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# Social Structure and Educational Inequality

The causes of educational inequality between rural and urban  
Chinese people

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## Summary

Educational inequality between rural and urban Chinese people is not only the result of urbanisation and economic development but also constructed by separation policies and unequal distribution of educational resources. According to Giddens's (1984) structuration theory, the education system as a part of social system stretches away in time and space, beyond the control of any individual actors. At the same time, the actors' own theories of the education system guide their activities which may reify the education system. However, most previous sociological research only uses status attainment theory to explain educational inequality, ignoring the effects of macro-level social changes and distribution of educational resources (M.Horan, 2013). On the other hand, economic studies on persistent inequality emphasise the importance of a family's economic condition, leading to different preferences on their educational consumption (Mookherjee and Ray, 2003). Based on the economic explanation of persistent inequality, international and domestic organisations implement demand-side interventions, these aim to stimulate their educational demands by improving the economic condition of low-income families. However, those policies are far less effective than it had been expected (Bonai, 2007). Thus, it is necessary to add factors such as principles of social structure, policies, culture and institutional characteristics into theoretical models.

Historically, the Chinese population was divided into rural and urban residents via the household registration system (the *hukou* system) whereby people were either registered as rural or urban residents according to their place of birth. The *hukou* system still has a great influence on shaping the present social structure and culture. This dissertation uses a structuralist framework to analyse the educational gap between rural and urban Chinese people. The objective of the dissertation is twofold: first, to

empirically apply the structuration theory on analysis the educational inequality with quantitative method; second, to understand the causes of the educational gap between rural and urban Chinese people. In pursuing this objective, a theoretical discussion of the application of structuration theory to the study educational inequality and three empirical studies were conducted that together form the present dissertation.

Chapter 2 uses a structuralist framework to elaborate the recursive relationship between social structure and agents' educational outcomes. It argues that the agents' motivation in pursuing higher education is shaped by both historical experiences and current social structure. Chapter 3 reviews the relevant literature and Chapter 4 briefly introduces the data and methods of analysis used in the three empirical chapters.

Chapter 5 is the first empirical chapter, in which I analyse how changes to the economic and political systems affect the educational gap between rural and urban Chinese people; Chapter 6 analyses the effect of the supply-side distribution of educational resources on the educational gap between rural and urban Chinese students; Chapter 7 investigates the effect of demand-side educational resources on the educational gap.

The findings in these three empirical chapters suggest that the educational gap between rural and urban Chinese people has been widening in recent years, and the driving force behind the widening educational gap is the unequal distribution of supply-side educational resources and differences in educational environments. The last chapter (Chapter 8) provides an overview of the main findings, and suggest they imply that the egalitarian policies from the socialist period may still affect rural Chinese people's educational expectations. However, the increasingly unequal distribution of resources and social barriers for rural Chinese people is deepening educational inequality between rural and urban Chinese people. This kind of inequality will be difficult to reduce as

long as the nation's development model continues to be urban-centred and in the absence of redistributive policies.

## Resum

La desigualtat educativa entre la població rural i urbana a la Xina no es deu només a la urbanització i desenvolupament econòmic. Les polítiques de separació i desigual distribució dels recursos educatius tenen un efecte molt important. Segons la teoria d'estructuració de Giddens' (1984) el sistema educatiu com a part del sistema social té una dimensió temporal i en l'espai que escapa el control de qualsevol actor individual. Al mateix temps les teories sobre el sistema educatiu dels actors guien les seves accions i al seu torn afecten el sistema educatiu. Fins ara la recerca en sociologia ha fet servir la teoria de l'assoliment de l'estatus per explicar la desigualtat educacional. Això ignora els canvis socials a nivell macro i la distribució de recursos educatius (M.Horan, 2013). Per altra banda els estudis econòmics sobre la persistència de la desigualtat emfatitzen la importància de les condicions econòmiques familiars (Mookherjee i Ray, 2003). Basant-se en aquesta explicació econòmica que se centra en la persistència de la desigualtat les organitzacions internacionals i domèstiques intervenen sobre la demanda. L'objectiu és canviar les condicions econòmiques de les famílies amb ingressos baixos per estimular la seva preferència per l'educació. Però aquestes polítiques han sigut molt menys efectives del que s'esperava (Bonal, 2007). Per tant caldria afegir factors com ara l'estructura social, polítiques, cultura i característiques institucionals en els models teòrics.

Històricament la població xinesa es va dividir entre residents rurals i urbans a través del sistema de registre de llars (sistema *hukou*) pel qual cada individu es registrava com a rural o urbà segons el lloc de naixement. El sistema *hukou* encara té

una gran influència sobre l'estructura social i cultural. En aquesta tesi utilitzo el marc teòric estructuralista per analitzar la bretxa educativa entre la població urbana i rural a la Xina. La tesi té un doble objectiu: primer, aplicar empíricament la teoria de l'estructuració a l'anàlisi de la desigualtat educativa utilitzant mètodes quantitius; segon, entendre les causes de la bretxa educativa entre la població urbana i rural a la Xina. Així doncs, la tesi conté una discussió teòrica sobre com aplicar la teoria de l'estructuració per estudiar la desigualtat educativa a més de tres estudis empírics.

El capítol 2 utilitza el marc estructuralista per elaborar una relació recursiva entre estructura social i els resultats educatius de diferents agents. Proposo un marc teòric estructuralista per analitzar la desigualtat educativa que es concentra en tres dimensions: canvis històrics de l'estructura i regles socials, la distribució de l'oferta de recursos educatius i la distribució de la demanda de recursos educatius. El capítol 3 conté la revisió de la literatura i el Capítol 4 introdueix breument les dades i mètode d'anàlisi dels tres capítols empírics. El Capítol 5 es el primer capítol empíric. Estudia com els canvis en el sistema econòmic i educatiu afecten la bretxa educativa entre la població rural i urbana a la Xina; el Capítol 6 analitza l'efecte de la distribució de l'oferta de recursos educatius en la bretxa educativa entre la població rural i urbana xineses. El capítol 7 estudia l'efecte de la demanda de recursos educatius sobre la bretxa educativa.

Els resultats empírics suggereixen que la bretxa cultural entre la població urbana i rural a la Xina ha augmentat els darrers anys, però que la raó d'aquest augment en la desigualtat no són les diferències entre la posició social dels individus sinó de la desigualtat de l'oferta de recursos educatius i diferències en entorns educatius. L'últim capítol (capítol 8) dóna una visió general dels resultats més importants i suggereix que les polítiques igualitàries del període socialista encara influencien les expectatives

educatives de la població rural, però que la distribució de recursos cada cop més desigual, i les barreres socials per la població rural, augmenten la desigualtat educacional entre la població rural i urbana a la Xina. Serà difícil reduir aquesta desigualtat mentre el model de desenvolupament continuï centrant-se en la població urbana i no s'implementin polítiques redistributives.

## **Resumen**

La desigualdad educativa entre la población rural y urbana en China no se debe solamente a la urbanización y el desarrollo económico. Las políticas de separación y la desigual distribución de los recursos educativos tienen un efecto muy importante. Según la teoría de estructuración de Giddens (1984) el sistema educativo como parte del sistema social tiene una dimensión temporal y espacial que escapa el control de cualquier actor individual. Al mismo tiempo las teorías sobre el sistema educativo de los actores guían sus acciones, y estas a su vez afectan el sistema educativo. Hasta ahora la investigación en sociología ha utilizado la teoría de los logros de estatus para explicar la desigualdad educacional. Esta teoría ignora los cambios sociales a nivel macro y la distribución de recursos educativos (M. Horan, 2013). Por otro lado los estudios económicos sobre la persistencia de la desigualdad enfatizan la importancia de las condiciones económicas familiares (Mookherjee i Ray, 2003). Las organizaciones internacionales y domésticas intervienen sobre la demanda con el objetivo de cambiar las condiciones económicas de las familias de bajos ingresos para estimular la su preferencia por la educación. Pero estas políticas han sido mucho menos efectivas de lo que se esperaba (Bonai, 2007). Por lo tanto hace falta añadir factores tales como la estructura social, las políticas, cultura y características institucionales en los modelos teóricos.



Históricamente la población china se dividió entre residentes rurales y urbanos por el sistema de registro de hogares (sistema hukou). El sistema hukou todavía tiene una gran influencia sobre la estructura social y cultural. En esta tesis utilizo el marco teórico estructuralista para analizar la brecha educativa entre la población urbana y rural en China. La tesis tiene un doble objetivo: primero, aplicar empíricamente la teoría de la estructuración al análisis de la desigualdad educativa utilizando métodos cuantitativos; segundo, entender las causas de la brecha educativa entre la población urbana y rural en China. La tesis contiene una discusión teórica sobre como aplicar la teoría de la estructuración para estudiar la desigualdad educativa además de tres estudios empíricos.

El capítulo 2 utiliza el marco estructuralista para elaborar una relación recursiva entre estructura social y los resultados educativos de diferentes agentes. Explico como la motivación individual para acabar estudios superiores depende de las experiencias históricas y la estructura social actual. El capítulo 3 contiene la revisión de la literatura y el Capítulo 4 introduce brevemente los datos y método de análisis de los tres capítulos empíricos. El Capítulo 5 es el primer capítulo empírico. Estudia como los cambios en el sistema económico y educativo afectan la brecha educativa entre la población rural y urbana en China; el Capítulo 6 analiza el efecto de la distribución de la oferta de recursos educativos en la brecha educativa entre la población rural y urbana en China; El capítulo 7 estudia el efecto de la demanda de recursos educativos sobre la brecha educativa.

Los resultados empíricos sugieren que la brecha cultural entre la población urbana y rural en China ha aumentado en los últimos años, pero que la razón de este aumento en la desigualdad no son las diferencias entre la posición social de los individuos sino de la desigualdad de la oferta de recursos educativos y diferencias en el entorno educativo. El último capítulo (capítulo 8) da una visión general de los

resultados más importantes y sugiere que las políticas igualitarias del período socialista aún influyen las expectativas educativas de la población rural. Sin embargo, la distribución de recursos cada vez más desigual, y las barreras sociales para la población rural causan un aumento de la desigualdad educacional entre la población rural y urbana en China. Será difícil reducir esta desigualdad mientras el modelo de desarrollo continúe centrándose en la población urbana y no se implementen políticas redistributivas.



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## 1. Introduction

China is the most populous country in the world, with half of its population living in rural areas; however, only 5 per cent of university students are from rural areas (Zhang et al., 2015). The educational gap between rural and urban people is not a secret in China; many scholars indicate the gap has been widening in recent years. Some economists argue that the industrialisation process always occurs along with the fast-growing and expanding urban areas, so the rural-urban disparity is the result of different schooling demands between rural and urban areas. However, the huge education gap between rural and urban areas cannot be found in other industrialised countries.

Empirical research suggests that the education gap between rural and urban areas in China is constructed by the household registration system (*hukou*), which is rooted in the socialist period (Pepper, 1996; Zhou et al., 1998; Hannum, 1999). Compared to urban *hukou* students, rural *hukou* students suffer a higher level of poverty and have more health issues and higher dropout rates (Xu and Xie, 2015; Zhang, 2016; Fu et al., 2018). Despite government efforts to reduce the educational disparities between rural and urban Chinese students in recent years, the gap persists. As Lynch and Backer (2005: p131) suggest, ‘Equality in education can only be achieved if we recognise the deeply integrated relationship that exists between education and the economic, political, socio-cultural and affective systems in society.’ In this dissertation, I ask the question: what are the causes of educational inequality between rural and urban Chinese people? To answer this question, it adopts a structuralist approach and aims to highlight the structuration process of the educational inequality between rural and urban Chinese people empirically.

Educational inequality refers to the observed persistent disparities in access to education associated with different social groups. The theories explaining different results of educational outcomes overlap with the stratification research in sociology, the most influential one of which is the status attainment model, addressing the impact of different parental resources and individual abilities on individual educational attainments or careers. However, the status attainment theory presumes that individuals with different characteristics are competing in an open-opportunity structure, which ignores the possible segmentation of social structure. The segmentation of social structure leads to different opportunity and reward structure for individuals in different social positions; in this situation, the status attainment model is inadequate to explain the different educational outcomes of individuals. For example, the educational outcomes of black students are constantly lower than those of white students in the United States, and female students have lower educational attainment than male students in some African countries (Coleman et al., 1966; Jackson, 2009; McKeever, 2017). Thus, it is necessary to add factors such as principles of social structure, policies, and institutional characteristics into theoretical models. This research seeks to draw a full picture of the educational inequality between rural and urban students in China, concentrating on three dimensions: the first dimension is in the macrolevel of social structure, in which I analyse how changes to the economic and political systems affect the educational gap between rural and urban *hukou* holders (Chapter 5); in the second dimension, I analyse the roles of supply-side educational resources play in influencing the education gap between rural and urban Chinese students (Chapter 6); the third dimension is the individual level, in which I investigate the effect of demand-side educational resources on the educational gap by empirically applying cultural reproduction theory (Chapter 7). This chapter provides the introduction of the

dissertation, starting with a brief overview of the objective of the dissertation and its context.

### ***1.1 Context of study: The social structure and educational system in China***

According to Giddens (1984, p377), a structure is formed by rules and resources, which are not only recursively involved in the institution, but also implicated in the production and reproduction of a social system. Understanding how rules and resources form the division of rural and urban society is key to unlocking the myth of the education gap between rural and urban Chinese students.

#### **Evolution of the *hukou* system**

The rural-urban division is primarily caused by the household registration system and unequal distribution of resources. The household registration system (called “*hukou*” in Chinese) was launched in 1958 and served as a localised internal passport system (Chan, 2009). In 1951, not long after the establishment of the People's Republic of China (PRC)<sup>1</sup>, in order to ‘protect the social security, secure the right of living and immigrating freedom’, the Ministry of Public Security created a household registration act for urban citizens called “*hukou*”. Natural disasters occurring between 1953 and 1956 caused a sharp decline in agricultural production. Accordingly, a large segment of the rural Chinese people moved to urban areas. The changed household registration act aims to prohibit migration from rural to urban areas and to extend the household registration act to rural areas. In 1958, the household registration system was legalised; after that, it was used to limit the population legally from moving from rural to urban areas. Later, supplemental acts clearly stated that all enterprises, organisations, and the

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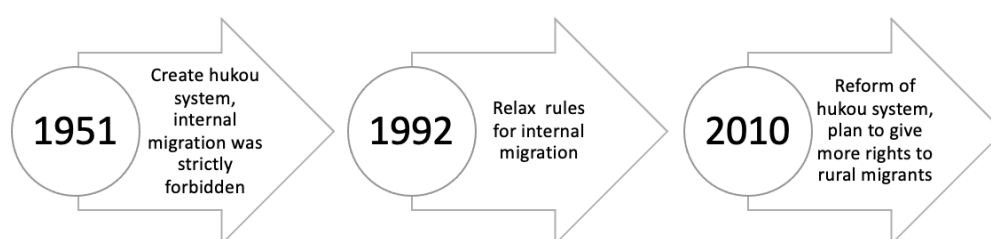
<sup>1</sup> This research focuses only on the period after PRC was established. China refers only to mainland China.

regional governments could not hire rural Chinese farmers; moreover, county and urban citizens should not help their peasant relatives searching for jobs in cities; meanwhile, that the food purveyance ministry should not provide grain coupons to people without urban *hukou*. During the Great Famine (1959-1961), migration was strictly controlled, especially in big cities. Moreover, to manage the shortage of grain, the central government encouraged the city residents to move to rural areas. In 1961, the government made an official plan to limit the number of city residents to twenty million. To coordinate with this plan, *hukou* was categorised according to both job and location. People were classified into two categories: “agricultural rural *hukou*”, “non-agricultural urban *hukou*”. This classification was the basic criteria for the grain quotas, and only the “non-agricultural urban *hukou*” has grain quotas. In 1964, the Chinese government passed an amendment to the residence registration act, requiring local government to strictly control residents’ moves from rural to urban areas. Furthermore, freedom of migration was deleted from constitution in 1975.

In 1977, a new regulation from the Ministry of Security said that ‘rural residents who married with urban residents could not move to urban areas, he/she must participate in the collective labour activities in rural areas, and their offspring’. In other words, people could not change their *hukou* type through marriage. The government also controlled the number of people who could switch their *hukou*; the official guideline for local governments suggested the maximum number of people changing their *hukou* types should not exceed 0.15 per cent of the local population annually. In 1992, the food grain rationing was abolished, but the *hukou* system was kept as the baseline for differentiating social benefits. With the fast-growing economy, the demand for cheap labour in urban areas increased dramatically. In order to satisfy this labour demand, the central government allowed people with rural *hukou* to move to urban areas

and gave them temporary residence permits if they had job contracts in urban areas. In 1993, the government began a reform of the *hukou* system which aimed to adjust economic development; the conditions for rural Chinese residents to move to urban areas were relaxed gradually. On the other hand, the ongoing decentralisation of administrative power gave local governments the autonomy to modify the local *hukou* policies under central guidance. In 2010, the National Assembly set the reform of the *hukou* system as one of the most important missions in contemporary China. However, it is safe to say that the urban *hukou* is still a scarce resource, especially in the most developed urban areas such as Beijing and Shanghai. Figure 1.1 shows the timeline of the evolution of the *hukou* system. Because more than 90 per cent of rural *hukou* holders live in rural areas, in this dissertation, Chinese people with rural *hukou* sometimes simply refers to rural Chinese people and similarly reference uses to urban *hukou* holders.

Figure 1.1 Timeline of the evolution of the *hukou* system



### Changes to the educational system

The educational system in contemporary China has been through five major changes.

