbourhood violence. Again, many of these studies rely on cross sectional data which makes it impossible to identify the long-term impacts over the course of an individual’s life, or infer causal relationships. Research on the impacts of pollution is much more developed. For example, Zhang et al. (2018) link data from a nationally representative longitudinal survey with air quality data in China to estimate the long-term effects of exposure to air pollution on cognitive performance. They find significant impacts, particularly for men and the less educated. To develop a more robust evidence base on relational neighbourhood effects will require data sets that can facilitate detailed longitudinal analysis and causal inference (see below). This could be achieved by creating large

⁸ For a fuller discussion of the challenges related to quantifying the independent causal impacts of neighbourhoods and techniques for meeting these challenges, see Galster and Sharkey (2017) and Graham (2018).

panel surveys, but linkage of existing data is probably more cost effective. Linked administrative datasets in the Nordic countries, the Netherlands and more recently New Zealand provide exemplars of what can be achieved. However, the UK approach that involves linking Census data with administrative data might be more feasible in the short run and provide a useful interim data infrastructure that exploits existing datasets.

15.3.3 Externally Determined Resources and Mechanisms

The third source of neighbourhood effects are those arising from external factors and mechanisms (Galster 2012a). Low-income communities often have access to fewer resources and are less well-served by public services even though their needs are greater. An especially troubling example of this is the Inverse Care Law which says that the ‘availability of good medical care tends to vary inversely with the need for it in the population served’ (Hart 1971, p. 405). This law, Hart proffered, ‘operates more completely where medical care is most exposed to market forces’ (ibid). For similar reasons, access to transport, schooling and employment opportunities will also tend to be significantly lower in poorer neighbourhoods (Sampson et al. 2002). While there is a sizeable and growing literature on these inequalities in China (e.g. Chap. 8, 11, 14; Liu et al. 2014; Chen and Yeh 2019), more research is needed on their causal impacts over the life-course,⁹ and how they interact to create cumulative disadvantage for particular individuals and groups.

To address these external sources of inequality, Chinese policy makers will need to disentangle the multi-layered political, economic and institutional factors that drive them. The desirability of particular neighbourhoods and the consequent rise in rents and house prices, is often determined by factors on a wider geographical scale. Factors such as economic dynamism, transport facilities and environmental risks can affect clusters of neighbourhoods and even entire municipalities. This means that poor neighbourhoods are often concentrated in local authority areas with less potential for economic and housing development. Consequently, they have limited ability to raise tax revenue through leasing land to developers. This, in turn, means that these local authorities have the least fiscal capacity to fund the health, education, transport, police, environmental monitoring and enforcement services that are desperately needed by their disproportionately disadvantaged residents (Galster 2012b).

There also remain pronounced urban-rural (Chen et al. 2016; Lu and Chen 2006; Cao 2010; Xu and Xie 2015), and regional (Chap. 8) dimensions to inequality in health, housing, education and employment. Hannum and Wang (2006, p. 253) highlight the extent of inequalities in education between Chinese regions and how these

⁹ I.e. over the course of a person’s life. The ‘life course approach’ was developed in the 1960s to look at the effects on different life stages, particularly how events in the formative years affect the trajectory of a person’s life thereafter. It is an interdisciplinary approach that seeks to understand the full range of factors that affect life outcomes.

have been rising since the 1960s, attesting to the ‘enduring significance of geography as an educational stratifier’. Some of these inequalities are reinforced by limited fiscal autonomy at the local level. There is a complex system of tax and revenue sharing and transfers through the various tiers of government in China that leaves local governments with ‘hardly any discretionary power to modify taxation’ and ‘fiscal disparities within provinces remain high and are much greater than between regions in OECD countries’ (Wang and Herd 2013, p. 1).