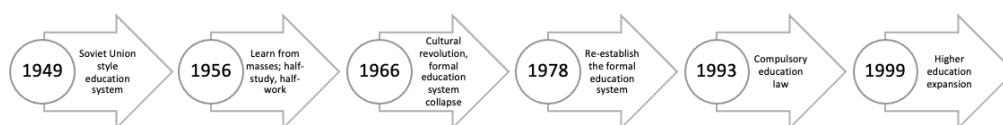
After the PRC was established in 1949, the new government was devoted to

establishing a modern and universal educational system. From 1949 to 1956, the educational system and the precise method of instruction for each course were prescribed in the Soviet Union's practice. The vital features of the Soviet Union style were centralisation and uniformity. Centralisation meant the central government controls all educational resources; and uniformity indicated curricula, teaching plans, schedules, textbooks, materials, and standardised test were unified across the country (Pepper, 1996). Furthermore, the new socialist regime broke the class boundaries with the aim of producing a new kind of intellectual, drawn directly from the government cadre, working-class ranks, and peasants. Under the new system, the privileges of the old upper class, such as the bourgeois and landlords, perished. After Stalin died, the academic experts from the Soviet Union were withdrawn from China, and the change in the global political system pushed the Chinese central government to launch educational reform due to a shortage of educational resources. Meanwhile, the socialist revolution used education as its bedrock; Mao once remarked of the character of revolution 'the important question is the education of the peasants'. Because the formal educational system was considered elite education, which goes against the socialist ideology, it was replaced by part-time schooling and sending young people to rural areas 'to learn from the masses'. Moreover, to reduce the gap between urban and rural areas, intellectuals and technical workers were sent to rural areas to learn from peasants (Williamson, 1979). During the Cultural Revolution (1966-1976), educational reform was radically egalitarian and against the so-called 'bourgeois academics' and their 'reactionary' teaching methods; this idea was captured in the Maoist slogan 'Education must serve proletarian politics and be combined with productive labour'. Furthermore, the qualification to become a teacher should not be constricted by the credential; instead, 'whoever could teach' could be a teacher. Academic ability was not the most important



factor for schooling, but evidence of a ‘good socialist consciousness’ was a mandatory entrance requirement for higher education. The educational system was re-established after 1978, and one of the symbols was restarting the university entrance exam. According to National Statistical Bureau, 5.78 million students participated in the exam, but only 0.273 million were accepted; the ‘transition’ rate was 4.7 per cent in 1978. At the beginning of the 1980s, the government put limited educational resources in urban areas, aiming to build a modern, urban-based, quality-oriented educational system. In the mid-1980s, the government launched a new educational reform, which converted the education system from Soviet-style to the US-style. The reform included decentralising the administrative power of the educational system, initialising and legalising compulsory nine-year education, and eradicating youth and adult illiteracy. In 1993, the compulsory education was extended to rural areas. In 1999, the “Action Plan for Education Development and Decision on Furthering the Education Reform and Promoting Quality-Oriented Education” was announced by the central government. The action included expanding upper secondary and tertiary education and terminating the planning labour market (in which the government acted as the central planner and assigned jobs to graduates). Figure 1.2 summarises the major changes of the education system after PRC has established.

Figure 1.2 Changes of the education system



The unique historical experiences in the changes to the social structure and educational system in China provide an interesting case study for empirically understanding educational inequality through structuration theory. In general, the historical experiences and changes to the social structure construct the division of rural and urban societies in China (highlighted in Chapter 4), which reflects in the school and educational system (highlighted in Chapter 5); structural properties of the divided system also may shape people's knowledge and transfer into their daily interactions (highlighted in Chapter 6).

### *1.2 Needs and opportunities for research*

Education for All goals set in Dakar in 2000 specified that by 2015, all children should have free access to primary education and an opportunity to continue to secondary school. Since education is pivotal for social mobility in modern society, a large number of studies have been directed at examining causal factors for persistent educational inequality throughout the years. As a result, it is widely accepted among sociologists that providing equal educational opportunities is the cornerstone for reaching educational equality. Equal educational opportunities imply the chances a person has to access educational resources should not be affected by one's social origin and the rule of educational institutions (Shavit et al., 2007). On the other hand, economic studies on persistent inequality emphasise the importance of a family's initial condition, which leads to different preferences in their educational consumption (Mookherjee and Ray, 2003). Based on the economic explanation of persistent inequality, international and domestic organisations adopt demand-side interventions which aim to change the initial condition of low-income families and stimulate their educational demands. However, those policies are far less effective than expectations (Bonal, 2007). Previous studies on the sociology of education have already pointed out the neoclassical economic theory

has omitted the inverse relationship between education and poverty (Verger and Bonal, 2012; Bonal, 2016). This study extends this argument to the macro-level, demonstrates the important roles which social structure and social institutions play in constructing educational inequality.

As stated above, an important link between educational inequality and social structure is the household registration system and policies in China. People living in rural areas are officially registered as rural *hukou* holders, which becomes a legal barrier for rural Chinese people to access high quality educational resources in urban areas. Additionally, under the decentralised financial system, the allocation of educational resources is highly unequal between rural and urban areas, and the disadvantages of holding a rural *hukou* have accumulated over generations. However, current policies target only economic poverty and ignore the recursive relationship between social structure and agents' action, especially for the constructed inferior social status of rural Chinese people; thus, this dissertation aims to address the importance of noneconomic aspects of causations of educational inequality.

### ***1.3 Chapter outline***

The dissertation proceeds as follows: Chapter 2 elaborates a conceptual approach that explores the recursive relationship between macro-level social structure and microlevel agent's action to explain changing educational inequality patterns. To do so, I apply a structuralist framework in analysing educational inequality between different categories of people. Furthermore, I argue the recursive relationship between social structure and agents' action has two links: in an unstable society, agents may need to adapt to the new social rules first, and it is an adaption process; and in a stable society, agents may follow the reproduction process which has been widely studied. The novel theoretical approach could be seen as complementary to current theoretical framework like status attainment,

neoliberal, and social reproduction theories. I suggest researchers take the time space dimension into account to form a better understanding of the causation of educational inequality in a specific society. I also review the relevant literature on the relationship between social structure and agents' actions, in addition to the empirical studies in China in Chapter 3.

Chapter 4 describes the research design and methodology of this dissertation. It also demonstrates the documents, data, main variables, and analytic strategies used in the empirical chapters.

Chapter 5 investigates the effects of social change on the educational outcomes of rural and urban *hukou* holders. Using decomposition methods, I analyse the changes in the components of the educational gap between rural and urban *hukou* holders in China, finding that the main driver behind the educational gap between rural and urban *hukou* holders has different features in different historical periods. In the socialist period, the egalitarian policies effectively reduced the educational gap, and after the higher education expansion reform, status attainment theory could be used to explain the education gap between rural and urban *hukou* holders. In addition, the educational outcomes of rural *hukou* holders are negatively affected by the constructed rural-urban division. These results imply the educational inequality between rural and urban *hukou holders* is driven by both structural changes and current social rules, and if the inequality is driven by structural properties, those neoliberal policies that aim to reduce the educational inequality but target only micro level agents' characteristics may have little effect on reducing the inequality.

Chapter 6 examines the impact of unequal distribution of supply-side educational resources on the educational gap between rural and urban Chinese students. In particular, it investigates the role school plays in widening the educational gap

between rural and urban *hukou* students in different achievement distributions. I apply a value-added fixed effect model to two waves of data on middle school students from the Chinese Education Panel Survey (CEPS). The results provide evidence that the effects of peers and educational resources on the growth of cognitive scores vary by students' *hukou* and the initial test distribution and indicate that an efficient public policy to reduce the educational gap should target specific subgroups, which are harmed by the initial unequal distribution of educational resources.

Chapter 7 integrates the structuration theory with Bourdieu's theory of cultural reproduction by using the "Structure-Disposition-Practice" framework to develop an integral model of cultural reproduction and construct a more precise measurement of habitus. It aims to provide an in-depth empirical understanding of the impact of demand-side educational resources on student's educational outcomes by investigating interrelationships between social position, parents' and students' dispositions, practices, and the field with a Structure Equation Model (SEM). The results suggest Chinese parents' and students' *habitus* play a more crucial role than the family's social position and the student's *hukou* type in the cultural reproduction process, but student's *hukou* type is more important in reproducing the student's cognitive development than academic achievements. The findings provide a quantitative understanding of the cultural reproduction process with relational thinking.

Chapter 8 presents the conclusion of my findings. This research uses a positivist research design to investigate the recursive relationship between structural change and the rural-urban educational gap in China. The results suggest that the egalitarian policies from the socialist period may still affect rural Chinese people's educational expectations but the increasingly unequal distribution of supply-side educational resources and social barriers for rural Chinese people is deepening educational inequality between rural and

urban Chinese people. This dissertation attempt to first empirically use quantitative method to apply saturation theory in educational inequality research and the findings provide a reference for policymaker to reduce the educational inequality between rural and urban Chinese people redistributing educational resources.

#### *1.4 Limitations and future direction*

The limitations of this study must be mentioned. While a majority of the dissertation focused on eighth grade students due to data availability, I could not draw a full picture of the social barriers to rural Chinese students at the level of higher education.

Compulsory education in China provides for free education for children in grades one through nine; one's familial socioeconomic position may play a more vital role in higher education. Future studies investigating how educational resources and cultural capital play a role in the transition from middle school to high school and from high school to university could shed additional light on the relationship between social structure and the rural-urban educational gap.

In this research, I address two different mechanisms of intergenerational transmission. In a stable society, the reproduction theory has higher explanation power to explain the link between social structure and individual action; but when social structure has changed dramatically, people would first adapt the new social rules, so the adaption process is the link between social structure and individual action. Although I addressed the importance of the adaption process, it is difficult to provide solid evidence to show the process only through quantitative methods. Perhaps future fieldwork with qualitative analysis could provide a greater proof for my hypotheses. Especially during the recent pandemic, many countries' educational systems have transferred to online learning. This shift could be an interesting case to study the adaption process, since most people do not have experiences in schooling online. Moreover, despite lacking

educational resources, my results show that rural students and parents are not ‘low suzhi’<sup>2</sup> people; a new direction for policy discussion could shift away from referencing rural areas as being backwards. A more in-depth look at the relationship between social structure and education outcomes would be very helpful for policymakers and researchers.

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<sup>2</sup> Suzhi refers to human quality, which is a widely used slur in China as an essential character for modern citizen. Those of that have low suzhi are seen as not capable, low quality and lacking. Peasants are portrayed and ideologically created as backward and low suzhi people who must undergo civilizing (Anagnost, 2004).





## 2. Theoretical Framework

In this dissertation, the causes of educational inequality between rural and urban *hukou* holders are my main interest. In this chapter, I briefly review the theoretical explanations on the causations of educational inequality and the concepts within structural and reproduction theories. Next, I develop a theoretical framework to understand educational inequality between rural and urban *hukou* holders in China. This dissertation focuses on how the educational inequality between rural and urban *hukou* holders are constructed, and the causes of educational inequality between rural and urban *hukou* holders. The mainstream of educational inequality research uses social origin to explain the differences in educational outcomes; however, the status attainment assumption could not explain why the educational outcomes vary in different countries for people with the same social origins. Some sociologists use the inequality of educational resources to explain the supply side variations; in the rest of this chapter, I use a relational perspective to draw an integrated theoretical picture to illustrate the recursive relationship between social structure, individuals' social position and their educational opportunities.

### *2.1 Possible explanations for educational inequality of the section*

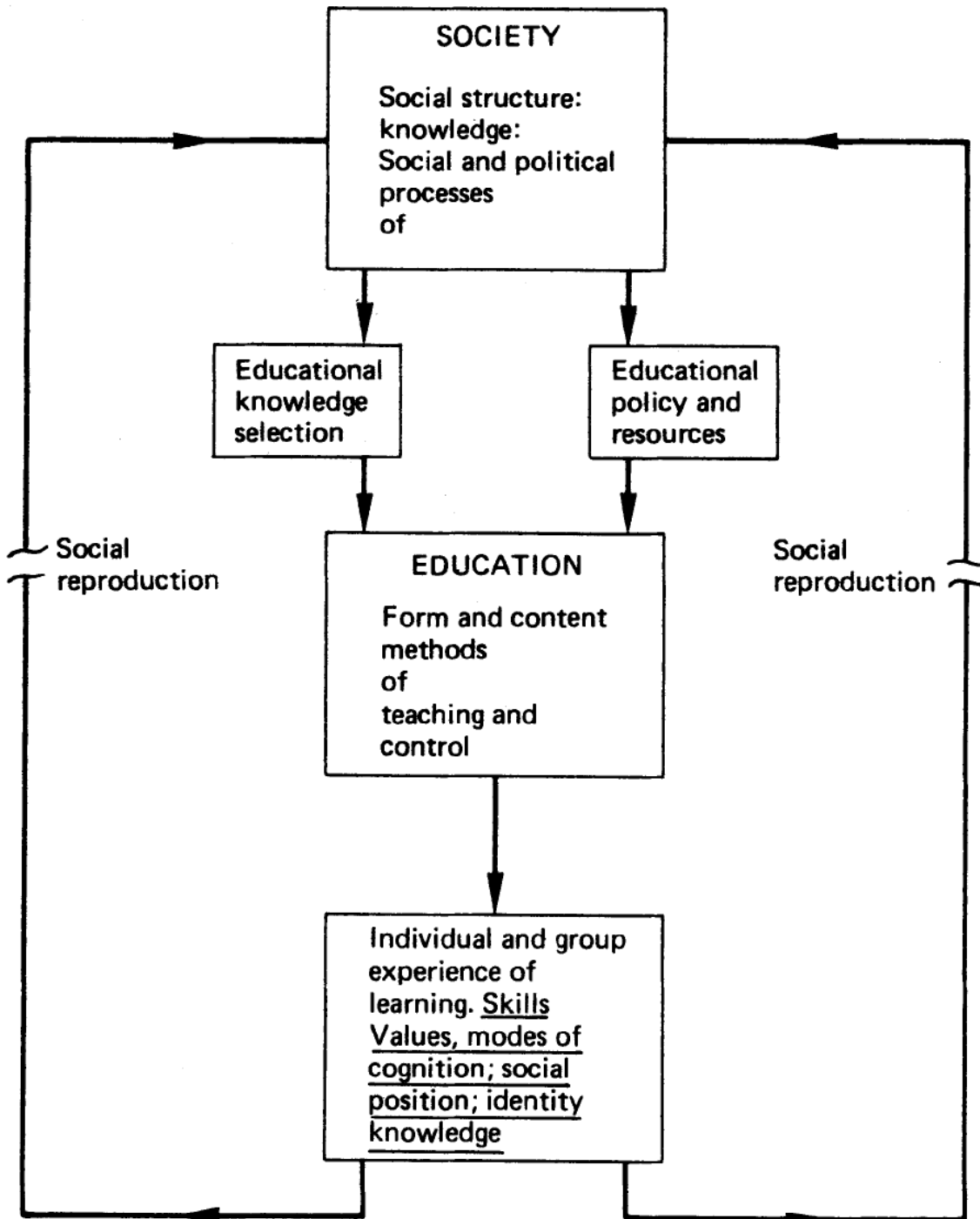
Economists link education to economic development; the stock of human capital is the energy for economic development. On the other hand, sociologists are concerned that education is not a commodity but a programme of action that plays a vital role in social reproduction.

Williamson (1979: p9) said, 'The available education in a given society is the outcome of political processes which determine the pattern of educational facilities and the content of what is to be learned.' The education system as a social institution reflects the power structure of the society and functions as a channel of vertical circulation. In modern society, both family

and school consist of the educational institution which selects and distributes individuals to suitable positions to perform definite social functions. Marxist theorists perceived the education system as subordinate to the economic order of society; thus, educational inequality is caused by the economic inequality among classes.

In contrast, Weberian theorists address the different life conditions to determine the various actions taken by different status groups; therefore, the educational differences are due to similar preferences but different effective resources and relative opportunity costs (Goldthorpe, 1998). Other sociologists, such as Bourdieu and Passeron (1977), who use cultural differences to explain the differences in educational achievements; point out that the function of the school is helping individuals realise and acknowledge the particular culture and language that are dominant in their society through schooling and socialisation with teachers; thus, social group who acquires dominant culture and language gains most via the educational system. Though all major sociological perspectives on educational inequality are related to the social reproduction function of education in which the distribution of power in society affects education. Regarding the nature of the educational experience itself, the question remains how the distribution of power affects the educational system and individuals' actions. By combining a theory of structure and a theory of action, Williamson (1979: p8) uses Figure 2.1 as a simple synopsis of perspective that illustrates education as having a central role in reproducing a given institutional order schematically.

Figure 2.1 A schema for the analysis of education



source: Willamson, 1979: p8

The diagram outlines that individuals' private experiences and social structure interact with each other through the educational process and reproduce the social order. Meanwhile, education itself is the outcome of social stratification, knowledge and the social and political process which determines the educational policy and content of what is to be learned (Williamson, 1979). The diagram also has a similar implication as to the concept of 'duality of structure', which Giddens uses to describe the dynamic interaction between social structure and individual practices. However, in the diagram, Williamson has neglected the time space dimension. According to Giddens (1984: p25), the structure is out of time and space and is marked by an 'absence of subject'; on the contrary, social systems which consist of activities of human agents, are reproduced across time and space. Thus, as a social system, the education system stretches away in time and space, beyond the control of any individual actors; at the same time, the actors' theories of the education system guide their activities which may reify the education system. Based on the notion of the duality of structure, the structural property of the education system is both the medium and outcome of the educational practices it recursively organises. This implies the changes in the economic and education system in the past decades may affect current educational practices. For this thesis, this aspect is crucial since China has experienced dramatic social change, both economic and political, in past decades. In the following sections, I discuss how social changes and other aspects might be help address the research question.

## *2.2 Social changes and educational inequality*

Society changes over time. In addition to social structure and culture, the education system both shapes and is shaped by the dominant model of development and historical experiences. Educational inequality also varies in different contexts; even with the same aim to reduce

educational inequality, the results of an educational policy may vary due to circumstances.

The development stage of society matters. In developed societies, educational inequality is the byproduct of socioeconomic inequality that students from higher-income origins have greater chances of access to quality, educational resource and promotion within the system; in underdeveloped societies, the rural-urban imbalance in educational resources is associated with inequality. Williamson (1979: p23) noted:

‘The transmitted deprivation of the inner city has the same kind of consequences for the individual in modern society as the transmitted poverty of the rural areas in the underdeveloped society. In both cases people lack access to an important resource through which it would be possible to inject a greater degree of control into their lives and understand better the social forces which shape their current poverty.’

In his classic study, Turner (1960) suggests the English school system follows a sponsored mobility model, while the American school system follows a contest mobility model. These two intergenerational mobility models are different in how elite status is obtained. Sponsored mobility is a system in which elite status is obtained through standards put in place by the established elite or their agents and cannot be taken by any amount of effort or strategy; contest mobility is a more meritocratic system in which elite status is acquired through an open contest and is taken by students’ own efforts. Further, Turner explains that under a contest mobility system, all the players compete on an equal footing; the contest norms value people who achieved their success through their own efforts rather than their ascribed characteristics. In contrast, under a sponsored mobility system, the fairness of the game solely depends on the objectiveness of the judgement of the elite or their agents. Turner’s theoretical discussion of the education systems and mobility models explicitly points

out the importance of specific social structures in analysing the function of education systems. Allmendinger (1989) provides an empirical demonstration on the links among social structure, education systems and intragenerational mobility. He uses the degrees of standardisation and stratification to measure the educational system. According to Allmendinger, there are four types of education systems: high standardisation and high stratification, high standardisation and low stratification, low standardisation and high stratification, and low standardisation and high stratification. Societies' different education system structures lead to different labour market outcomes. The occupation of a person educated in a high stratification education system is strongly determined by their educational attainment, whereas in less stratified systems, occupation is weakly related to educational qualification. Meanwhile, people change jobs less frequently in a standardised educational system than in an unstandardised educational system. Thus, the different types of educational systems reshape social structure.

However, as Giddens (1984: p244) pointed out 'All social life is episodic'. Thus, certain aspects of agents' actions can be characterised as episodes with specifiable beginnings and endings. The characteristics of education systems are not fixed. Analysis of educational inequality should not ignore the sequences of change affecting educational institutions or economy and educational institutions changes, in broader intersocietal relations.

The disparity of rural and urban education outcomes in China is an example of how unique historical experiences of societal changes play a role in shaping a current society. The recursive relationship between social structure and the education system is enacted through people's private experiences. Social structure is embedded in individuals' memory traces and instantiated in social practice. Besides the time dimension, the region is another important aspect of analysing educational inequality as it provides the space for interaction.

Furthermore, as Giddens (1984: p119) suggests, regionalisation not only includes location but

also refers to the intersection of space and time, and the time space relation to routinised social practices. Cities are the centres of economic development; correspondingly, rural areas are the periphery of the development. The difference between centre and periphery is not only present in terms of the economy; people, who occupy the centre have greater capability to control their resources. They employ a variety of forms of social closure to protect their prestige and sustain distance from people in the periphery, who are treated as inferiors (Weber, 1978: p 341).

### *2.3 Social structure, cultural capital and educational inequality*

The recursive relationship between social structure and education system is enacted through people's private experiences. Structure is embedded in individuals' memory traces and instantiated in social practice. Among other conditions, education strongly depends on how testing and sifting of individuals are carried out by other institutions, especially by families. Suppose the family performs this role efficiently in such a way that only an already selected group of children reaches the doors of the schools and enters them. In that case, the school's testing, selecting, and sifting role is not so necessary. This is when the doors of a school are open for all children when there is no selection or elimination preceding school. Perhaps cultural and social capital theories are the best illustrations for this process. Bourdieu uses the concepts of cultural capital and *habitus* to explain the cultural reproduction process through educational systems, addressing the effect of social origin on educational outcomes. Bourdieu and Passeron (1977: p116-136) argue that the cultural reproduction process in the French education system mainly occurs through linguistic capital. They note that the bourgeois language is similar to the language used in educational institution to transmit knowledge. Therefore, students from bourgeois families profit from their linguistic capital in the

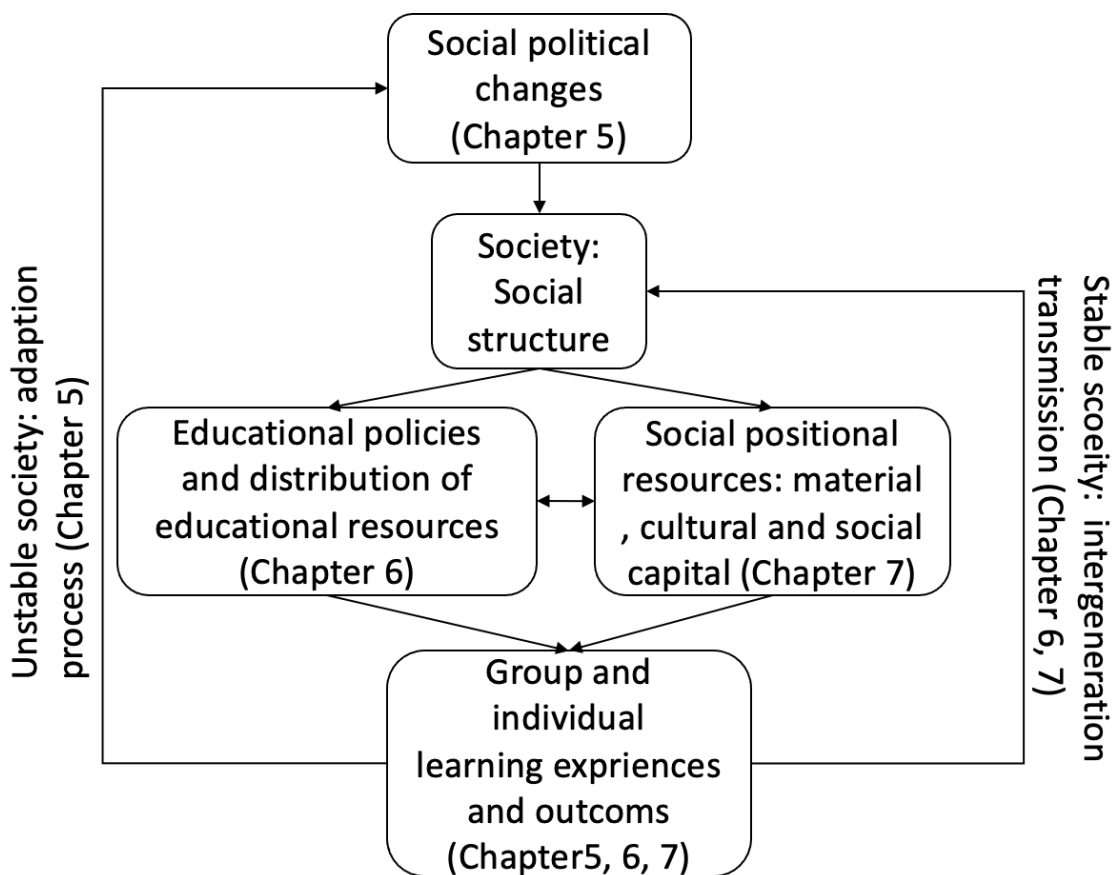
educational system, while working-class students are negatively sanctioned due to a relative lack of linguistic capital. Based on their observation of the French education system, Bourdieu and Passeron conclude that in the French education system, bourgeois culture is dominant. This gives it a similar function as physical capital, which can be translated into profits or advantages later. Familial social capital can enhance or weaken the intergenerational transmission of human capital and cultural capital (Coleman and Hoffer, 1987). According to Coleman and Hoffer, familial social capital is defined as the relations between parents and children, especially the time and effort parents spend on the children's educational development. Social capital beyond the family refers to that gained from the community or the parents' social circles. The presence of this kind of social capital can also help students' educational development in settings such as Catholic schools and elite private schools. Coleman and Hoffer argue that in a strong functional adult community, students from advantaged family backgrounds may reinforce their advantages through schooling. Students from disadvantaged family backgrounds may perform worse in school.

Therefore, social reproduction is a homeostatic causal loop, which reproduces the extant social order through the education system. Giddens (1984: p131-185) refers to this social reproduction process as *social integration*. According to him, social integration refers to the reciprocity between actors in the contexts of co-presence. Since Giddens focuses on the reciprocity of social relationships, I concentrate on the domination dimension of social structure to address the reproduction of inequality. I use social inequality to describe transmission of inequality between co-present actors. Another concept Giddens uses to describe the social reproduction is *system integration*. Giddens (1984: p28) defines this concept as the 'reciprocity between actors or collectives across time space'. Based on his concept, I use the term *system reproduction* to refer to a reproduction process that includes



dimensions of time and space. In this thesis, I argue that educational inequality should be analysed from a *system integration* perspective, which includes the analysis of social changes and regionalisation. I use Figure 2.2 to show the structural schema for the analysis of education inequality, which also defines my research design approach that links all empirical chapters.

Figure 2.2 A structural schema for analysing educational inequality



The revised schema offers a systematic way to understand educational inequality and its transmission mechanisms. First, “education institutions” should include both official institutions such as schools and the family, as well; second, the time and space dimensions play a crucial role in shaping the social system. The adaption process happens when the

structural properties implicate an education institution and interact with an individual.

According to evolution theory, the adaption process means social agents modify their existing social or organic traits in order to maintain a stable society when short-term fluctuations and long-term changes in its composition or structure occur (Giddens, 1984: p233-236). For example, in his study of Algeria, Bourdieu argues the Algerian society evolves from an agrarian society to a capitalism society, workers have to develop the rational perspective before they could carry out rational calculation (Swedberg, 2011). On the other hand, based on status attainment theory, intergenerational transmission occurs in a relatively stable society. This demonstrates how social structures interact with individual practices through one's familial social location. Status attainment theory states that the process of a person's familial social location accounts for whatever status locations one comes to occupy. While a plurality of social hierarchies offers alternative focus for the study of attainment, it is the occupation that is the most strategic and best known readily measured status variables. Finally, any study of individual attainment must take into account the changing structure of status systems within which these processes take place (Haller and Portes, 1973). In this thesis, I use this theoretical model to empirically analyse the educational inequality between rural and urban Chinese people, but this extensive model cannot be put to the test as a whole. To be able to test it in empirical research, a large longitude data across generations and with details of observation categories is required. In the following chapters, I relate them using my theoretical framework and select best longitudinal data I can find. Chapter 3 and 4 review the relevant literature and introduce the data and methods in this research. Chapter 5 focuses on the effects of social and institutional changes on educational outcomes for rural and urban Chinese people. Chapter 6 concerns the impact of school policy and educational resources on educational outcomes.

Chapter 7 explores the impact of familial resources on the individual education outcomes. In Chapter 8, I conclude how the empirical findings echo this theoretical framework.



### 3. Literature Review

This chapter reviews the literature on social changes, educational resource, individual social position and educational inequality in China. As I mentioned in previous chapter, a gap currently exists in the educational inequality literature in exploring the relationship between social changes and educational inequality and providing a clear picture which aspect of education system weight more on reproducing inequality. Even fewer research in non-Western-country context. The focus of the dissertation is, how do social changes affect the educational gap between rural and urban Chinese people? What shapes the educational gap between rural and urban students nowadays? How Chinese student's familial social position affects their educational outcomes?

Studies in Western-country contexts suggest the educational gap between rural and urban people is the result of social development, namely industrialisation and urbanisation, and rural-urban disparities will disappear as the society become more industrialized. The educational inequality is the result of familial social position, which transmit their advantages (or disadvantages) through social and cultural reproduction process; and the effect of the distribution of educational resource on educational inequality is insignificant (Coleman et al., 1966a)

#### *3.1 Social Changes and educational outcome in China*

Few studies were conducted on educational inequality during the socialist period in China, but studies of the educational inequality in the former Soviet Union are adequate. Many Soviet Union studies found that political forces play a vital role in social stratification in socialist countries. For instance, Wong (1998) examines the effects of social structure on educational inequality in former Czechoslovakia during the socialist rule and finds that communist party membership acted as a significant stratification agent. Gerber and Hout (1995) use cohort

analysis and find that education expansion leads to reduce the influence of social origins on educational achievement at the beginning of the Soviet period, then it increases at the end of the Soviet period. In their later research, they also find that social origins became more important during the market transition period in their later research and suggest the increased competition and decreased state intervention reinforce the favourability of the privileged social class (Gerber and Hout, 2004). According to these studies, when a society transits from a socialist regime to a capitalist regime, educational inequality increases which lead to the decrease of intergenerational educational mobility.

Research in China suggests the Cultural Revolution had drastically reduced the impact of one's social origin on the educational outcome, especially for those intelligentsia and cadre families considered privileged social class; and the party membership has a significant impact on one's educational attainment during the 1950s in China (Deng and Trieman, 1997). Whyte (2010) argues that the differences between rural and urban areas in China began in the Mao era when the government created a serfdom social circumstance for rural peasants under the name of socialism. Most studies of educational inequality between rural and urban Chinese people concentrate on the post-reform period. They find that the educational inequality of rural and urban Chinese people is the predominant component of overall educational inequality in the post-reform period in China (Qain and Russell, 2008; Wu and Treiman, 2007). Some scholars blame economic disparity as the leading cause of inequality (Rong and Shi, 2001; Brown and Park, 2002). Others thought that the current education policy in China encourages high competition among students, which promotes educational inequality (Heckman, 2005; Fan, 2008; Jacob and Ma, 2013; Yue, 2015). The higher education expansion in the late 1990s efficiently reduces overall educational inequalities, especially between the eastern developed region and the rest of the country (Bickenbach and Liu, 2013).

The educational opportunity of rural migrants also attracts a lot of interests in recent years. Zhang (2016) reviews literature relates to the inequality of educational opportunities for rural migrants and points out that both administrative barriers and financial barriers based on hukou are the main obstacles for rural migrants to receiving a quality education. Recently, a small-sample estimation shows that the educational gap between rural and urban Chinese people is widening; and the acceptance rate of rural Chinese students for top universities has fallen from twenty-two per cent in 1990 to seventeen per cent in 2000 (Ma, 2010). However, previous studies either only focus on the impact of economic factors on educational inequality between rural and urban Chinese people or ignore the effects of changing the social-political system on educational outcomes. The link between Chinese society and global change, current educational inequality and historical development are missing in the literature. Chapter 5 try to fill this gap by explores the dynamic relationship between social changes and educational inequality in China.

### *3.2 Educational resources and educational outcomes in China*

In the theoretical framework proposed in previous chapter, at least two mechanism link educational inequality with the particular distribution of educational resource. The mechanisms are social exclusion and control.

#### **Social exclusion and educational outcomes**

Webber (1968: pp.43-46) first described social exclusion as the social closure which is created by the powerful to keep the less powerful away from particular benefits. One of the main focuses of this research is how rural Chinese people were excluded from accessing to the quality educational resources. The possible ways to prevent one group of people to access quality educational resource are school segregation and only provide low quality school.

These two ways are usually connected to each other. For example, black students were segregated from white students in the United States before 1954—the *Brown v. Board of Education*. But after the integration program has conducted for decades, researchers find that schools with a higher rate of black students have a higher student-teacher ratio and higher dropout rates, the educational gap between black and white students persists (Booser et al., 1992; Johnson, 2011).

In contemporary society, school segregation is no longer based on different races, but based on the community where people live. Residential sorting reinforce the impact of student's family socioeconomic status on school choice, and lead the socioeconomic composition of the school's student body becomes the primary driver of the academic achievement gap (Card and B. Krueger, 1992; Frankenberg et al., 2003; Berends et al., 2008; Borman and Dowling, 2010; Owens, 2018). However, Coleman Report find school characteristics have little impact on educational inequality when control students' familial backgrounds (Coleman et al., 1966a). Others argue that the Coleman Report has miscalculation and insufficient methodological problems which underestimate the school effect (Jencks et al., 1972; Borman and Dowling, 2010). Moreover, it is difficult to estimate the causal relationship between school segregation and educational outcomes because school segregation could result from residential sorting and endogenous regional educational policy (Vigdor, 2011). Recent quantitative studies suggest that the relationships between some school characteristics and students' academic achievement are nonlinear, they may have different impacts on different students' groups (Hanushek, 2001; Fryer and Torelli, 2010). Understanding the relationship between school characteristics and students' academic achievement is important to identify the mechanism behind it. In chapter 6, I investigate the effect of school characteristics on educational gap between rural and urban Chinese students.



Due to the data limitation, only a few research focuses on the effect of school characteristics on students' educational outcomes in China. Hu and Wang (2018) use Programme for International Student Assessment (PISA) data to estimate the impact of school socioeconomic segregation on students' performance in Shanghai. They use an F-statistic within-school and between-school variation of students' socioeconomic background in PISA to measure the level of school segregation and find a negative correlation between the diversity of school environment and students' performance. Xu and Wu (2016) apply CEPS baseline survey data with a linear regression to investigate the effect of school segregation on cognitive gap between migrant and local students; and they find the level of school segregation is positively related to local students' cognitive scores - especially for local urban *hukou* students and negatively associated with migrant students. They also find school quality is negatively related to the percentage of migrant students. Ma (2019) uses the same data set with a multilevel regression and find the impact of migrant status on students' cognitive development varies across the administrative level of the school location. For instance, the migrant status does not have a significant impact on students' cognitive development in municipal cities; but the relationship between migrant status and students' cognitive development is significant in nonmunicipal cities. Ma also finds similar variations in the relationship between schools' rank and the cognitive gap of migrant and non-migrant students. These two studies focus on the interaction between school segregation and students' migrant status and provide evidence that an individual academic achievement varies depends on peer composition and school quality. However, urban to urban migrant and rural to urban migrants may have a massive difference in familial resources and administrative barriers. In Chapter 6, I control the migrant status and provide a more accurate estimation of the effects of school characteristic on educational gap between rural and urban Chinese students.

## Familial social position and educational outcomes

People in different social position obtain different resources which enhance their offspring's cultural skills that may be rewarded by the educational institutions. Bourdieu (1986a; 1986b) defines such mechanism as cultural reproduction process, he explains the dominant social group is able to reproduce its social position and restrict social mobility through the education system by inculcating their kids with *habitus* and cultural capital which are appreciated by the education system. Nash (2005b; 2005c) defines the specific *habitus* in the field of education as the cognitive *habitus*, which is a subset of the *habitus* that allow cognitive development to function and have an enduring effect on learning ability. He explains that the cognitive *habitus* is the tendency of an individual to act intelligently, while cognitive skills such as reading, and speech are the practices that constitute the cognitive *habitus*.

The cultural reproduction theory in education explains how a dominant social group, through its knowledge and capabilities, reproduces and enhances their offspring's cultural skills, which are rewarded by the educational institutions. In contrast, students in families who lack such kind of knowledge and capabilities are negatively sanctioned by educational institutions through a wide range of mechanisms. Therefore, the dominant social group is able to reproduce its social position and restrict social mobility through the education system. Bourdieu (1986a; 1986b) defines such knowledge and skills as *habitus* and cultural capital, which are shaped during inculcation. In general, the socioeconomic position of the families leads to different parents' *habitus*, which results in different parenting practices. Students' disposition is transmitted from parents and affected by daily parenting practices. The dispositions of a family exist beyond the field, which is constituted by embodied cultural capital and *habitus*. Nash (2005b; 2005c) defines the specific *habitus* in the field of education as the cognitive *habitus*, which is a subset of the *habitus* that allow cognitive development to

function and have an enduring effect on learning ability. He explains that the cognitive *habitus* is the tendency of an individual to act intelligently, while cognitive skills such as reading, and speech are the practices that constitute the cognitive *habitus*. The embodied cultural capital and cognitive *habitus* are essentially the same thing but represent distinct factors in the socialization process. The cognitive *habitus* reflects the capacity of learning, whereas the embodied cultural capital is the capability of learning (Edgerton and Roberts, 2014; Costa, 2006). Specifically, the cognitive *habitus* is the preference and positive attitudes on schooling and related learning activities; the embodied cultural capital is the capability to understand the content of the curriculum. According to Bourdieusian studies, the parental practices of middle-class families address reasoning, self-discipline, and positive self-concept, producing the cognitive *habitus* and embodied cultural capital relevant to the school's value. Therefore, students from middle-class families can transfer their class-related disposition to educational practices, fostering their accumulation of more cultural capital and enhancing their social position.

Since Bourdieu developed the concept of cultural capital and reproduction theory, several studies have tried to assess this theory over the past decades empirically. However, the application of cultural reproduction theory varies depending on the different understandings of the reproduction process. DiMaggio (1982) is one of the pioneers of applying quantitative methods to reproduction theory. Using the students' self-reports of involvement in art, music, and literature as proxies of cultural capital, he finds that highbrow cultural activities have a limited impact on educational attainment. He concludes that, cultural capital refers to personal experiences rather than a familial socioeconomic status; the former plays a cultural mobility role rather than a reproduction one in the United States. Later, Aschaffenburg and Maas (1997) find that participating in high-cultural courses outside the school and before one is 12

years old had a greater impact on the transition to higher education than doing so in older age. Their study also uses parents' participation in highbrow cultural activities as a proxy to measure parents' cultural capital and found a significant effect on children's educational transition. However, whether highbrow cultural activities can be regarded as cultural capital is contentious. Meanwhile, as Bourdieu(1986a) explains conceptually, acquiring cultural capital is time-restricted; the earlier a child is exposed to the cultural activities, the higher the chance he or she gets of accumulating cultural capital. Several measurements of cultural capital have been adopted in the educational and social literature (for a review, see Lareau and Weininger, 2003). Because the concept is very broad to be quantified, it is necessary to narrow it down by integrating with *habitus* and the demands of the field.