The multiscale drivers of inequalities in services, amenities and resources are mirrored in the multiscale drivers of life outcomes—educational achievement, job prospects, housing careers, health and wellbeing, etc. If governments overlook the multiscale nature of neighbourhood effects¹⁰ they may severely underestimate the true impacts of concentrated poverty on wellbeing and life outcomes. The risk of underestimating these impacts is increased by the complex and multi-faceted factors involved and by multiple spatial scales such as neighbourhood, jurisdiction and region (Sampson 2012, 2019). Many empirical and theoretical studies of neighbourhood effects fail to capture the profoundly interconnected nature of geographic context, and we are aware of no attempts to explore this in the Chinese context. Most studies focus on a particular geographic scale (such as the local neighbourhood), a single outcome (such as health, educational or employment) and/or a particular strand and direction of causality.

Galster and Sharkey’s (2017) *Spatial Opportunity Structures* model provides a comprehensive theoretical framework for thinking about these effects, one that highlights the inadequacy of partial approaches. They argue that the geographic context of our childhood affects not only our access to good schooling and safe environs, but also shapes our attitudes and motivations. It affects our ability to make important life decisions, how we evaluate options and determines the information available to us to make choices. It affects our perception of ourselves, of our status in the world. It affects our parents and their attitudes, behaviours and choices, which in turn shape our own. It affects the cultural, financial, and educational resources available to us as we grow up. It affects our social networks, our role models and our experience of peer pressure. The overall impact is amplified through feedback effects as each of these factors interact with each other, often in mutually-reinforcing and path-dependent ways.

So, geography matters. It affects life outcomes by structuring the opportunities available to us both directly and indirectly and does so in ways that interact across spatial scales. Many of China’s neighbourhoods have only been formed in the past 20 years and many more are in the process of being formed or in a state of transition. Amenities and public services to support these communities are still in development. China still has the opportunity to prevent the geographical entrenchment of inequality. The *Spatial Opportunity Structure* model offers a powerful framework for

¹⁰ ‘Neighbourhood effects’ is the name given to broad range of impacts on life outcomes of the various features of the neighbourhood environment (housing, transport, exposure to crime and pollution, access to employment, amenities, health care etc.). See van Ham et al. (2012), Galster and Sharkey (2017) and Graham (2018) for recent reviews.

various layers of the Chinese government to develop joined-up policy interventions, infrastructure and service provision in ways that are cognisant of the interconnected geographical drivers of inequality.

15.3.4 Housing Wealth Inequality

We have argued that growing income inequality can drive up housing prices in the most desirable locations, leading to the concentration of highly-educated affluent households in the best neighbourhoods. This, in turn, can make prosperous neighbourhoods all the more attractive as buyers seek to buy into the social networks and positive peer group opportunities that such neighbourhoods ostensibly confer. In principle, this sorting process can further drive up house prices in the most desirable locations creating significant gains in housing wealth for those who can afford to buy into up-and-coming neighbourhoods. Housing wealth accumulation can, in turn, reinforce intergenerational inequalities as affluent homeowners use their housing wealth to assist with house purchases of their children and grandchildren (Galster and Wessel 2019) and contribute towards school and university fees.¹¹

In principle, we would expect rates of housing wealth accumulation to equilibrate across neighbourhoods (Levin and Pryce 2011). The initial growth in housing wealth inequality during a period of economic reform and market liberalisation can, however, confer lasting advantage to affluent households and their descendants. This creates further path dependencies in poverty and affluence (Toft and Ljunggren 2016; Toft 2018; Galster and Wessel 2019). It is also possible for significant gulfs to emerge in housing wealth accumulation over prolonged periods between rural and urban areas (Wang et al. 2020). Inequalities can also emerge at the regional level due, for example, to the unequal impacts of austerity measures. Particular sectors and regions of the economy may also experience structural growth while others endure structural decline (Owen et al. 2020).

15.4 The Relational Impacts of Segregation and Inequality

So far, our discussion of the processes that drive socioeconomic segregation and the consequences of concentrated poverty has focussed on four key aspects: (i) socialisation effects; (ii) exposure to environmental and social risks such as pollution and violent crime; (iii) poor access to resources, public services and various amenities; and (iv) discrepancies in housing wealth accumulation.