Many qualitative studies focus on the effects of *habitus* on educational outcomes (i.e., Lareau, 2011; Reay, 2004). Compared to the various measurements of cultural capital, the measurement of *habitus* is more unified, and scholars usually use occupational aspirations or students' educational expectations as a proxy for *habitus*. Dumais (2002; 2006) analyse *habitus* with a regression model and used students' *habitus* and parental *habitus* separately in different studies. In these studies, she interprets student's occupational aspiration as student's *habitus*, parents' attitudes toward schooling as parental *habitus*, and the outside school cultural activities as cultural capital. The results suggest that students' *habitus* has a larger effect on academic achievement than on cultural capital and that teachers' perception of students' academic skills is positively affected by their parental *habitus*. Researchers apply similar measurements of student's *habitus* and cultural capital also find an effect of *habitus* on higher education transition in other developed countries, but as I mentioned before, due to the narrow representation of cultural capital in quantitative studies, cultural capital is far less important to higher education transition than *habitus* is (Roksa and Robinson, 2017). Most

studies use regression models to estimate the correlations between social background, cultural capital, *habitus*, and academic outcomes, although such models are ill-equipped to reflect the structure of these complex relations. Edgerton, Roberts, and Peter (2013; 2014) apply a structural equation model (SEM) using the Structure Disposition Practice (SDP) framework to examine the relationship between *habitus* and cultural capital.

Empirical studies of the cultural reproduction process in China have been growing in recent years. Many of them are interested in exploring the relationship between cultural capital and students' subject choice in higher education. Sheng (2012) uses both quantitative and qualitative methods to examine this link; she finds that social class has no significant influence on students' subject choice but does affect the type of university they choose. The author also determines that family's cultural activities and the number of books in households are significantly and positively correlated with students' educational expectations. Hu and Wu (2019) examine the mediation effects of cultural capital and *habitus* on choosing a university's major. They divide the cultural capital into objectified cultural capital and embodied cultural capital, and find that cultural capital, in general, mediates the effect of family background on attaining a college major. Further, they report a negative correlation between embodied cultural capital and national college entrance examination scores in Chinese, mathematics, and English; they suggest students' involvement in extracurricular activities might crowd out the time devoted to school learning.

Qualitative research on cultural reproduction in education provides more information about parental practices. Wu (2012) points out that the existing school choice practices among elite primary schools and middle schools require both high-level economic capital and cultural capital. Middle-class parents in China have a higher capability to help children accumulate cultural capital by taking extracurricular classes, acquiring educational credentials, hiring

tutors, becoming ‘special talent students’ and making good use of parents’ educational level and personal history. Therefore, children from a middle-class family background have a big advantage for accessing an elite school and obtaining higher educational resources than children from a working-class or rural migrant family background. Sheng (2017) shows that middle-class parents have a higher level of academic involvement and education expectations for their children, whereas working-class parents also have high expectations regarding their children’s education, but less academic involvement. Yu (2020) shows how the rural migrant working-class parents in Chinese megacities struggle to get involved in the educational activities because they lack the cultural capital needed to succeed in educational institutions. Like previous research conducted in Western countries, quantitative research in China has also neglected the effects of *habitus* in the cultural reproduction process. Chapter 7 try to fill this gap by including parents’ *habitus* and practices in order to provide a comprehensive configuration of intergenerational transmission of cultural advantage.



## 4. Research design and methodology

In this chapter, I outline my research design and methodology. I follow a structuralist research design with document analysis. I start to investigate changes in contemporary China's socioeconomic system and education policies by analysing policy document and historical publications. Various statistical methods are used for studying different aspects of educational inequality between rural and urban Chinese people. This thesis is benefited from several national representative data sources for studying education outcomes, family social location in China: Chinese Household Income Project (CHIP), the official data from the government and China Education Panel Survey (CEPS). Then, I explain the analytic strategy and challenges for each empirical chapter. I provide a table to link the theoretical framework, sub research questions and research methods at the end of the chapter.

### *4.1 Document analysis*

Both socioeconomic system and education policies have changed dramatically after the establishment of the PRC in 1949. To show the important policy changes, I identified, collected, and analysed the following government documents, which are particularly used in Chapter 1 and Chapter 5 but also in the other empirical chapters:

- Report on the results of the national economic plan (PRC/Department of planning, State education commission: 1980, 1998)
- China education yearbook (PRC/ Ministry of Education: 1998, 2000, 2010, 2011, 2012, 2013)
- Yearbook of educational statistics (PRC/ Ministry of Education: 1949-1984, 1990, 2000, 2010)



- Chronicle of Education in the People's Republic of China (PRC/ Ministry of Education: 1949-1982).
- Achievement of education in China (PRC/Department of planning, State education commission: 1975-1980, 1985-1990).

In these documents, I look for key terms that associated with changes in Chinese society, such as:

- Cultural revolution
- Planning economy
- Market-oriented economy
- Compulsory education law
- Statistics
- Assigned job
- Higher education expansion

I discuss the occurrence of these terms and put them into the perspective of who wrote them when, in which document, and with which apparent purpose. I also engage with some academic literature that discuss the early days of reform of the education system in China to sketch the changes in Chinese society and the rural education sector.

#### *4.2 Quantitative data sources*

Four types of data that I use in the subsequent chapters: (1) Official data from government (2) the Chinese Household Income Project (CHIP), which includes six waves in the years 1988, 1995, 1999, 2002, 2007, and 2013; (3) the China Education Panel Survey (CEPS) data includes two waves in 2013-2014 and 2014-2015.

##### **Official data from government**

The official data is from three institutions, the National Statistical Bureau (NBS), the Ministry of Education (MoE) and the China Institute for Reform and Development (CIRD). NBS is the official statistical system responsible for countrywide reporting and has counterparts in each of the twenty-two provinces, four municipalities and five autonomous regions. The online data collection for NBS opens to the public, and I extracted data from the population database to show the changes of rural population from 1963 to 2013 in Chapter 4. I was able to find the number of teachers and number of schools in rural areas in correspondingly years through the annual report from MoE and report from CIRD. Reports from MoE are “Achievement of Education in China: Statistics 1949-1983” and “Achievement of Education in China: Statistics 1986-1990”.

### The Chinese Household Income Project (CHIP)

The Chinese Household Income Project (CHIP) is part of a collaborative research project on incomes and inequality in China, which is organised by Chinese and international researchers, with assistance from the NBS. CHIP has conducted five waves of household surveys in 1989, 1996, 2003, 2008 and 2013. They cover the income and expenditure information in each wave and contain individual and household surveys for urban and rural Chinese people, and include more than 80 per cent of provincial-level administrative units. Each respondent represents one household, and answers cover the information on demographic characteristics, educational attainment, and details of parents’ education and political status. As I mentioned in Chapter 1, the *hukou* system was introduced in the late 1950s as an integrated part of the planning system, which does not only register a person as rural or urban but also has large implications for his or her well-being. Many public policy measures have long prioritised urban persons who are also holders of an urban *hukou*. Chinese people live in the cities live a different life than their peers in the rural areas. This is the background for why CHIP has a Rural

Household Survey covering rural areas and an Urban Household Survey for the urban areas - not a unified system. Given the increased importance of rural-to-urban migration, and because the urban and rural household subsamples do not adequately cover migrants, the 2002 survey added a survey of rural-to-urban migrants. Thus, the 2002 CHIP survey includes three subsamples. The same procedure was adopted for the 2007 survey, which is also composed of three parts: the urban household survey, the rural household survey, and the rural-to-urban migrant household survey. This structure reflects China's urban-rural division and the increased number of rural individuals who have migrated into the urban areas, especially during the last two decades. I apply all the surveys of CHIP data except the 2007 survey, which only questioned rural migrants as the objects, and those questions were quite different from the other CHIP surveys. I only include five waves in the analysis in Chapter 5, and the total sample includes 24,144 individuals.

### **The China Education Panel Survey (CEPS)**

The China Education Panel Survey (CEPS) is a nationwide, large-scale follow-up survey designed and implemented by the China Investigation and Data Centre of the Renmin University. It aims to unveil the influence of home, school, community, and macro-social structure on individual educational outputs and further explore the role education plays over the life course. The project started in 2013, and it tracks students when they enter middle school (seventh grade). The survey includes five questionnaires: (1) students, (2) their parents, (3) their teachers, (4) their main subject teachers, and (5) their principals. The sample uses the average educational level of the population and the proportion of the floating population as stratified variables, and randomly selecting twenty-eight county-level units (counties, districts, and cities) from the entire country as survey points. A total of 10,279 students in seventh grade nested in 112 schools and 221 classes were randomly selected from the county-level

units to conduct the baseline survey. The follow-up survey included 9449 students from the baseline survey who is in the eighth grade in the 2014-2015 academic year, and the response rate was 91.9 per cent. The CEPS survey contains wave-specific weights for non-response that makes the sample representative on a cross-sectional basis. Both Chapter 6 and Chapter 7 use data from CEPS, the follow-up wave of the CEPS, which is conducted during the academic year of 2014-2015. Only some variables were acquired from the baseline wave of the academic year of 2013-2014. Data used in Chapter 6 mainly comes from the follow-up wave of CEPS conducted during the academic year of 2014-2015. Some variables were acquired from the baseline wave during the academic year of 2013-2014 after excluding 2.2 per cent of observations with missing cases in the follow-up survey. Chapter 6 includes 9238 students in eighth grade from 112 schools in 28 cities. Chapter 7 only use data from the follow-up survey, because some questions are not consistent within the two waves that involve the key variables in our model. After excluding 7.8 per cent of the observations with non-response in the follow-up survey, the final sample includes 8,714 students in Chapter 7.

### ***4.3 Analytic strategies***

As it is shown in Figure 2.2, to answer the main research question, I focus on three dimensions. Chapter 5 focuses on how changes to the economic and political systems affect the educational gap between rural and urban *hukou* holders; Chapter 6 analyses the roles of supply-side educational resources play in influencing the education gap between rural and urban Chinese students; Chapter 7 investigates the effect of demand-side educational resources on the educational gap by empirically applying cultural reproduction theory. These three empirical chapters use different analytical methods, Chapter 5 and 6 use regression-based statistic models, and Chapter 7 uses the Structure Equation Model (SEM). The

statistical software STATAMP 14 (Stata Corp, College Station, TX) and RStudio (Version 1.1.419 – © 2009-2018 RStudio, Inc) were used to perform statistical analysis.

### **Analytic strategies in Chapter 5**

Chapter 5 aims to evaluate the changes in the educational gap and the drivers of these changes between rural and urban people. I divide the analytical sample into three cohorts based on the changes in social structure and education policies. The detail of each cohort is summarised in Table 4.1. Cohort 1 was born between 1960 and 1969, who were in middle school or below when the cultural revolution happened; Cohort 2 was born between 1970 and 1979, who were affected by the economic reforms and restoration of the education system in 1978 might have affected their educational attainments; Cohort 3 was born between 1980 and 1989, whose educational attainment was strongly influenced by the educational expansion policy. Since the latest wave of the CHIP study was conducted in 2013, for people who were born in 1989, they had only reached twenty-four years old in 2013. The underestimated educational attainment for Cohort 3 is expected. To reduce this selection bias, I restricted the age range of our sample to the range of 24-39. The average age of graduation from college is around 23. Thus, most people observed at ages 24-39 already graduated from college. The potential selection bias is for those observations who are over 24 but still are full-time undergraduate students. However, as only 0.4 per cent of observations are in this group, it is safe to conclude this selection strategy should not significantly affect the results.

Table 4.1 Periods, cohorts and corresponding policies

	Cohorts	Social control	Education Policy
Socialist period (1949 - 1976)	Cohort 1 (1955-1964)	inter-migration was forbidden	socialist egalitarian education policy, and radical social movement destroyed the education system.
Transition period (1977 - 1985)	Cohort 2 (1965-1974)	used quota to control inter-migration; rural hukou holders no social benefits	mixed socialist policy and market-oriented policy; education system was restored.
Modernisation period (1986 -)	Cohort 3 (1975-1984)	inter-migration is allowed; rural hukou holders no social benefits	market-oriented policy; 1986 compulsory education law, 1998 education expansion.

Chapter 5 uses the regression models (both linear regression and ordered probit regression) to separately estimate the determinants of educational attainment for rural and urban Chinese people. Then, the extension of Blinder-Oaxaca decomposition (B-O decomposition) is used to capture drivers of the changes in the educational gap between rural and urban Chinese people.

The B-O decomposition has been widely used to study the gender differences and cohort effects in the wage discrimination literature; as well as the educational gap between genders or ethnic groups (Oaxaca, 1973; Blinder, 1973; Yang et al., 2005; Gevrek and Seiberlich, 2014). It decomposes the total difference between two groups into two parts: the explained difference and the unexplained difference. The explained difference is the difference between independent variables; the unexplained difference is the difference between coefficients and the intercept. Blinder (1973) and Oaxaca (1973) interpret the unexplained difference as discrimination. But others argue that the difference in coefficients for the constant and dummy variables is difficult to interpret; also, the omitted variable may lead to overestimating the impact of discrimination (Ospino et al., 2009; Elder et al., 2010). This research aims to show the big picture of the changes in the educational gap and the main drivers. I interpret the explained difference as the measurable individual material differences

and the unexplained difference as the difference caused by categorical inequality (For instance, when others are equal, the different returns between male and female, I interpret as the gender inequality caused by unknown structural rules).

I use the decomposition method based on OLS regression to address drivers of the differences in educational attainment: either due to the gap in the mean of independent variables (measurable material differences) or the mean of coefficients (categorical inequality). Then, I use the extension of B-O decomposition to find the driver of the change of educational gap between rural and urban hukou holders through three periods (Wellington, 1993; Fairlie, 2005). The B-O decomposition method is presented in Appendix.

### Analytic strategies in Chapter 6

Chapter 6 attempts to investigate the effects of supply-side educational resources, such as students' body composition, public expenditure per students and school's milieu on educational gap between rural and urban students. Students are divided by initial achievement for rural and urban *hukou* students. A. Hanushek and G. Rivkin (2008) use this method to investigate the effect of student racial composition on black-white students' achievement gap in different achievement quartile. I assume differences in educational resources may affect students with different *hukou* type and initial achievements differently.

Dividing students by their initial achievement may have some identification issues. First, the initial cognitive scores may contain the actual knowledge with errors, which means two students with identical cognitive skills could place into different categories. Second is the issue that may arise due to the cut-off, students near to cutoffs, 25<sup>th</sup>, 50<sup>th</sup>, and 75<sup>th</sup>, may have similar characteristics, but they are placed into different categories. To solve the first issue, I use another subject (math) to test the validation of the robustness of the result, based on the assumption that the positive correlation of true knowledge across subjects and no correlation

of errors. The results are similar and present in Appendix, so it is safe to say that the bias due to the cut-off is small in this study. However, it is difficult to find a solution for the second issue without using the experimental method. The only way to reduce the possible bias under the current condition is to examine the distribution of two *hukou* types of students and use the group with more dispersed distribution as the cut-off baseline. The rural *hukou* students have higher variance and standard deviation for initial cognitive scores; thus, the sample is divided on the basis of initial cognitive scores quartile of rural hukou students.

Identifying the student composition effect and school characteristics is difficult because educational resources allocation may relate to the school's student body composition. I use the value-added models with fixed effects to identify the effects of student composition, education resources, and school milieu. The models control the student, family, school, community, and city characteristics, which may bias the estimated effect and minimise the endogeneity problem. Specifically, a series of controlled variables are included to identify the impact of interest. The null model only controls the student's ascribed characteristics. In the second model, the achieved individual characteristics are controlled, including educational inspiration, number of friends, and friend's learning behaviour. The third model controls class characteristics, which present the potential within-school variation. The fourth model controls other school characteristics rather than variables of interest. In the last model, the regional differences are captured by the city fixed effect.

### Analysis strategy in Chapter 7

Chapter 7 examines the relationship between demand side educational resources and educational outcome in China. It uses the path analysis via an SEM method and applying them to the CEPS survey data. This method has two main advantages over other quantitative techniques: first, it uses a system of equations to uncover both direct and indirect paths



simultaneously, which allows us to investigate the theoretical linkage between factors (Sewell and Hauser, 1975; Carolan and Wasserman, 2015); second, SEM with latent variables allows for the measurement errors of composite indicators to be modelled, which averts the possibility of omitted variable. To get the unbiased parameters for the representative results, the model is weighted by the specific design weights of the survey; and detail on the weighting method is provided in the CEPS data manual since the survey's sample was not randomly selected (National Survey Research Centre, 2015: page 16-20). Chapter 7 also uses standardised root mean squared residual (SRMR) and coefficient of determination (CD) indices to evaluate the model's goodness of fit. The conventional cut-off of SRMR is .08, and one of less than .08 indicates an excellent fit of the model to data; CD is the same as  $R^2$  to the whole model, a perfect fit corresponds to 1 (Browne and Cudeck, 1993; Hu and Bentler, 1999). Chapter 7 first examines interrelationships between all the factors and specifies links between family social position and intergenerational transmission of cultural advantage; then, it builds from this preliminary step to compare the influence of each factor on cognitive scores and academic achievements.

#### *4.4 Methods per chapter and research question*

The following table summarise statistical methods and research questions in each empirical chapter:

Table 4.2 Statistical methods and research questions in each empirical chapter

Chapter	Research Question	Methods	Conceptual Framework
Chapter 5	What is the impact of changes in the social system on the educational gap between rural and urban people in China?	Quantitative methods; apply CHIP data; use OLS and B-O decomposition model.	Effects of social changes on educational inequality (Unstable society).
Chapter 6	What are the impacts of education resource, school environment and school segregation on the cognitive development of rural and urban <i>hukou</i> students?	Quantitative methods; apply CEPS data; use fixed effect value-added model.	Effects of supply-side educational resources on educational inequality (stable society).
Chapter 7	What is the cultural reproduction process in China? Does <i>hukou</i> type affect the reproducing process?	Quantitative methods; apply CEPS data; use SEM model.	Effects of demand-side educational resources on educational inequality (stable society).



## 5. Social Changes and Educational Gap between Rural and Urban Chinese People (1956-2013)

The structure of the education system has remained similar since the establishment of the PRC in 1949. Schooling comprises five or six years of primary school, four (or three) years of secondary/middle school, and three years of academic or technical high school. Then, high school graduates must pass the national college entrance examination (NCEE) to enrol in either four-year university (for bachelor's degrees) or three-year postsecondary education for professional certificates. The schooling age usually starts at age six or seven for primary school. Students enter middle school around twelve or thirteen years old, high school around fifteen or sixteen, and if university studies are completed successfully, students graduate around age twenty-three. As I mentioned in Chapter 1, the education policies and allocation of educational resources have been affected by social political structure changes. During 1955-1978, the newly established country struggled to survive and explore socialist development. The communist ideology had addressed to allocate the resource and rights equally to everyone; on the other side, the internal migration was under strict restriction and urbanization was stagnated that the percentage of urban population kept around 17 per cent. The university access exam was restored at the end of 1977, in the next year, China has launched the market-oriented economic reform and decided to 'put economic development at the priority, and all other institutions includes education system need to be adjust itself to meet the aim.' (Deng, 1995: p231). The economic reform also implies the planed egalitarian policies replaced by the market-oriented and urban-centred policies. Despite government have relaxed the migration restriction that small number of rural peasants could go to urban areas and become low-skilled worker in the factories or construction industries, but neither them nor their kids do not have

the qualification to access to schools in the urban areas due to the unchangeable rural *hukou* type. Moreover, with the decentralized fiscal policy after 1978, many rural schools had lost their stable financial source, and had to shut down or merge with other schools, number of rural schools have reduced sharply (Xie, 2002; Zhao, 1999). The compulsory education law has conducted in 1986, which required children from ages 6-16 to obtain at least nine years of basic schooling (including 6 years of elementary and 3 years of middle school. Other policies have followed: In 1996, the state abolished the job assignment rules and the labour market became de facto market-based; in 1999, the higher education began to expand, more universities were built, and the enrolment rate has increased sharply. As a result, Chinese people born after 1980 need to follow their 9 years of compulsory education while they were young and have to find jobs by themselves when they graduate from higher education institutions. In general, the elementary school enrolment rate in 1980 was 93.9 per cent per cent, which grew to 98.9 per cent in 1998. Middle (secondary) school enrolments increased from 75.9 per cent in 1980 to 94.3 per cent in 1998. The university entrance rate in the 1980s was 4 per cent, which increased to 5 per cent in the 1990s. After the higher education expansion, the entrance rate increased to 17.7 per cent in 2005, and even further to 31 per cent in 2012 (China Statistical Yearbook, 2006; 2013). In the meantime, the tuition fees for higher education have increased as well-the average cost of tuition has increased by a factor of 25 from 1989 to 2007 (300 yuan to 5000 yuan), but the average incomes for urban and rural residents have only increased 9 and 6 times, respectively (NBSC 2008). Table 5.1 shows changes in population, primary and middle schools, and teachers in rural areas after 1949. Restricting by the data availability, Table 5.1 only presents data in some critical years, aiming to glance at changes in population and education resource in rural areas. The rural population has decreased gradually from 1963 to 2013. The rural schools and teachers have increased

dramatically before 1978 due to the socialist policies and cultural revolution; then, it decreased sharply after economic reform. On the one hand, these changes in educational resources in rural areas reflect the changes in the socioeconomic structure; on the other hand, one may wonder how these changes impact on people’s educational outcomes.

Table 5.1 Percentage of the rural population, number of primary and middle schools and teachers in rural areas

Periods	Year	PoP (%)	PSs (%)	PTs (%)	MSs (%)	MTs (%)
Before 1978	1963	83.16	49.43	78.12	64.07	35.31
	1978	81.08	96.52	86.78	94.67	78.74
1978-1998	1981	79.84	95.97	85.38	91.68	73.51
	1998	66.65	81.26	63.94	56.56	75.43
After 1998	1999	65.22	80.46	62.76	55.80	51.78
	2013	46.27	65.71	56.79	35.00	36.08

Note: PoP stands for percentage of the population; PSs stands for the percentage of primary schools; PTs stands for the percentage of primary school teachers; MSs stands for the percentage of middle schools; MTs stands for the percentage of middle school teachers.

Source: NBSC 2014.

Ministry of Education, Department of Planning, ed., *Achievement of Education in China: Statistics 1949-1983* (Beijing: Peoples Education Press, 1985), pp.200,222; State education commission ed., *Achievement of Education in China: Statistics, 1986-1990* (Beijing: Peoples Education Press, 1991), pp, 68-77

Ministry of Education, Department of Planning, *Annually Education Statistics Report*. <http://www.moe.gov.cn/s78/A03/moe560/moe566/>

China reform organization. (2012, March 2). Shortening Rural Education Gap. Retrieved November 27, 2018, from <http://www.chinareform.org.cn/Economy/Agriculture/Practice/201203/t20120303135667.htm>

### 5.1 Changes in education outcomes between rural and urban Chinese people

In the following analysis, I apply data from CHIP and the analytic strategy which I have described in Chapter 4. Figure 5.1 shows the higher education participation rates have increased for both rural and urban people. Still, higher education participation rates have grown much more for urban Chinese people than rural Chinese people. The average share of higher education participation rates for Chinese people has increased from 10 per cent for

people born in 1955 to more than 20 per cent for people born in 1985. But the gap between rural and urban people is vast: for urban people, the higher education participation rate has increased from 10 per cent to almost 60 per cent; but for rural people, it only increased from 0 to near 10 per cent.

Figure 5.1 Higher education participation rates for rural and urban people

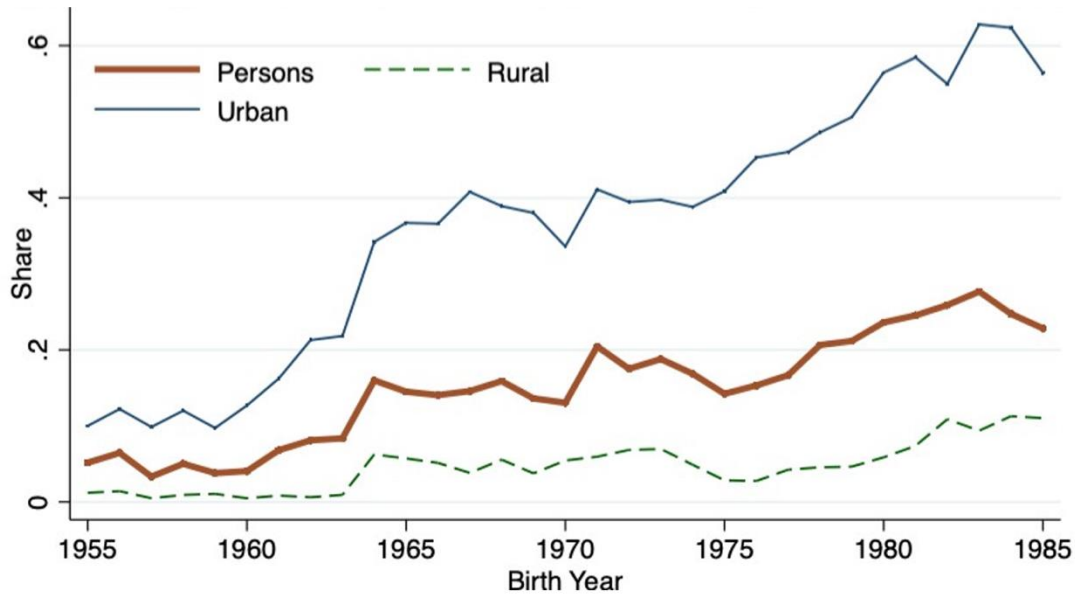
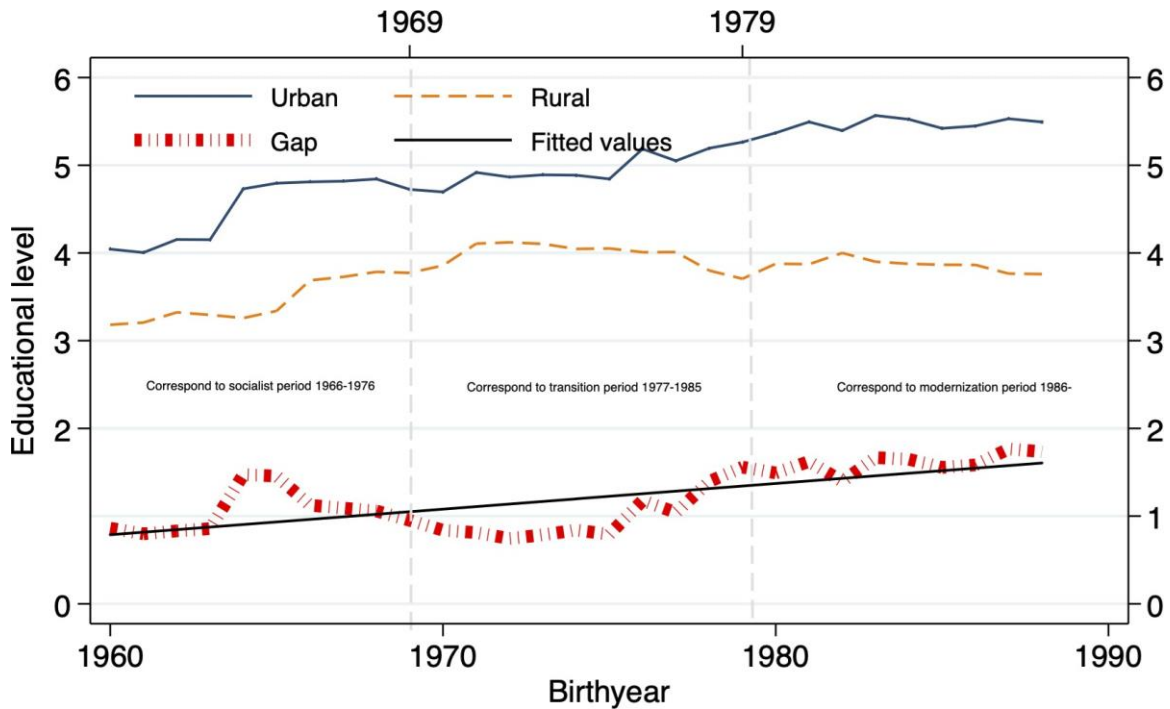


Figure 5.2 shows the changes in the educational gap in each cohort. The educational gap first raised for people born in 1955, then decreased for people born between 1965 to 1974, and increased for people after 1975. There is a tendency of reducing the gap for people born in 1985; however, due to the data limitation, this decrease could be seen as underestimating the educational attainment gap. After all, it clearly shows that the difference in educational attainment between rural and urban Chinese people is increasing, especially for people born after 1975. According to the sample, rural Chinese people's the main educational attainment trends only have a small increase from 1965 to 1975. The average educational attainment for urban Chinese people has increased almost two levels from 1955 to 1985.

Figure 5.2 Average educational attainment and the educational gap between rural and urban Chinese people



### 5.2 Variables and coding strategy

Based on the context of educational inequality in China, I categorised three main drivers of educational inequality as independent variables: family background, region, individual characteristics. The familial background includes parents' educational attainments and party memberships. Educational attainment for each parent uses the same measurement as the dependent variable. The relationship between parents' educational levels and children's educational attainment is intergenerational educational mobility (Pfeffer, 2008). Some sociologists assume that intergenerational educational mobility is high in a meritocratic society (Blau and Duncan, 1967). Others consider parents' educational backgrounds as a resource or capital for the child; therefore, highly educated parents could be an asset for their



child's future success (Bourdieu, 1973; Coleman, 1988). Party membership is a symbol of the new privileged class in socialist countries, and empirical studies show that party membership was crucial for de-stratification during the first communist generation and re-stratification for the second generation in many former Soviet countries (Szelenyi and Aschaffenberg, 1993; Heyns and Biatecki, 1993). A recent study uses survey data in 2010 to show that the schooling gap for parents with and without Communist Party membership is around 2.2 years on average in China (Golley and Kong, 2017).

Income inequality among regions has sharply increased after 1978, especially between coastal and inland provinces (Kanbur and Zhang, 1999; Lee, 2000). According to the regional economic development policy, I code the geographic regions into four areas: (1) East, (2) Middle, (3) West, and (4) Northeast, which follows the chronological order of the economic development policies that were issued by the state. The regional variables are affected by both the economic structure and policies; so, it is a time-varying variable that may affect the number and quality of schools (Mikk and Saar, 1995). I assume that regional differences are the smallest during the socialist period, then they grow during the reform period; finally, they decrease during the educational expansion period.

Other personal characteristics such as gender and ethnicity may also affect educational inequality due to social and cultural norms (Farkas et al., 2010). The age-specific factors could also be an issue, so I include the age and survey year as control variables to control the age-related errors (Torche, 2015). Table 5.2 shows the description of all variables.

Table 5.2 Description of data

Category of variables	Observed variables	Type
<b>Dependent Variable</b>	Educational attainment	Ordinal
<b>Independent Variables</b>		
Familial background	Father's educational level	Ordinal
	Mother's educational level	Ordinal
	Father's party membership	Ordinal
	Mother's party membership	Ordinal
Region	East	Dichotomous
	Middle	Dichotomous
	West	Dichotomous
	Northeast	Dichotomous
Personal Characteristics	Gender	Dichotomous
	Ethnics	Dichotomous
Control	Age	Cardinal
	Survey year	Ordinal

### *5.3 Find the determinants of educational attainment for rural and urban Chinese people in each cohort*

This section addresses the determinants of educational attainment and the components of the differences for each cohort. Tables 5.3- 5.5 show the results for each cohort based on the OLS models. Table 5.6 presents the results of the extension of B-O decomposition. The detail of the models is explained in Appendix A. In tables 5.3- 5.5, the first and third columns are results for OLS estimation, the second and fourth columns are results for OP estimation. As I mentioned in Chapter 4, OP estimation is used for robustness check since the dependent variable is an ordinal type. The results of the two estimations are similar, which suggest the OLS estimation is robust. The first two columns present results for urban *hukou* holders, the

last two columns are results for rural *hukou* holders. Table 5.3 presents the result for cohort 1, who is born between 1955 and 1964, and their schooling decision is mainly affected by the education policies in the socialist period. According to the results of OLS estimation, the parents' educational levels, father's political affiliation, and gender have significant impacts on urban *hukou* holders. For urban *hukou* holders, the coefficients on parents' educational levels and father's political affiliation are positive and highly significant, and on gender is negative and highly significant. For rural *hukou* holders, the coefficients on parents' educational levels, father's political affiliation, and northeast region are positive and significant, and on minority and gender are negative and significant. First, other things equal, one has a father with communist party membership has higher educational levels, around 0.150 standard deviations higher for both rural and urban *hukou* holders. Women have lower educational attainments compare to men, the negative impact of being women on educational attainments is around -0.160 for both rural and urban *hukou* holders. Negative effects are seen for ethnic minority people with rural *hukou*; their educational attainments are 0.220 standard deviations lower than ethnic Han people. Last, rural *hukou* holders in the northeast region have higher educational attainment than in the East region, but the effects are moderate ( 5 per cent significance level).

Despite the coefficients on parents' educational levels are positive and significant for both urban and rural *hukou* holders, the magnitudes of coefficients on rural *hukou* holders are much smaller than urban *hukou* holders, which suggest intergenerational mobility is higher in rural areas, and the association between parents with a low education level and educational attainment is weak. Only the father's political affiliation has significant impacts on educational attainment, the coefficients on mother's party membership are insignificant for both *hukou* holders. The regional disparity has not appeared during this period.

Table 5.3 The determinants of educational attainment for rural and urban *hukou* holders (Cohort 1: 1955-1964)

	Urban		Rural	
	OLS	OP	OLS	OP
<b>Family Background</b>				
Father Education	0.159***(7.76)		0.045*(2.02)	
<i>Primary</i>		0.110 (0.80)		0.008 (0.13)
<i>Middle</i>		0.345* (2.35)		0.203* (2.34)
<i>High</i>		0.414** (2.72)		0.108 (0.83)
<i>Professional</i>		0.901***(5.01)		0.088 (0.43)
<i>University</i>		0.722*** (4.16)		0.0334(0.12)
Mother Education	0.125*** (5.08)		0.055*(2.50)	
<i>Primary</i>		0.173* (2.10)		0.189** (3.25)
<i>Middle</i>		0.104 (1.01)		0.255 (1.79)
<i>High</i>		0.420*** (3.79)		-0.038(-0.16)
<i>Professional</i>		0.335 (1.84)		0.400 (1.23)
<i>University</i>		1.107*** (5.76)		0.353(1.86)
Father' s Political	0.153***(3.66)	0.173*** (3.73)	0.152** (3.16)	0.191** (2.95)
Mother' s Political	0.057 (0.96)	0.054(0.81)	0.083(0.55)	0.0881 (0.43)
<b>Region</b>				
Middle	0.087 (1.72)	0.076 (1.34)	-0.0295(-0.64)	-0.030 (-0.50)
West	0.046 (0.85)	0.035 (0.58)	-0.0593 (-1.28)	-0.050 (-0.82)
Northeast	-0.084 (-1.29)	-0.127 (-1.75)	0.151* (2.12)	0.183(1.92)
<b>Personal Character</b>				
Minority	0.053 (0.53)	0.095(0.86)	-0.220** (-3.21)	-0.279** (-3.05)
Female	-0.160*** (-4.04)	-0.156*** (-3.56)	-0.156*** (-4.15)	-0.202*** (-3.99)
_cons	2.762***(7.64)		3.413*** (12.40)	
Control				
Age	Y	Y	Y	Y
Year	Y	Y	Y	Y
<i>N</i>	2479	2479	2098	2098
<i>A R<sup>2</sup>/P R<sup>2</sup></i>	0.247	0.1079	0.259	0.1235

Note: Omitted categories are illiteracy (in coeducational level), east region (in region). Political is a dummy variable ( Communist party member = 1, noncommunist party member= 0); minority is a dummy variable (Han=0, minority =1); female is a dummy variable (male = 0, female = 1).

t statistics in parentheses.

The A  $R^2$  is the adjusted  $R^2$ , the P  $R^2$  is the Pseudo  $R^2$ .

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Table 5.4 shows the results for Cohort 2 (1965-1974), whose educational attainment was affected by the structure and the policies during the transition period. According to the results of OLS estimation, parents' educational levels, parents' political affiliation, northeast

region and gender have significant impacts on urban *hukou* holders. For urban *hukou* holders, similar to Cohort 1, the coefficients on parents' educational levels and father's political affiliation are positive and highly significant, and on gender is negative and highly significant. But the importance of the mother's political affiliation and regional differences arises for Cohort 2 with urban *hukou*. For rural *hukou* holders, the coefficients on variables that reflect the familial background are insignificant, which include parents' educational levels and parents' political affiliation. The coefficients on middle, western regions, minority, and gender are positive and significant. First, other things equal, urban *hukou* holders' parents with communist party memberships have higher educational levels, around 0.131 standard deviations higher if one's father is a communist party member, and 0.085 standard deviations higher if one's mother is a communist party member. Women with urban *hukou* have lower educational attainments compare to men, the negative impact of being women on educational attainments is around -0.173, but women with rural *hukou* have higher educational attainments compare to men, the positive impact of being women on educational attainments is around 0.155. Also being an ethnic minority with rural *hukou* has positive effects on educational attainment, which is around 0.084 standard deviations higher than ethnic Han people. Last, rural *hukou* holders in middle and west regions have higher educational attainments than in the east region, urban *hukou* holders in the northeast region have higher educational attainments than in the East region, but the effects are moderate ( at 5 per cent significance level).