In addition to these important factors, another category of influence arises from the direct effect that inequality has on our sense of worth and self-efficacy. We label these

¹¹ Note the growing for affluent parents to invest in private education for their children to prepare them for college entrance exams (Shi et al. 2020).

‘relational impacts’, which, broadly speaking, include the consequences of inequality and socioeconomic segregation for human relations and wellbeing. Our concern here is with the psychological, and social impacts of inequality and segregation and the need for a policy response that is fully cognisant of these effects. We consider the psychological impacts first, followed by the consequences for social cohesion and social mobility.

15.4.1 Status Anxiety and the Shame of Poverty

Economics Nobel Laureate Amartya Sen (1983, p. 159) claimed that shame is at the ‘irreducible absolutist core’ of poverty. Mixed-methods empirical research by Walker et al. (2013, 2014) supports this claim, finding that households who are relatively poor in affluent countries feel similar levels of shame, worthlessness and status anxiety as poor households in developing countries, even though their living standards are markedly higher. How steep the hierarchy is, and our perceived position within it, are potentially important drivers of individual wellbeing and social outcomes (Wilkinson and Pickett 2009, 2018).

The concern is that income inequality becomes ‘a marker of wider status hierarchy that provokes an emotional stress response in individuals that is harmful to health and wellbeing’ (Layte and Whelan 2014, p. 525). The more unequal the society, the steeper the social hierarchy, and the greater the pressure at all levels to demonstrate personal significance through status and acquisition of material goods that signal that status. Layte and Whelan (2014), for example, explored the relationship between income inequality and status anxiety using data from a cross-national survey of over 34,000 individuals from 31 European countries. They found that respondents in higher-income countries do indeed report higher levels of status anxiety. Wilkinson and Pickett (2009, 2018) claim that these psycho-social effects have much wider ramifications, arguing that they are the primary driver of various health and social outcomes associated with inequality. As a result, inequality is bad for everyone, not just the poor. Inequality reduces the levels of trust among people, leads to greater social conflict, higher crime rates, poorer mental health and wellbeing, and ultimately shorter life expectancy (Wilkinson and Pickett 2009; Oishi et al. 2011).

These causal claims remain contentious, however. For example, few of these studies consider the impact of geographical concentrations of poverty and the wider Spatial Opportunity Structures noted in the previous section. There are also questions about the direction of causality: does inequality lead to lower trust and social cohesion, or does lower trust and social cohesion erode public support for measures that reduce inequality? Also, it is not clear how the relationship between subjective feelings of shame and status anxiety estimated in European and North American contexts translates to China’s very different social, cultural and historical context and other post-socialist countries.

Nevertheless, the upward long-term trend in income inequality in China means that these impacts are of growing concern. Estimates by Zhang and Zhao (2019)

reveal that China currently has a Gini index of at least 58 which suggests a level of income inequality well in excess of most European countries (though comparisons across countries are inevitably frustrated by differences in spatial scale, data and methods). This inequality is marked not only in terms of inequalities between regions and cities, but also within them. Lie and Wu (2008, p. 404) conclude that, ‘Chinese cities, once characterised by egalitarianism, are becoming the most unequal cities in the world’. All this reinforces the imperative to understand the psycho-social impacts of inequality in the Chinese context and to design an appropriate policy response.

15.4.2 Inter-Group Contact and Social Mobility

One of the most important implications of income inequality, and its tendency to divide affluent and poor households into separate neighbourhoods, is the consequence for relations between these groups. Allport’s (1954) seminal contribution to the understanding of the causes and nature of prejudice argues that lack of positive contact between rival groups can lead to distrust and antipathy (see further discussion in Chap. 2 and in Pettigrew and Tropp 2006, 2011). This geographical separation can lead to enduring tensions and conflicts between groups, particularly when income disparities overlap with other forms of social stratification, such as ethnicity (Tan et al. 2019; Morales 2019; Wang 2019; Hannum and Xie 1998) or migrant status (Chaps. 4 and 10).