The father's education level follows the pattern that increases marginal returns of higher educational attainment for urban *hukou* holders. For example, according to the OP results, urban *hukou* holder's father who graduated from middle school has 29.2 per cent higher returns, and who graduated from university has 84.2 per cent higher returns on

educational attainment than the illiterate father. Variables of familial background only have small impacts on educational attainment for rural *hukou* holders. The coefficients on parents' educational level are insignificant, which suggest the intergenerational mobility for rural *hukou* holders are very high, this may cause by the implementation of compulsory education law. Since most parents in rural areas are illiterate before. Both parents' political affiliations have positive and significant impacts on educational attainment for urban *hukou* holders but don't affect rural *hukou* holder's educational attainment. At this period, China focusses on developing urban areas and the communist party membership may provide more prestigious rights. Being women have lower educational attainment in urban areas, but females with rural *hukou* have a higher education level, with 0.155 standard deviations higher returns than males on average. The regional education disparity began to increase in rural areas, and even though the coefficients are relatively small. Rural *hukou* holders in the east region have relatively lower education attainments compare to other regions. This may be because the east rural region has higher demands for cheap unskilled labour, leading rural youths to choose work over school. The rural *hukou* holders who identify as an ethnic minority have higher educational attainment than the Han, which may be the consequence of the special higher education quota policy among ethnicities. Considering that the substitution effect of government intervention may be more substantial in poor rural than urban areas, the minorities in rural areas have more educational opportunities compared to the Han (Gerber and Houts, 2004).

Table 5.4 The determinants of educational attainment for rural and urban *hukou* holders  
(Cohort 2: 1965-1974)

	Urban		Rural	
	OLS	OP	OLS	OP
<b>Family Background</b>				
Father Education	0.150*** (10.98)		0.000(0.00)	
<i>Primary</i>		0.194* (2.35)		-0.257*** (-5.34)
<i>Middle</i>		0.292*** (3.42)		-0.266*** (-4.39)
<i>High</i>		0.524*** (5.97)		-0.149* (-2.05)
<i>Professional</i>		0.692*** (6.69)		-0.0178 (-0.15)
<i>University</i>		0.842*** (8.02)		0.290* (2.27)
Mother Education	0.125*** (7.83)		-0.009 (-1.44)	
<i>Primary</i>		-0.010 (-0.18)		-0.061 (-1.55)
<i>Middle</i>		0.145* (2.36)		-0.0583 (-0.77)
<i>High</i>		0.364*** (5.40)		-0.233** (-3.04)
<i>Professional</i>		0.403*** (3.42)		-0.233* (-2.43)
<i>University</i>		0.655*** (5.04)		-0.127 (-1.64)
Father' s Political	0.131*** (4.36)	0.149*** (4.44)	-0.035 (-1.80)	-0.059(-1.40)
Mother' s Political	0.085* (2.02)	0.084 (1.76)	0.035 (0.69)	0.077 (0.71)
<b>Region</b>				
Middle	-0.009 (-0.24)	-0.024 (-0.58)	0.043* (2.33)	0.100* (2.55)
West	-0.015 (-0.40)	-0.032 (-0.75)	0.047* (2.40)	0.106* (2.52)
Northeast	-0.107* (-2.07)	-0.111 (-1.91)	0.037 (1.37)	0.128* (2.17)
<b>Personal Character</b>				
Minority	-0.030(-0.44)	-0.044 (-0.57)	0.084*** (3.46)	0.167** (3.16)
Female	-0.173*** (-6.22)	-0.189*** (-6.07)	0.155*** (10.16)	0.372*** (11.06)
cons	1.411*** (7.21)			3.617*** (20.24)
<b>Control</b>				
Age	Y	Y	Y	Y
Year	Y	Y	Y	Y
<i>N</i>	4765	4765	6580	6580
<i>A R</i> <sup>2</sup> / <i>P R</i> <sup>2</sup>	0.165	0.0461	0.197	0.178

Note: Omitted categories are illiteracy (in coeducational level), east region (in region). Political is a dummy variable ( Communist party member = 1, noncommunist party member= 0); minority is a dummy variable (Han=0, minority =1); female is a dummy variable (male = 0, female = 1).

t statistics in parentheses.

The *A R*<sup>2</sup> is the adjusted *R*<sup>2</sup>, the *P R*<sup>2</sup> is the Pseudo *R*<sup>2</sup>.

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001.

Tables 5.5 reports the results from OLS and OP regression for Cohort 3, who is born between 1975 and 1984, and their schooling decision is mainly affected by the higher education expansion reform in the market-oriented economic period. According to the results of OLS estimation, the parents' educational levels, regional variables have significant impacts on both urban and rural *hukou* holders. For both urban and rural *hukou* holders, the coefficients on parents' educational levels are positive and highly significant, and on regional variables are negative and highly significant. The difference between parents' political affiliation, gender and ethnics are disappeared for urban *hukou* holders, but being a female remains disadvantage for rural *hukou* holders.

The OP results show that parents with university and higher educational level have the highest returns. For instance, the educational attainment for urban *hukou* holders whose father has university degrees or above is 1.029 standard deviations higher than the illiterate; and the educational attainment for urban *hukou* holders whose mother has university degrees or above is 1.099 standard deviations higher than the illiterate. The educational attainment for rural *hukou* holders whose father has university degrees or above is 0.868 standard deviations higher than the illiterate, and the educational attainment for urban *hukou* holders whose mother has university degrees or above is 0.302 standard deviations higher than the illiterate. Other things equal, Women have lower educational attainments compare to men, the negative impact of being women on educational attainments is around -0.160 for both rural and urban *hukou* holders. Negative effects are seen for ethnic minority people with rural *hukou*; their educational attainments are 0.220 standard deviations lower than ethnic Han people. Last, rural *hukou* holders in the northeast region have higher educational attainment than in the East region, but the effects are moderate (5 per cent significance level).



The gender disparity for urban *hukou* holders has disappeared, yet the educational attainment of females with rural *hukou* status has decreased more than males. One possible explanation is the ‘one-child policy’, which was launched in 1970 and has had a significant and positive impact on urban female’s educational attainment, but it has not affected rural females’ education level (Connelly and Zheng, 2003). The regional variables have significant impacts on the educational attainment for Cohort 3 and both *hukou* types. The coefficients in the northeast region are negative and significant, -0.380 standard deviations lower than the east. The western inland region is the most disadvantaged region for rural *hukou* holders, and the result is consistent with other studies suggesting that west rural areas are the poorest areas and that the financial difficulties and education barriers resulted in poor educational outcomes (Lee et al., 2016).

Table 5.5 The determinants of educational attainment for rural and urban *hukou* holders (Cohort 3: 1975-1984)

	Urban		Rural	
	OLS	OP	OLS	OP
<b>Family Background</b>				
Father Education	0.221***(10.26)		0.107*** (7.56)	
<i>Primary</i>		0.254** (2.67)		0.260*** (4.96)
<i>Middle</i>		0.534*** (5.45)		0.403***(6.64)
<i>High</i>		0.742***(7.26)		0.468*** (6.57)
<i>Professional</i>		0.997*** (7.59)		0.548*** (4.39)
<i>University</i>		1.029*** (6.36)		0.868*** (4.29)
Mother Education	0.166*** (7.36)		0.061*** (4.91)	
<i>Primary</i>		0.0236 (0.35)		0.226*** (5.19)
<i>Middle</i>		0.174* (2.37)		0.463*** (7.69)
<i>High</i>		0.518*** (6.24)		0.274*** (3.67)
<i>Professional</i>		0.596*** (4.00)		0.202* (1.97)
<i>University</i>		1.099*** (4.37)		0.302** (2.99)
Father' s Political	0.0764 (1.15)	0.089 (1.25)	0.001 (0.04)	-0.029 (-0.51)
Mother' s Political	0.140(1.52)	0.134 (1.33)	0.103 (1.13)	0.096 (0.73)
<b>Region</b>				
Middle	-0.289*** (-6.25)	-0.313*** (-6.45)	-0.174*** (-6.80)	-0.247*** (-6.59)
West	-0.227*** (-4.34)	-0.247*** (-4.49)	-0.290*** (-10.13)	-0.408*** (-9.66)
Northeast	-0.380*** (-4.71)	-0.391*** (-4.62)	-0.194*** (-3.91)	-0.322*** (-4.45)
<b>Personal Character</b>				
Minority	-0.124 (-1.49)	-0.129 (-1.48)	0.001 (0.04)	-0.005 (-0.09)
Female	0.018 (0.45)	0.018 (0.45)	-0.068** (-3.15)	-0.135*** (-4.28)
cons	4.185*** (18.28)		4.385*** (33.89)	
<b>Control</b>				
Age	Y	Y	Y	Y
Year	Y	Y	Y	Y
<i>N</i>	2861	2861	5370	5370
<i>A R</i> <sup>2</sup> / <i>P R</i> <sup>2</sup>	0.165	0.0668	0.197	0.106

Note: Omitted categories are illiteracy (in coeducational level), east region (in region). Political is a dummy variable ( Communist party member = 1, noncommunist party member= 0); minority is a dummy variable (Han=0, minority=1); female is a dummy variable (male = 0, female = 1).

t statistics in parentheses.

The *A R*<sup>2</sup> is the adjusted *R*<sup>2</sup>, the *P R*<sup>2</sup> is the Pseudo *R*<sup>2</sup>.

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

#### 5.4 Decomposing the Gap Over Time

Table 5.6 shows changes in the educational gap and its components between rural and urban *hukou* holders over time. Changes in the educational gap have two components: The explained differences show the changes in the mean of independent variables; the unexplained

differences show the changes in the mean of the coefficients. A negative sign implies a reduction in the educational attainment gap between rural and urban *hukou* holders, and a positive sign refers to an increase in the educational gap. The total changes of the educational gap in the table echo figure 1, in which the total educational attainment differences first decrease from Cohort 1 to Cohort 2, then increases from Cohort 2 to Cohort 3.

Most of the explained differences in independent variables reduce the educational gap between rural and urban Chinese people from Cohort 1 to Cohort 2, except father's educational attainment. This might be caused by the *hukou* policy allows the higher educated rural *hukou* holders to change their *hukou* type. The unexplained differences slightly increase; both the returns of parental educational attainment and political background increase the educational gap, but the changes in the return of age-education effect, gender, and regions decrease the educational gap. The explained differences in family background increase the educational gap, and the regional differences reduce the educational gap between rural and urban Chinese people slightly from Cohort 2 to Cohort 3. This may be due to the implementation of compulsory education law in the modernisation period reduce the average educational gap between rural and urban Chinese people. The dramatic increase in unexplained differences is driven by the increase in return of regions and the age-education effect. Surprisingly the changes in unexplained differences in familial background reduce the educational gap between rural and urban Chinese people from Cohort 2 to Cohort 3, but the reduction subtracts by the increase of unexplained differences in regions and age-education effect.

The total explained differences reduce the educational gap between rural and urban Chinese people by 103.48 per cent from Cohort 1 to Cohort 2 and 48.3 per cent from Cohort 2 to Cohort 3. The explained differences continually reduce the educational gap, but the

unexplained differences increase the educational gap. The unexplained differences increase the educational gap by 13.4 per cent from Cohort 1 to Cohort 2, then dramatically increase by 61.6 per cent from Cohort 2 to Cohort 3. The total explained differences indicate the changes in material differences continually reduce the educational gap between rural and urban Chinese people but reduce more educational gap from Cohort 1 to Cohort 2, and only a small reduction from Cohort 2 to Cohort 3. On the contrary, the unexplained differences, which indicates the inequality caused by unidentifiable changes in social rules, increase the educational gap between rural and urban Chinese people slightly from Cohort 1 to Cohort 2, then sharply increase the educational gap from Cohort 2 to Cohort 3.

Table 5.6 Decomposition of the change in the educational gap between rural and urban

Variables	Decompose Difference%		Decompose Difference%	
	Cohort1-Cohort2		Cohort2-Cohort3	
	Endowments	Coefficients	Endowments	Coefficients
Family Background	-9.5	33.4	3.9	-75.6
Father Education	-6.2	12.1	1.4	-49.3
Mother Education	-3.5	17.5	-2.0	-26.3
Father' s Political	0.2	4.2	3.8	0.2
Mother' s Political	0.0	-0.4	0.7	-0.3
Region	0	11.3	-1.5	15.9
East	1.1	4.0	0.0	-12.2
Middle	-1.2	3.1	0.0	4.9
West	-0.5	2.4	-0.9	6.9
Northeast	-0.1	1.8	-0.6	1.7
Personal Characteristics	0.7	-12.2	0.2	0.7
Minority	-0.1	-2.5	-0.2	1.3
Gender	0.6	-9.7	0.4	-0.6
Control	-93.7	-3305.1	77	26744
cons		3285.9		-26610
Subtotal	-103.48	13.47	-48.3	61.6
Total	-90.01		13.2	

Note: Omitted categories are illiteracy (in coeducational level), east region (in region). Political is a dummy variable (Communist party member = 1, noncommunist party member= 0); minority is a dummy variable (Han=0, minority =1); gender is a dummy variable (male = 0, female = 1).

### 5.5 Other interesting results

Some interesting changes for the impact of other variables besides the *hukou* type are

generalised to the characteristics of societal changes. First, the decreasing impact of political affiliation is similar to the Post-Soviet Union countries. When the market has been presented, it will significantly affect the reinforcement of the social stratification and the erosion of political power (Gerber and Hout, 1995; Zhou et al., 1998). Second, the changing impact of gender influence on the educational attainment in urban areas follows the trends in Western countries, which is diminishing in recent years (Breen et al., 2010). Still, for the rural *hukou* holders, it may reflect the changes of traditional value on gender and the impact of the one-child policy (Zhou et al., 2016). A recent empirical study showed that, in poor rural areas, female students have the highest dropout rate in elementary school, whereas rural boys with the same family background usually continue to finish the nine years of compulsory education (Brown and Park, 2002). Last, the continuously increasing impact of the parents' educational backgrounds on urban *hukou* holders, may result in decreased intergenerational mobility in urban areas. This result also indicates that the inheritance educational inequality in urban areas has been reinforced. Meanwhile, the increased influence of the mother's higher educational attainment on her child's educational outcome could reveal that the educated mother has greater power on the familial educational decision in urban areas (Jerrim and Micklewright, 2014). Moreover, the growing disparity among regions plays a vital role in the widening gap in the educational expansion period, and this regional disparity requires further study.

## ***5.6 Conclusion***

The results suggest the educational gap between rural and urban *hukou* holders may persist or even widen. Unlike in developed countries, nearly 50 per cent of the total population are rural *hukou* holders in China. Low educational attainment for rural *hukou* holders may lead to serious social problems, such as waste of human capital and persistence of inequality. In the socialist period, when China aimed to reduce inequality in its society, the educational gap

between rural and urban people was lesser. The effects of the egalitarian socialist policy even lasted through the transition period, when educational resources gradually became concentrated in urban areas. Despite the rural and urban *hukou* holders had geographically separated, there were no significant differences between the allocation of educational resources. Benabou (1996) argues segregation does not necessarily result in inequality; instead, the unequal allocation of resources and other selective policies are the roots of the inequality.

From the transition period to the modernisation period, the state legalised unequal chances to access educational resources based on *hukou* status. The sharply increasing educational gap began during the modernisation period when higher education began to expand, and a market-oriented economic system and neoliberal policies gained the dominant position. Moreover, due to the decentralised fiscal policy and market-oriented ideology, the education resource was centralised in the urban areas. These policies address the efficiency and allocate scarce resources to the most profitable sections (here referred to as the urban areas), reflecting the political rationality that may achieve short-time efficiency. These policies reinforce the selective character of the education system and increase the inequality among different groups (Bonal, 2003). The sharply increased unexplained difference implies that social rules have a greater impact on the educational gap between rural and urban *hukou* holders. The different drivers of the change of the educational gap suggest the trends of educational inequality between social groups are affected by both the changes of social structure at the macro-level and the changes of individual social background at the micro-level.

Limitations of this study must be mentioned. This research has excluded the rural-urban migrants in China because they do not have a comparable group during the socialist

period. Thus, I could not draw a full picture of the drivers of the educational gap between rural and urban Chinese people during the modernisation period. Many researchers find the vast educational gap between rural-urban migrants and urban Chinese people as well.





## 6. The Educational Resources and Cognitive Development for Rural and Urban Chinese Students (2014-2015)

### *6.1 Rising discrimination against rural students*

The previous chapter has shown the educational gap between rural and urban Chinese people is widening in recent years. The lower educational attainment of rural Chinese people is not only attracted the policy-makers' and researcher's attention but also noticed by media and normal people. For example, one of the recent incidents was a widely spread video on social media, which shown the educator discriminate against rural students. In that video, a kindergarten principal in Xi'an (The capital city of Shaanxi Province) told the parents in the meeting:

The village head came to me and asked for sending their kids to my kindergarten; I refused, the quality of these kids is very low. The state (government) asked us to be a non-profit institute, open the gate to poor rural students. I told the officers (in the Administration of Education) that our teachers are trained to teach the swan, not the pig. (People.cn, 2019).<sup>3</sup>

Despite the universal condemns for the principal who has made such an improper metaphor and considered students from the local village as low-quality students, the speech reveals that some schools do not want to accept students from rural areas. This chapter focuses on finding the impact of supply-side educational resources on the growth of cognitive scores for rural and urban students in eighth grade. Regardless of the different roots, some scholars point out the education inequality between different *hukou* types in China is similar to the

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<sup>3</sup> Source: People.cn (2019, June 23). "The Surprised Speech from the principal of Kindergarten: Cultivate the Swan not the Pig" Weibo. Retrieved from <https://www.weibo.com/2286908003/HAbSiORrD?type=comment>

education inequality based on racial differences in the U.S. (Xie and Zhou, 2014). For example, rural *hukou* students also face systematic discrimination, suffer a higher level of poverty, have more health issues, higher dropout rates, and disproportionate access to higher education (Xu and Xie, 2015; Zhang, 2016; Fu et al., 2018). Moreover, the rural migrants in the urban city face administrative barriers to register into high-quality public schools in China (Li and Placier, 2015). Some cities have built private migrant schools to help those rural migrant students; however, those migrant schools are poorly facilitated and have limited government financial support to recruit qualified teachers (Zhang, 2016). In fact, both rural-urban Chinese and black-white Americans are based on positional relational categories that are responsible for unequal distribution of educational resources needed for access to quality schools. Rural and urban Chinese students are de facto segregated, and the social barriers for rural Chinese students deepening the educational gap between rural and urban Chinese students.

One of the central questions in the Coleman Report is how school characteristics affect educational inequality, and they find school characteristics have little impact on educational inequality when control students' familial backgrounds (Coleman et al., 1966a). Others argue that the Coleman Report has miscalculation and insufficient methodological problems which underestimate the school effect (Jencks et al., 1972; Borman and Dowling, 2010). For example, school quality in contemporary society is highly associated with residential sorting. Black students' families are concentrated in the district with a high poverty rate, and school racial segregation has little independent effects on students' academic achievement. Instead, student's family socioeconomic status and the socioeconomic composition of the school's student body are the primary drivers of the academic achievement gap (Card and B. Krueger, 1992; Frankenberg et al., 2003; Berends et al., 2008; Borman and Dowling, 2010; Owens,

2018). Thus, it is difficult to estimate the links between racial categories and educational outcomes because the quality of school which black students attended could result from residential sorting and endogenous regional educational policy (Vigdor, 2011).