One of the important implications of Allport’s contact hypothesis is that forms of segregation that arise initially for benign reasons—as accidents of history, side-effects of well-meaning policies, etc.—can in the long run erode relations between the separated groups. So, while gated communities in China may have Maoist communal origins free from the ‘connotations of exclusivity and xenophobia associated with gated communities in the West’ (Chap. 4, p. 70), they may nevertheless, in due course, become sources of social fragmentation, prejudice, and territorial behaviour.

When the geographical separation of groups takes the form of ‘social frontiers’—sharp spatial differences between adjacent neighbourhoods in the social, religious or ethnic mix of residents (see Chap. 13)—these divides can take on territorial meaning. Social frontiers may, for example, evoke defensive responses from the rival communities, and increase the likelihood that prejudices, misunderstandings and conflicts escalate (Chap. 2; Dean et al. 2018). These effects can, in time, have negative impacts on health and wellbeing. Maguire et al. (2016, p. 845), for example, find that while traditional measures of segregation had no impact on mental health, the effects of social frontiers were very large indeed. Proximity to social frontiers—such as the ‘peacelines’ in Belfast, which kept rival communities apart—‘increases the likelihood of antidepressant medication by 19% ... and anxiolytic medication by 39% ... , even after adjustment for gender, age, conurbation, deprivation and crime’. The mental health impacts, in turn, have the potential to affect educational and employment outcomes, particularly when they are associated with higher rates of violent crime (Dean et al. 2018), and anti-social behaviour (Legewie and Schaeffer 2018).

For example, Layard et al. (2014) find that, ‘the most powerful childhood predictor of adult life-satisfaction is the child’s emotional health’, which highlights the potential for segregation and inequality to erode human capital and economic efficiency.¹²

When the psycho-social and relational effects are considered alongside the demographic and spatial factors discussed earlier, we might expect a measurable overall impact on economic output and social mobility. Indeed, the research is more than suggestive that there are macro-level impacts on economic dynamism. Ostry et al.’s (2014) research for the International Monetary Fund, for example, finds that lower inequality is ‘robustly correlated with faster and more durable growth’. Moreover, research by Corak (2013) finds that more equal countries have higher rates of social mobility.

15.5 Policy Effectiveness

In this section, I discuss recent advances in using robust research methods to investigate social and economic policy questions and consider practical ways in which policy making could be improved at various levels of government in China.

15.5.1 *Evaluation, RCTs and Causal Inference*

One of the most important revolutions in the social science and epidemiological literature over the past 30 years has been the development of methods that allow researchers reliant on observational data to mimic the robustness of the scientific experimental method. In the natural sciences, Randomised Control Trials (RCTs) have long been considered the gold standard for establishing the causal effects of a particular intervention or influence. So, for example, if a pharmaceutical company wants to know the effect of a drug on reducing blood pressure, it will randomly assign participants to a Treatment Group and a Control Group. The Treatment Group will receive a genuine dose of the drug, while the Control Group will receive a placebo. Central to the explanatory power of RCTs is the randomised allocation of participants between the two groups. Laboratory experiments are rarely feasible or ethical for the exploration of social questions. Yet, social scientists and other researchers reliant on observational rather than experimental data have found increasingly innovative ways to mimic this key attribute of the scientific method.

As a result of this ‘Causal Revolution’ (Pearl and Mackenzie 2020) in social and economic research, policy makers now have the option to design interventions in a way that allows for robust evaluation of its causal effectiveness. They now include a control group and carefully randomise participants. Pilot schemes designed in this way may not cost much more than those without the randomisation, but

¹² For a theoretical analysis of segregation and social efficiency, see Galster (2007, 2019: ch. 9).

add hugely to how well they can be evaluated. Consequently, randomised policy experiments have bourgeoned in recent years. See, for example, the plethora of such American experiments that have emerged in the domains of education (Raudenbush and Schwartz 2020), employment training (Riccio 2010) or rental housing vouchers (Sanbonmatsu et al. 2011).