In this chapter, I examine whether the distribution of supply-side educational resources plays essential roles in widening the educational gap between rural and urban *hukou* students in China. It is widely accepted that the differences in supply-side educational resources based on students' composition violates the equal educational opportunity rule. Previous studies suggest that students' composition, peer effects, and school characteristics may cause differences in student's learning outcomes (see a review, Hallinan, 2001; Vigdor, 2011). The research question in this chapter is how school segregation, government expenditure, and school environment affect the educational outcomes of rural and urban Chinese students respectively. Specifically, this chapter addresses the different influences of school segregation, government expenditure, and school environment on students with different initial achievement. To reach this question, I apply data from the Chinese education panel survey (CEPS) to a value-added fixed effect model with lagged achievement distribution. A. Hanushek and G. Rivkin (2008) use this method to investigate the effect of student racial composition on black-white students' achievement gap in different achievement quartile. I assume differences in educational resources may affect students with different *hukou* type and initial achievements differently. This model helps to identify the net effect of interest variables on the specific group of students; and allow for within-school heterogeneity in the impact of school variables on learning, which is usually ignored in the literature, but maybe an important driver of inequality. Students' *hukou* composition is the proxy of the peer effect, which addresses the main concern about whether the students' *hukou* composition affects the growth of students' achievement differently by their *hukou* type and initial test scores. Both

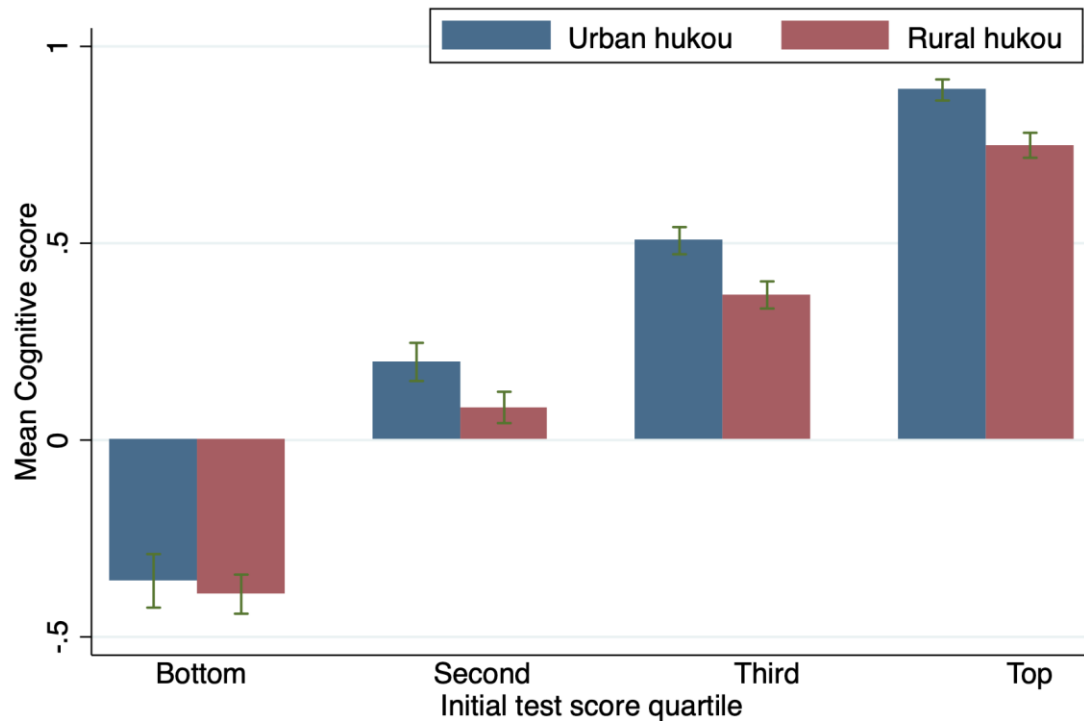
government expenditure on education and dropout rate are the proxies of educational resources; and expenditure per student is the public expenditure per student, which extracts from the school's principal questionnaire and varies across schools; the dropout rate is the measure of school milieu. Table 6.1 reports the potential importance of the differences. Rural *hukou* students are more likely to attend schools with a higher proportion of rural *hukou* students, a lower government expenditure per student, and a higher dropout rate.

Table 6.1 Key characteristics of schools and peers by *hukou* and initial achievement  
initial cognitive quartile

	Bottom	2nd	3rd	Top
<b>Rural hukou students</b>				
Rural schoolmates	70.8%	70.0%	67.5%	63.5%
Expenditure per student(std)	-0.313	-0.236	-0.152	-0.047
Dropout rate	0.63%	0.56%	0.48%	0.38%
Number of observations	1212	1206	1206	1209
<b>Urban hukou students</b>				
Rural schoolmates	49.2%	41.6%	37.2%	31.4%
Expenditure per student(std)	-0.014	0.104	0.200	0.374
Dropout rate	0.34%	0.23%	0.22%	0.15%
Number of observations	816	884	1087	1618

These three variables of interest are widely used in previous research as the determinants of achievement. I also considered other factors, such as teacher's educational level, students' familial income composition, and student-teacher ratio; none of them has a significant impact on the growth of cognitive scores. Figure 6.1 shows the difference in cognitive scores between rural and urban *hukou* students in different initial test score quartiles.

Figure 6.1 The cognitive scores gap between rural and urban *hukou* students by initial test score quartiles



## 6.2 Students' composition and educational outcomes

Identifying the students' composition effect and school characteristics is difficult because the education resource allocation might be highly related to the students' body composition. I use the value-added models with fixed effects to identify the effects of students' composition, educational resources, and the school's milieu. I use the value-added models with fixed effects to identify the effects of students' composition, educational resources, and the school's milieu. The models control characteristics of the student, school, community, and city, to minimise the endogeneity problem. Specifically, a series of controlled variables are included to identify the effect of interest. The null model only controls the student's ascribed characteristics. In the second model, the achieved individual characteristics are controlled, including the educational inspiration, number of friends, and friends' learning behaviour. The third model controls class characteristics, which present the potential within-school variation. The fourth model controls

other school characteristics rather than variables of interest. In the last model, the regional differences are captured by the city fixed effect. Table 6.2 reports the results of the proportion of rural *hukou* students on student's cognitive scores. It shows substantial different impacts on students in different initial achievement quartiles and with different hukou types. In general, the coefficients in magnitude are small for all students and positively relate to rural *hukou* students, negatively relate to urban *hukou* students. A few exceptions occur; in the last model, with fixed city effect, the proportion of rural *hukou* students negatively correlates to cognitive achievement for rural *hukou* students in the lower three quartiles, but the effects are insignificant. Comparing different models, the results remain consistent across models. Still, additional controlling the school characteristics and fixed city effects in the last two models increase the coefficients in magnitudes and decrease in standard error magnitudes, suggesting the effect of the proportion of rural *hukou* students in increasing student's cognitive score is affected by other school characteristics and city-specific features. Due to the institutional barrier and geographic concentration of rural *hukou* holders, it is no surprise that students' *hukou* composition is not independent of the school and the city characteristics. The only significant effect in the full fixed effect model is for urban *hukou* students in the bottom quartiles, which is -0.007 and significant at one per cent level. The significant effect also found in the first three columns for urban *hukou* students in the third quartile and the third and fourth models for rural *hukou* students in the lower two quartiles. The addition of controls and fixed effects cause different effects in coefficient magnitudes and standard error magnitudes suggest other school characteristics and regional differences may also have nonlinear effects on the growth of student's cognitive score. The compositional effect positively relates to the initial top perform rural *hukou* students, but the effects are insignificant. Interestingly, students with urban *hukou* in the first bottom score test quartile performed worse in the schools with a

higher proportion of rural *hukou* students.

Table 6.2 Estimated effects of the proportion of rural *hukou* students on cognitive scores by hukou and initial test score quartile

	M1	M2	M3	M4	M5
Student' s characteristics	No	Yes	Yes	Yes	Yes
Class characteristics	No	No	Yes	Yes	Yes
School characteristics	No	No	No	Yes	Yes
Fixed city effect	No	No	No	No	Yes
<b>Rural hukou students</b>					
Bottom quartile	0.006 (0.004)	0.006 (0.003)	0.005 (0.003)	0.007* (0.004)	-0.004 (0.002)
Second quartile	0.002 (0.002)	0.002 (0.002)	0.004* (0.002)	0.007* (0.003)	-0.001 (0.002)
Third quartile	-0.004* (0.002)	-0.003 (0.002)	-0.003 (0.002)	0.001 (0.002)	-0.002 (0.002)
Top quartile	0.001 (0.002)	0.001 (0.002)	0.000 (0.001)	0.002 (0.002)	0.002 (0.002)
<b>Urban hukou students</b>					
Bottom quartile	-0.000 (0.002)	-0.000 (0.002)	-0.003 (0.002)	-0.009*** (0.002)	-0.007** (0.003)
Second quartile	-0.002 (0.002)	-0.002 (0.001)	-0.002 (0.002)	-0.003 (0.003)	-0.003 (0.002)
Third quartile	-0.004*** (0.001)	-0.004** (0.001)	-0.004*** (0.001)	0.000 (0.002)	-0.000 (0.002)
Top quartile	-0.002 (0.001)	-0.001 (0.001)	-0.002 (0.001)	-0.001 (0.002)	0.003 (0.002)

Robust standard errors clustered by school in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

### 6.3 Government expenditure and educational outcomes

Table 6.3 shows a positive relationship between government expenditures per student and cognitive scores in general. The effects remain similar across models and strongly correlated to the cognitive scores of rural *hukou* students in the lower two initial achievement quartiles.

A one standard deviation increases the expenditure per student result in 0.171 and 0.133 a standard deviation increases in cognitive scores for the rural *hukou* students in the bottom

initial achievement quartile and lower second initial achievement quartile, respectively. The coefficient of expenditure per student is insignificant for urban *hukou* students in the full model with fixed city effect, but it significant at five per cent level (0.064) before fixed the city effect and in model 3 (0.049) for the urban *hukou* students in top initial test score quartile. The magnitudes of coefficients are larger for the bottom quartile than other quartiles. The results of expenditure per student show the pattern of the overall inequality hypothesis; the educational resources are more important for rural *hukou* students in the lower two initial achievement quartiles than urban *hukou* students and rural *hukou* students in the higher two achievement quartiles.



Table 6.3 Estimated effects of expenditure per student on cognitive scores by *hukou* and initial test score quartile

	M1	M2	M3	M4	M5
Student' s characteristics	No	Yes	Yes	Yes	Yes
Class characteristics	No	No	Yes	Yes	Yes
School characteristics	No	No	No	Yes	Yes
Fixed city effect	No	No	No	No	Yes
<b>Rural hukou students</b>					
Bottom quartile	-0.112 (0.111)	-0.112 (0.089)	-0.099 (0.090)	-0.137 (0.088)	0.171*** (0.047)
Second quartile	0.151** (0.052)	0.130* (0.052)	0.108 (0.057)	0.0472 (0.072)	0.133*** (0.039)
Third quartile	-0.004* (0.002)	-0.003 (0.002)	-0.003 (0.002)	0.001 (0.002)	-0.002 (0.002)
Top quartile	0.042 (0.031)	0.043 (0.031)	0.023 (0.038)	0.035 (0.044)	-0.013 (0.031)
<b>Urban hukou students</b>					
Bottom quartile	-0.171 (0.106)	-0.150 (0.103)	-0.0639 (0.0865)	-0.000 (0.070)	0.111 (0.060)
Second quartile	0.027 (0.030)	0.029 (0.027)	0.034 (0.033)	-0.001 (0.038)	0.031 (0.046)
Third quartile	0.110*** (0.032)	0.097** (0.029)	0.105*** (0.029)	0.079 (0.040)	0.046 (0.037)
Top quartile	0.030 (0.023)	0.030 (0.023)	0.049* (0.020)	0.064* (0.032)	-0.046 (0.032)

Robust standard errors clustered by schools in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

#### 6.4 School's milieu and educational outcomes

Table 6.4 shows a negative impact of the school dropout rate on student's cognitive achievement in general, and the magnitudes of coefficients are larger for rural *hukou* students than urban *hukou* students. The coefficient is strongly significant (-0.131) for the rural *hukou* students in the top initial test quartile and significant at five per cent (-0.075) and one per cent (-0.010) for the rural *hukou* students in the third initial test quartile before controlling the school characteristics, and before fixed the city effect respectively. It also negatively relates to the rural *hukou* students in the bottom test quartile in the full model with fixed city effect and significant at five per cent level. For urban *hukou* students, the dropout rate negatively (-0.180) associates with cognitive scores of the student in the bottom initial test scores quartile in the full fixed model at five per cent significant level; and negatively (-0.136) affect the

cognitive scores in the fourth model where all factors are controlled except the city effects for students in the third initial test quartile. The estimated effects of dropout rates on rural *hukou* students in the top initial test are large and significant at the 0.1 per cent level. The effects are also statistically significant for both rural and urban *hukou* students in the bottom initial test quartile. The overall pattern of the effects of school dropout rates in the growth of student's cognitive scores also suggests the rural *hukou* students are more vulnerable to a less disciplined school environment.

Table 6.4 Estimated effects of dropout rate on cognitive scores by *hukou* and initial test score quartile

	M1	M2	M3	M4	M5
Student's characteristics	No	Yes	Yes	Yes	Yes
Class characteristics	No	No	Yes	Yes	Yes
School characteristics	No	No	No	Yes	Yes
Fixed city effect	No	No	No	No	Yes
<b>Rural hukou students</b>					
Bottom quartile	0.026 (0.046)	-0.005 (0.046)	-0.013 (0.040)	-0.093 (0.048)	-0.093* (0.042)
Second quartile	0.031 (0.032)	0.037 (0.030)	0.024 (0.035)	-0.024 (0.050)	-0.038 (0.036)
Third quartile	-0.022 (0.031)	-0.019 (0.030)	-0.025 (0.027)	-0.075* (0.032)	-0.010** (0.031)
Top quartile	-0.098* (0.038)	-0.099* (0.039)	-0.099** (0.036)	-0.141*** (0.037)	-0.131*** (0.031)
<b>Urban hukou students</b>					
Bottom quartile	0.004 (0.044)	0.012 (0.037)	0.056 (0.039)	0.006 (0.062)	-0.180* (0.070)
Second quartile	0.042 (0.048)	0.050 (0.043)	0.080 (0.053)	0.053 (0.049)	-0.040 (0.064)
Third quartile	-0.021 (0.038)	-0.018 (0.039)	-0.030 (0.035)	-0.136** (0.040)	-0.068 (0.044)
Top quartile	-0.073 (0.072)	-0.075 (0.077)	-0.042 (0.067)	-0.067 (0.046)	-0.075 (0.042)

Robust standard errors clustered by schools in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## 6.5 Conclusion

As the results showing, the proportion of rural *hukou* students has a minimum impact on student cognitive achievement; in contrast, educational resources are very critical for rural

*hukou* students to grow their cognitive scores. Therefore, restricting rural *hukou* students from accessing qualified educational resources harms rural *hukou* students and widens the rural-urban achievement gap. Surprisingly the urban *hukou* students in the bottom initial test quartile performed worse in the school with a higher proportion of rural *hukou* students. Perhaps the rural *hukou* students are more motivated to adjust to the integrated schools, and one of the purposes of their schooling is to change their rural *hukou* into urban *hukou*. In contrast, the urban *hukou* students put less efforts to adjust to school with a higher rural *hukou* proportion, and they may feel more challenging to integrate into such school. The result also implies that unlike the group identity based on races, the group identity based on rural and urban *hukou* is not strong. One of the possible reasons is that there are many rural people who change their *hukou* type through higher education in the 1970s and 1980s due to the egalitarian socialist policies became roles model for rural *hukou* students. Therefore, the integrated school including both rural *hukou* and urban *hukou* students may be ideal for reducing prejudice and discrimination.

The educational resource and school discipline have a greater impact on rural *hukou* students. However, as shown in Table 6.1, rural *hukou* students are attending school with less government expenditure per student and a higher dropout rate than urban *hukou* students; thus, the unequal distribution of educational resources has been widening the achievement gap between rural and urban *hukou* students. Rural *hukou* students have less opportunity to access to qualified educational resources, which are crucial in growing their cognitive scores. Previous studies suggest that urban *hukou* students are more likely to find substitute educational resources than rural *hukou* students; the educational resources in school are less important for them than rural *hukou* students.

This chapter uses the value-add model to investigate the causal effect of a small portion of school characteristics on cognitive development. The cognitive skills feed directly into academic performance, future schooling, and labour market, contribute to the differences of rural-urban disparities in lifetime earnings and occupation prestige. The results highlight some aspects of the complex impact of school characteristics in the growth of rural-urban *hukou* students' cognitive achievement gap. The central finding that the proportion of rural *hukou* students does not have significant impacts on the growth of cognitive scores for both rural and urban *hukou* students except the urban students in the bottom initial test score quartile; but government expenditure per student and student dropout rate has a significant impact on rural *hukou* students in all initial achievement quartiles. The expenditure per student has a positive and significant impact on the growth of cognitive scores for rural *hukou* students in lower two initial test score quartile, and the student dropout rate has a significant and negative impact on the growth of cognitive scores for rural *hukou* students in both higher two initial test quartile and the bottom quartile. According to these findings, the most efficient public policy to address this situation is to increase the expenditure on rural *hukou* students and prevent student's dropout from school, especially in schools with a higher proportion of rural *hukou* students. On the other hand, this study evidence that the proportion of rural *hukou* students does not influence students' cognitive growth in general; government, media, and opinion leaders must avoid discrimination and construct an equal social environment for rural *hukou* holders.

Limitations of this study must be mentioned. While it could not provide a full picture for those dropouts from the survey, which in this case includes students who drop out, retained in grade, or those excused from taking test because of the illness or other circumstance. Despite only a small portion of students were excluded, which does not vary the results in this sample,

but given the much higher rate of rural hukou student dropout (93 of 121) and grade retention (2 of 3) than urban *hukou* student, the achievement comparison could not capture the gap fully, and it may underestimate the difficulties for rural hukou students in the long run.



## 7. Cultural Capital and Educational Outcomes for Rural and Urban Students (2014-2015).<sup>4</sup>

The unique socioeconomic condition in contemporary China provides an interesting case for studying the cultural reproduction process. The economic reform in China in 1978 is deemed a turning point for the transition from a planned to a market economy. The structural socioeconomic change in China resulted in the rise of a new-born middle-class which appeared in the middle of the 90s. The size of the Chinese middle-class increased between 2000 to 2016 from 5 million to 225 million households (Leaders, 2016), most of which include professionals living in the urban areas (Goodman, 2016; Li, 2010). On the other hand, compared to urban people, rural people receive fewer social benefits and have restricted from access to some public services. Many scholars argue that the social disposition of rural *hukou* holders is distinguished from those of urban *hukou* holders due to a lack of public resources. Thus, children with rural *hukou* cannot acquire the same school-related cultural capital as their urban counterparts, which may result in a lower educational achievement (Wu, 2012; Xu and Xie, 2015; Yu, 2020). The unique route of social, economic and political changes in China has creates two important sorting systems: one is based on the socioeconomic status and the other is based on different *hukou* types. This peculiar categorization is an interesting case for testing which roles *habitus* and cultural capital play in the cultural reproduction process. This chapter applies CEPS data with SEM model to explore the relationship between family's social position, cultural capital and student's educational outcomes.