It is also sometimes possible to observe public policy interventions that mimic random assignment, and these are known as ‘natural experiments’. For example, such natural experiments involving the quasi-random assignment of households to locations have been used to quantify neighbourhood effects. These have drawn from racial-ethnic desegregation programmes in US public housing, the allocation of tenants to social housing in Canada and Denmark, and the placement of refugees in particular locales in Scandinavia (see Galster 2019: ch. 8 for a comprehensive review).

Statistical techniques have also been developed that potentially allow researchers to infer the causal impacts of historical policy interventions. These include housing-based urban regeneration initiatives on employment (Zhang et al. 2020), neighbourhood policing on crime (Verbitsky-Savitz and Raudenbush 2012), or comprehensive revitalisation strategies on property values (Galster et al. 2006). Many of the statistical techniques for estimating these kinds of programme impacts are now well-established.¹³ They include iterated fixed-effects models (Bai 2009), synthetic control approaches (Xu 2017), difference-in-difference methods (Zhang et al. 2020), adjusted interrupted time series (Galster et al. 2004), family fixed effects (Aronson 1998), and regression discontinuity (Cunningham 2018; Angrist and Pischke 2008). Moreover, there are new waves of methodological innovation, such as the rapidly expanding field of machine learning approaches to causal inference (Kreif and DiazOrdaz 2019). These methods make science-based policy tantalisingly feasible and reinforce the potential benefits of an evidence-based approach to twenty-first century policy strategies for tackling segregation and inequality in China.

15.5.2 *Shadow Pricing*

One of the drawbacks of a policy strategy focussed exclusively on economic growth is that many of the factors that affect quality of life—clean air, access to green space, protection from flood risk and toxic waste, access to amenities and transport—are not accounted for in estimates of Gross Domestic Product (GDP). Policies that focus on GDP growth will overlook these impacts and provide a distorted sense of progress. How then can China develop an approach to economic accounting that is fit for purpose in a new policy regime where quality of life (Han et al. 2016, p. 176) and ecological impacts (Zheng et al. 2019) are prioritised?

¹³ For a fuller review of these techniques, see Shadish et al. (2002), Graham (2018) and Galster (2019: ch. 8).

The solution, from an economics perspective, is to estimate implicit prices. Essentially, this entails computing the monetary value that individuals place on their ability to access non-traded goods, such as beautiful views, clean air, and avoid non-traded ‘bads’, such as pollution and contaminated land. In Chap. 12, Lian, Song and Timmins argue that Hedonic Pricing techniques and equilibrium sorting models provide practical ways to estimate the implicit value of untraded goods and ‘bads’ from consumers’ choices. How much extra are households willing to pay to live in neighbourhoods with good air quality, for example, provides a useful guide to the economic value of this attribute.

Suppose we include these implicit prices in economic policy. It will mean that the cost to society of economic activities that give rise to harmful pollution or contamination will be seen as less attractive than activities without these unwanted side effects. This will guide policymakers in taxing activities that produce these negative ‘externalities’—outcomes of commercial activity that are not reflected in the market price. In this way, governments can help reduce the gap between the price paid by consumers for the products of such firms and the larger overall cost to society.

15.6 Conclusions for Policy

Over the past 40 years, China’s Reform and Opening-up have led to a reduction in rural poverty for over 700 million people, contributing 70% of global poverty reduction (Chap. 5). This is a truly extraordinary achievement. At the same time, however, there has been a rise in income inequality (Zhang and Zhao 2019), socioeconomic segregation (Chap. 10), and environmental hazards (Wang et al. 2016). The enormous growth of the urban population (from 172 to 813 million between 1978 and 2017) as a result of rural to urban migration also brought people into close proximity from very different social and cultural backgrounds. All this has heightened the potential for social fragmentation and neighbourhood segregation.

China once again faces the processes that generate inequality and segregation, the social ills that the 1948 communist revolution sought to eradicate. We have sought to highlight these emerging challenges and identify the sino-capitalist features that gave rise to them. An ambitious programme of poverty reduction and inclusive growth was launched in 2018, but there have been questions about managing funds and whether they have been appropriately allocated (Diallo 2019). While poverty levels among those with urban citizenship status has declined, ‘levels of chronic poverty among migrant workers has continued to grow, accounting for about 75% of the total population of urban poor’ (Chap. 5).

We also contend that there are deeper and more systemic questions. To what extent can we address poverty and disadvantage without tackling the entwined processes of segregation and inequality that are intrinsic to capitalist systems? Poverty and deprivation in a market economy context should not be viewed as static outcomes to be fixed by one-off interventions or government handouts. If China’s new phase of

urbanisation is to succeed, policy makers will need to appreciate the dynamic interactions between the political and legislative sectors, rural and urban areas, and between social and market forces. Understanding these linkages, and how they are shaped by local context, will help local and regional governments develop interventions that bring about lasting structural change (Sharkey 2013).

Multidimensional spatial inequalities can be extremely difficult to rectify; certainly, that has been the Western experience (Meen and Gibb 2005; Gibb et al. 2019). While China has demonstrated an impressive capacity to bring about transformative social and economic change, it will face challenges in the coming decades that will make tackling segregation and inequality all the more difficult.

Challenges associated with the country's rapidly ageing population are likely to become prominent. The ratio of dependents to workers will increase significantly. This could suppress growth, exacerbate pressures on public finances, and potentially increase existing inequalities in income (Chen et al. 2018), health (Gu et al. 2019; Wang et al. 2012) and social care (Lou and Ci 2014). China's working age population is forecast to decline by 63.6% by 2100, one of the largest proportionate declines in the workforce predicted for any the world's major economies (Vollset et al. 2020; Campbell 2019). Further pressures on the economy are likely to come from climate change (Tol 2018) and growing geopolitical tensions in China's relationships with other countries (Kavalski 2020; Le Corre 2020; Walker 2020; Niu 2020). There could be uncertain but potentially important impacts on trade, export growth and the domestic economy.

Chinese policy makers will need to grapple with the complexity of these anticipated changes and consider how they might affect the processes of residential segregation and inequality. A modernising social policy will require strategies that are specific to China rather than the re-cycling of policy approaches from Anglo-American and European contexts.

All this heightens the imperative to develop a home-grown evidence base on which to develop policy. I have argued in this chapter that informed policy will require a robust empirical approach to analyse and monitor the dynamic processes that drive segregation (Sect. 15.2) and the associated Spatial Opportunity Structures (Sect. 15.3). An understanding of how these processes affect health, wellbeing and social mobility (Sect. 15.4), will help policy makers design better policies, not only for mitigating inequality and segregation, but for the benefit of society and economy more generally. Appropriate data infrastructure, and the research capacity to evaluate the true impact of interventions (Sect. 15.5) are needed to achieve this.

But what should those interventions be? What policies are needed to tackle the growing problems of segregation and inequality in China and the further entrenchment of their impacts upon future generations? In this volume we have drawn together leading experts to reflect on China's remarkable economic success story, and the policy changes that are needed for the next phase of its development. These recommendations are illustrative rather than exhaustive but nevertheless offer a clear set of guidelines for policy development in the years to come. They are summarised as follows:

- **Reform of the *hukou* system:** a disproportionate amount of the inequality and segregation identified in by authors relate to the *hukou* household registration system. It will be a priority for the government to increase the proportion of rural migrants with full urban citizenship and to reform the *hukou* system (Chap. 5). However, this will have significant resource implications as widening access to urban public services for rural migrants will require a major expansion of those services. At present, public services are characterised by ‘dualisation’ in urban–rural provision and ‘fragmentation’ across regions in terms of the level and quality of service. To genuinely improve the citizenship rights of migrant workers, China will need to delineate administrative and expenditure responsibilities, develop a transfer payment system, diversify and enhance public service supply, integrate resources, use information technology to reduce public service inequality, and standardise laws and regulations (Chap. 8).
- **Regeneration of rural areas and small towns:** One way to ease pressures on public services in large cities will be to complement the reform of the *hukou* system with policies and infrastructure investment aimed to make rural areas and small towns more attractive places to live and work (Chap. 5). This should include an integrated set of measures to make shanty town redevelopments sustainable and attractive (Chap. 7).
- **Tackling the decentralisation of poverty:** Unlike many UK and US cities, poverty in China is often concentrated at the periphery and in the suburbs rather than in urban centres. This places an additional burden on poor families in terms of the costs and risks of commuting to work and poor access to amenities. Urban sprawl has been a major feature of city growth in China, but high-quality facilities and services such as hospitals and schools often remain located in the city centre (Chap. 4; Chen and Yeh 2019). Addressing these significant inequalities will require concerted reform of planning policy to ensure a more socially just approach to the location of public institutions, infrastructure and services.
- **Addressing the multidimensional nature of the problem:** The unequal provision of public services is just one aspect of the multi-faceted nature of disadvantage and risk exposure. Hence, in Chap. 14 we emphasised the need to measure deprivation not only in income but also in housing, education, environment, employment, transport and health. The design of policies to tackle poverty is much more likely to be successful if these multidimensional features are reliably monitored and made explicit in policy targets.
- **Reform of housing and land ownership system:** In Chap. 9, Wang and Dong highlighted the many administrative barriers that inhibit equal access to housing and set out a programme of reforms to tackle these. Under the present system, urban land is owned by the state while rural land is collectively owned. These two systems are incompatible in numerous ways that hinder new construction that would benefit rural migrants and prevent capital release to enable them to access homeownership. Extensive reforms are needed to create an integrated urban and rural land market that encourages the construction of affordable homes and improves access to high-quality housing for the urban poor. They also recommend demand-side measures including subsidies and an expansion of social housing

construction. Reforms are also needed in the private rental sector which has emerged rapidly in an unplanned way in response to rapid urban growth. This sector particularly needs better regulation to address the prevalence of substandard housing and the exploitation of migrant workers by landlords. At present, rural migrants ‘usually live in temporary sheds or densely populated dormitories provided by employers’ (Chap. 9). Such accommodation is often unfit for human habitation and is also highly precarious as migrant workers have no security of tenure.

- **Next-generation planning¹⁴:** Inspired by the architectural philosophy of Le Corbusier, the post-war period saw the rapid development of high-rise housing across many European cities and the clearance of significant numbers of traditional urban buildings as a result. However, subsequent changes in demography and lifestyle aspirations¹⁵ led to the demolition of many of these high-rise dwellings, especially those of questionable construction quality. There has also been renewed appreciation for traditional buildings and a sense of lost heritage due to the destruction of the historical urban landscape during the high-rise revolution. The rapid redevelopment and modernisation of Chinese cities over the past 30 years raises the question of whether China may eventually experience a similar backlash against high-rise living. The dissatisfaction reported in Chap. 6 in the context of urban village redevelopment, for example, may be an early indication of more widespread disenchantment. Projections of a rapidly ageing population in China (Vollset et al. 2020) will raise further questions about the best way to address future housing and social care needs (Ikels 2004; Vollset et al. 2020). Moreover, experience of Covid19 has led many to question the desirability of high-density living in a world where pandemics may become more frequent due to climate change and increased animal-human contact.¹⁶ Chinese policy makers, along with their counterparts around the world, will need to develop a long-term strategy for next-generation urban planning that will learn from the mistakes of European planners and anticipate the housing needs of the future.
- **Social integration of rural migrants:** The research presented in Chap. 11 reveals the complex and multi-layered nature of social separation of rural migrants and local urban residents working in care homes in Shanghai. These findings are illustrative of a wider problem of hidden stratification that emanates from the

¹⁴ I am grateful to Sako Musterd for raising the question of impending obsolescence of high rise housing in China in his comments on this chapter.

¹⁵ In the preface to their book, *High-rise housing in Europe*, Turkington et al. (2004) note that, ‘High-rise housing was constructed on a mass scale in the belief that blocks and estates would work for everybody who lived in them. However, the world has changed since then. Other housing types have taken their place, the single family dwelling represents the ultimate aspiration for many households. Whilst it is clear that the condition and market position of high-rise varies between countries, many complexes have deteriorated physically, socially, and are in the worst cases faced with a multiplicity of problems.’.

¹⁶ See, for example, <https://www.gavi.org/vaccineswork/5-reasons-why-pandemics-like-covid-19-are-becoming-more-likely>, and <https://www.who.int/globalchange/climate/summary/en/index5.html>.

social inferiority of rural migrants in the Chinese system. International research on migration agrees on a crucial point. For migrants to integrate socially, they need to be able to achieve ‘outcomes within employment, housing, education, health etc. which are equivalent to those achieved within the wider host communities’ (UK Home Office report, 2004). Such outcomes are vital because they offer migrants, minorities and other marginalised groups the opportunity to advance in the labour and housing markets, and acquire the resources needed to connect with the wider society. Without equivalent rates of social mobility among migrant workers and local residents, economic gaps will continue to widen between them, engendering a deepening sense of injustice and discrimination. The negative impact of the *hukou* system goes beyond the practical consequences of inability to access opportunities. There is also an emotional impact that stems from the stigma of being categorised as second-class citizens. Interventions to address these issues may involve measures to encourage positive social contact between groups, such as mixed tenure housing and inclusive approaches to the design of school catchments (Brown and Hewstone 2005; Ramos et al. 2019; McGlynn et al. 2004). These initiatives may be especially important where there are ‘social frontiers’ (see Chap. 13; Dean et al. 2018).

- **Shadow pricing and macroeconomic policy:** Earlier in this chapter, and in Chap. 12, we discussed the importance of incorporating the value of nature, clean air, and other non-traded outcomes of economic activity into economic decisions. One way to do this is to make greater use of shadow pricing to place monetary values on important impacts of economic activity that are currently unaccounted for in economic planning. This raises a more general issue: the need to synthesise macro- and micro-economic policy. The focus of our recommendations so far has largely been on specific areas of social policy and legal reform. However, we should not forget the role of macroeconomic policy in the generation of socioeconomic inequalities, not only through the taxation of income and wealth, but also through monetary policy (e.g. Coibion et al. 2017). Taxation of housing wealth comes under the remit of macro policy but also has implications for the inter-generational transfer of housing wealth inequalities. As house prices increase dramatically in boom cities, such inequalities are likely to widen considerably over the coming decades. Landlords and homeowners may accumulate wealth rapidly in these areas. Tenants will be excluded from these rewards and may also face rising rental costs. Macroeconomic policy should therefore be included in the mix for a fully coordinated response, although it is beyond the scope of the current volume to explore this in the Chinese context.

15.6.1 *Final Thoughts*

Our goal has not been to make the case for a return to communist-era economic planning.¹⁷ Instead, we stress the need to understand the very real challenges currently posed by a modern market economy and its tendency to generate self-reinforcing cycles of inequality and segregation. As inequality in China continues to rise, it will become increasingly important to find an appropriate policy response to shape the country's future and determine the success of its new emphasis on improving the quality of life.

As many of the authors of this volume have noted, China's economic policies have achieved an extraordinary rise in the living standards of hundreds of millions of people. It has also generated growing inequality across regions, between urban and rural areas and ethnic groups. Those without full access to citizenship rights suffer most. I have also raised the question of whether the negative consequences of inequality and segregation can to some extent offset the benefits of economic growth for the disadvantaged.

Crucially, there needs to be a robust way to evaluate the efficacy of policies and to foster a culture of policy-making that abandons or reforms policies that are ineffective or unjust. I have highlighted various methodological innovations, including those arising from the Causal Revolution in social science research. Combined with investment in China's socioeconomic data infrastructure, these recommendations pave the way to a more rational and transparent approach to policy development.

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¹⁷ As noted in Chap. 3, very low levels of inequality can also have negative consequences, such as economic stagnation.

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