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<sup>4</sup> The origin of this chapter is from the article "An integral model of cultural reproduction: The case of China" which is co-authored with Rosario Scandurra, and Xavier Bonal. The article has been accepted by Current Sociology on March 25th, 2021. Some minor revision has made in the chapter.

### *7.1 Variables and coding strategies*

The dependent variable is the student's cognitive ability scores in the follow-up survey in CEPS. Cognitive ability was measured through a standardised test to assess students' competencies, including language, graphic, calculation, and logic abilities, and does not relate to any of the subjects taught in school. There were three types of cognitive tests in the follow-up survey, and students received a different test on the basis of their cognitive scores in the baseline survey. All the tests include 35 cognitive questions, and respondents are required to complete them in 30 minutes. The survey employs an Item Response Theory (IRT) model to derive cognitive scores which are standardised and ranged between -2.0 and 2.0. One of the merits of using data from follow-up questionnaires is that the students' cognitive scores are more stable than in the baseline survey and contain few missing data. We focus on Chinese, mathematics, and English scores, which are the main subjects for all students and are highly associated with both graduation and high school entrance examinations. The midterm test scores of the three subjects are collected in the survey, but they are graded differently across schools, so we standardise the score and normalise the scores to make them comparable.

Each family's social background is measured on the basis of the family income level, the father's and mother's highest educational level, and parents' occupation. Family income comprises three levels: poor, moderate, and rich. There are seven categories of occupations of fathers or mothers: other, unemployed, farmer, labouring work, self-employed, intelligentsia (intellectuals and professionals), and government official. Parents' educational qualification has eight levels, from 1= none to 8= master or above, following the ISCED classification. Based on the definition of the previous study, middle-class families are those in which at least one of the parents has a professional or managerial position and a college degree; and in



which the economic condition at least is moderate (Horvat et al., 2003). In the sample, 28.1 per cent of students belong to a middle-class family.

The intervening variables include parents' habitus, the family's cultural activities, parental academic involvement, and the student's cognitive habitus, embodied cultural capital, and playtime. Since the survey does not contain variables directly representing those intervening ones, we constructed them based on the available information. Table 3.3 reports the nature and codification of the variables. Based on the relational principle of cultural reproduction, the parents' habitus should include parent's expectation and attitudes toward schooling. Based on the relational principle of cultural reproduction, the parents' *habitus* should include parents' expectation and attitudes toward education. Unfortunately, the survey does not provide information on aspects related to parents' cultural capital, and we could rely only on parents' habitus to represent parents' disposition. We extract questions related to parental expectations and attitudes toward learning and schooling and then use confirmatory factor analysis (CFA) to construct parents' habitus. Parents' expectation of the child's highest education level is frequently used as parents' habitus in previous research (i.e., Dumais, 2006; Bodovski, 2010). Besides the educational expectations, we include seven more other variables to draw a comprehensive picture of parents' habitus. Such variables include parents' expectation of the child's future occupation, parents' confidence for child's future, the frequency of parents reading books/newspapers/ magazines, and five questions relating to their attitudes toward schooling – whether parents are strict about: 1) their child's homework and examination, 2) their child's behaviour at school, 3) attendance at school every day, 4) time spent on the internet, and 5) time spent watching television. Detailed results of the CFA are included in Appendix.

Table 7.1 Description of variables

Latent variable	Observed variable	Type
Parents' habitus	Confidence for the future	ordinal
	Expectation of educational attainment	ordinal
	Expectation of future occupation	ordinal
	Reading habit	ordinal
	Care of studying	ordinal
	Care of behaviour	ordinal
	Care of attendance	ordinal
	Care of Internet	ordinal
Student's habitus	Care of Tv	ordinal
	Confidence for the future	ordinal
	Expectation of educational attainment	ordinal
	Occupational expectation	ordinal
	Go to school	ordinal
	Finish homework dislike	ordinal
	Finish homework long	ordinal
	Persist likes and hobbies	ordinal
	Quick response	ordinal
	Express clearly	ordinal
Fast learner	ordinal	
Student's embodied cultural capital	Curious	ordinal
	Hobby music	dichotomous
	Hobby art	dichotomous
	Like read	dichotomous
Parental academic involvement	Like craft	dichotomous
	Attend parents' meeting	ordinal
	Contact the teacher	ordinal
	Fulfil the requirement	ordinal

## 7.2 Cultural reproduction process

Table 7.2 reports the results of the SEM model for intervening variables. These findings show that that the middle-class background has a strong and positive effect on parents' *habitus* (.096), joint activities (.261), parental academic involvement (.113), and students' *habitus* (.088), but it is not statistically significant for students' embodied cultural capital and playtime. Students' *hukou* type also has a significant impact on joint activities (.137) and

parental involvement (.091). These results support previous qualitative studies, which suggested that the middle-class background has a greater impact on joint activities and parental academic involvement. Since the middle-class background is highly correlated with urban *hukou* (.309), it is not surprising these two variables have a similar impact on most of the intervening variables. Interestingly, only middle-class background has a significant impact on parents' *habitus*. This result echoes previous findings suggesting that education is highly valued, and parents are willing to make personal sacrifices for their children's education in China regardless of the family's *hukou* type, and this choice is more dependent upon parents' educational level (Brown, 2006; Liu et al., 2017; Liu et al., 2020). Parents' *habitus* strongly affects all intervening variables: it has a positive effect on joint activities (.181), parental academic involvement (.316), and students' *habitus* (.207) and embodied cultural capital (.111) as well as negative impact on students' playtime (-.105). An increase in parents' *habitus* of one standard deviation results in 18.1 per cent of a standard deviation increase in joint activities, 31.6 per cent of a standard deviation increase in parental academic involvement, 20.7 per cent of a standard deviation increase in students' cognitive *habitus*, 11.1 per cent of a standard deviation increase in students embodied cultural capital, and 10.5 per cent of a standard deviation decrease in students' playtime. Both middle-class background and *hukou* type do not have a significant impact on students' playtime. Students' *habitus* only has a moderate impact on students' playtime (-0.38), but parents' *habitus* and students embodied cultural capital (-.145) have a significant negative impact on students' playtime. Surprisingly, parents and students' joint activities increase students' playtime (.079). Perhaps parents who arrange more cultural activities for their child also give the child more freedom to them for playing. The results show the relational links among both structural variables and intervening variables. In general, the relationships among intervening variables suggest that parents'

*habitus* plays an important role in reproducing students' *habitus* and embodied cultural capital, and in generating practices in the field of education. The structural variables have some influences on intervening variables, but much smaller, the links between structural variables and parents' *habitus* are much weaker than they are in Western countries. The results of  $R^2$  suggest that our model has more explanatory powers for parents' practices and students' *habitus* in the field of education, but students embodied cultural capital is poorly explained. In the next step, we show the results of the reproduction procedure on students' cognitive ability and compare them with on other academic achievements.

Table 7.2 The direct and indirect effects of family background on intervening variables

Variables	Direct	Indirect	Total causal
<i>Parents' habitus</i>			
Middle class	.096***	-	.096***
Hukou type	-.000	-	-.000
CD		.009	
<i>Joint activities</i>			
Middle class	.261***	.017***	.278***
Hukou type	.137***	-.000	.137***
Parents' habitus	.181***	-	.181***
CD		.153	
<i>Parental academic involvement (PAI)</i>			
Middle class	.113***	.030***	.143***
Hukou type	.091***	-.000	.091***
Parents' habitus	.316***	-	.316***
CD		.136	
<i>Students' habitus</i>			
Middle class	.088***	.077***	.165***
Hukou type	.048**	.031**	.079**
Parents' habitus	.207***	.074***	.281***
PAI	.168***	-	.168***
Joint activities	.118***	-	.118***
CD		.156	
<i>Students' embodied cultural capital (STECP)</i>			
Middle class	-.011	.030***	.019
Hukou type	.025	.012**	.037*
Parents' habitus	.111***	.034***	.145***
PAI	.095***	-	.095***
Joint activities	.024	-	.024
CD		.031	
<i>Students' playtime</i>			
Middle class	-.009	-.003	.012
Hukou type	.004	-.001	.003
Parents' habitus	-.105***	-.027***	.132***
PAI	-.033	-.020***	-.053**
Joint activities	.079***	-.008**	.071***
Students' habitus	-.038*	-	-.038*
STECC	-.145***	-	-.145***
CD		.045	

Note: Hukou type is a dummy variable (Urban=0, Rural = 1); middle class is a dummy variable (lower class = 0, middle class = 1).

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

### *7.3 Results for cognitive scores and academic achievements*

The analytical results are presented in Table 7.4. The structural variables are more significant for cognitive scores than for academic achievements; in particular, the middle-class status has a significant direct impact on cognitive scores (.097) but does not affect academic achievements directly; the total effects of middle-class status are only significant for English scores and have a modest effect on math scores (.034). An increase of one standard deviation in middle-class status results in 9.7 per cent of a standard deviation increase in the cognitive scores. *Hukou* type does not have a direct influence on either cognitive scores or academic achievements and has only a moderate total effect on the cognitive scores (.051). Parents' *habitus* is perfectly mediated by other intervening variables; it does not directly affect students' cognitive scores, but it does directly affect academic achievements. An increase of one standard deviation in parents' *habitus* results in 4.8 per cent of a standard deviation increase in Chinese scores, 6.7 per cent of a standard deviation increase in English scores, and 4.4 per cent of a standard deviation increase in math scores. Because parents' *habitus* is an indicator that represents parents' expectation of students' future and attitude towards schooling, it is not surprising that it affects academic achievements more directly, but the total impacts of parents' *habitus* on cognitive scores and academic achievements are similar, which suggests that the mediation effects of other intervening variables are smaller for academic achievements than for cognitive scores. Surprisingly, parental academic involvement has a greater impact on cognitive scores than on academic achievements. An increase of one standard deviation increases in parental academic involvement result in 14.6 per cent of a standard deviation increase in the cognitive scores, 3.7 per cent of a standard deviation increase in Chinese scores, 5.8 per cent of a standard deviation increase in English scores, and

6.2 per cent of a standard deviation increase in math scores. Another variable in parents' practices is joint cultural activities, which have a similar magnitude for both cognitive scores and academic achievements, albeit opposite effects. An increase of one standard deviation in this variable results in 5.0 per cent of a standard deviation increase in cognitive scores, 5.0 per cent of a standard deviation decrease in Chinese scores and English scores, and 5.6 per cent of a standard deviation decrease in math scores. As Bourdieu's theory claims, students' *habitus* also plays a crucial role in shaping cognitive scores and academic achievements. An increase of one standard deviation in student's *habitus* result in 11.2 per cent of a standard deviation increase in cognitive scores, 10.0 per cent of a standard deviation increase in Chinese scores, 10.2 per cent of a standard deviation increase in English scores, and 11.3 per cent of a standard deviation increase in math scores. The effect of students' embodied cultural capital are consistent with Bourdieu's theory that it has a greater effect on linguistic subjects compared to on cognitive and math scores. An increase of one standard deviation in students' embodied cultural capital results in 9.6 per cent of a standard deviation increase in cognitive and math scores, but also in 20.3 per cent of a standard deviation increase in Chinese scores and 19.7 per cent of a standard deviation increase in English scores. On the other hand, students' unorganised playtime has a greater negative impact on cognitive scores (-.199) compared to on Chinese (-.100), English (-.106), and math scores (-.120). The results of CD suggest our model has greater explanatory power on cognitive scores (.153) and that academic achievements are fairly explained (ranging from .063 to .099). The SRMR is .30 for cognitive scores and .29 for academic outcomes, which also suggests that our model is plausible.

Table 7.3 Cultural reproduction process on cognitive scores and the academic achievement variables

Variables	Direct	Indirect	Total causal
Cognitive scores			
Middle class	.097***	.059***	.156***
<i>Hukou</i> type	.019	.032***	.051**
Parents <i>habitus</i>	.024	.127***	.151***
PAI	.146***	.038***	.184***
Joint activities	.050**	.002	.052**
Students' <i>habitus</i>	.112***	.007*	.119***
STECC	.096***	.029***	.125***
Playtime	-.199***	-	-.199**
CD		.153	
SRMR		.030	
Chinese scores			
Middle class	.002	.019**	.021
<i>Hukou</i> type	.004	.012*	.016
Parents <i>habitus</i>	.048**	.073***	.121***
PAI	.037*	.041***	.078***
Joint activities	-.050**	.010*	-.040*
Students' <i>habitus</i>	.100***	.004*	.104***
STECC	.203***	.014***	.217***
Playtime	-.100***	-	-.100***
CD		.088	
SRMR		.029	
English scores			
Middle class	.001	.024**	.025***
<i>Hukou</i> type	.011	.013*	.024
Parents <i>habitus</i>	.067***	.080***	.147***
PAI	.058***	.041***	.099***
Joint activities	-.050**	.010*	-.040*
Students' <i>habitus</i>	.102***	.004*	.106***
STECC	.197***	.015***	.212***
Playtime	-.106***	-	-.106***
CD		.099	
SRMR		.029	
Math scores			
Middle class	.014	.020***	.034*
<i>Hukou</i> type	-.013	.009*	-.003
Parents <i>habitus</i>	.044**	.071***	.115***
PAI	.062***	.034***	.096***
Joint activities	-.056**	.008*	-.048**
Students' <i>habitus</i>	.113***	.004*	.117***
STECC	.096***	.017***	.113***
Playtime	-.120***	-	-.120***
CD		.063	
SRMR		.029	

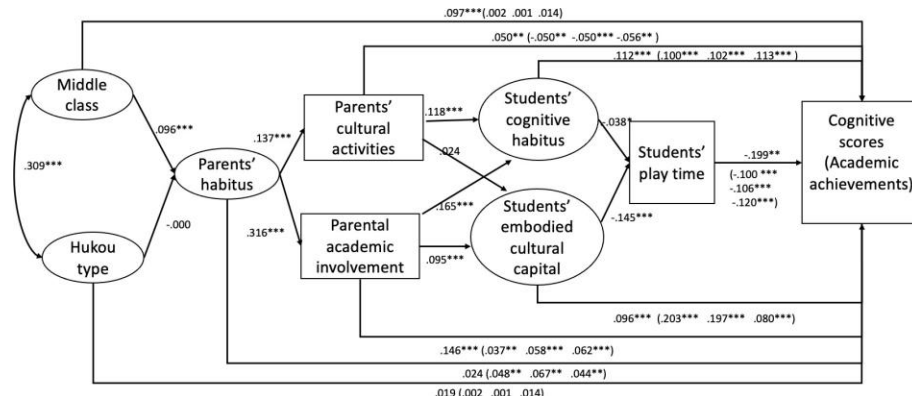
\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Note: *Hukou* type is a dummy variable (Urban=0, Rural = 1); middle class is a dummy variable (lower class = 0, middle class = 1). Number of observations: 8714. Degrees of freedom for all the models:  $df=54$ .



The indirect effects of the middle class and *hukou* are partially captured in Bourdieu's suggestion that cultural capital and *habitus* mediate a family's socioeconomic position (1990, p.130). But the impact is relatively small, especially with regard to *hukou* type, which contradicts previous studies' claims that *hukou* is more important than a family's social status for influencing children's educational outcomes (Wu, 2007; Liu et al., 2020). One of the possible reasons is that the historic socialist egalitarian policies still have impact on rural people's educational expectation, many of their relatives may got a job in urban areas and changed their *hukou* type, thus, rural parents may have more motivation to encourage their kids to study hard. Also, previous studies suggested that foreign language skills are considered as culture capital specific to the middle class (Dumais, 2006; Sheng, 2015; Goodman, 2016), but we did not find middle-class background to provide a special advantage on English or Chinese scores. These differences may owe to the fact that the exam-oriented compulsory education system in China emphasises memorizing and doing exercises rather than understanding, another possibility is that first-generation middle-class parents do not have a linguistic advantage compared to working-class parents. Figure 7.1 shows the path diagram of the cultural reproduction process. Overall, the student's *habitus*, embodied cultural capital and playtime are the most influential factors for cognitive scores and academic achievements; the structural factors have a greater impact on cognitive scores than on academic achievements, but the effects are modest among other variables. Parental academic involvement has a greater impact on cognitive scores than on academic achievements, and the joint cultural activities have a positive impact on cognitive scores and a negative impact on academic achievements.

Figure 7.1 The direct effects of cultural reproduction process on cognitive score and academic achievements.



Note: The coefficients for the variables that directly affect academic achievements are reported in parentheses. They are from left to right: Chinese, English and Math.  
 \* p < .05, \*\* p < .01, \*\*\* p < .001

#### 7.4 Conclusion

This chapter uses the SDP framework to empirically examine cultural reproduction and the interrelation among social structure, disposition, and practices. It addresses the basic question of how the cultural reproduction procedure translates social structure into educational outcomes. With the use of data from the CEPS, our results suggest that family background has a moderate direct effect on cognitive scores and does not affect academic outcomes directly; parents' *habitus* only has moderate direct effects on cognitive scores and academic achievements and is mediated by other intervening variables. These findings support previous studies which claiming that the widely accepted Confucian culture addresses self-effort and advocates education in East Asian areas and thus those academic achievements are more independent of family background than in Western countries (Stevenson and Stigler, 1994; Davis-Kean, 2005; Li and Xie, 2019). Students' disposition and playtime are quite

important for both cognitive development and academic achievements. In her book, Lareau (2011) suggests that children from a middle-class family have less unorganised playtime compared to children from a working-class family, which results in better educational outcomes in school. Our findings confirmed that playtime has a strong link to academic achievements, but we did not find a link between playtime and family background in China. On the other hand, family background – especially a family’s socioeconomic status – does have a significant impact on cognitive development, which is similar to the cultural reproduction pattern in Western countries, where the coefficient of family background on educational outcomes is among .15-- .25 (Xu and Hampden-Thompson, 2012; Scandurra and Calero, 2017), but this result cannot apply to students’ academic achievements in China. The model has greater explanatory power for cognitive scores but relatively small explanatory power for academic achievements. The difference of the empirical findings in the Chinese context from those in Western countries might be caused by the exam-oriented school education in China, which emphasises memorizing and practising, therefore, the academic outcomes in China are related more to the *habitus* and practising of students than to family background. Another evidence is the negative impact of joint activities on academic achievements. Middle-class families have participated in more cultural activities, but the time cost of cultural activities might compete with time used on practising and memorizing academic materials, and thus it is not surprising that increasing joint cultural activities decrease academic scores. Costa (2006) suggests that the *habitus* is limited by its objective condition but simultaneously modifiable, and instead of being modified by changes of material condition, it could be altered also through new knowledge that generates new dispositions and practices. Thus, if new knowledge in a specific field is easily available for people regardless of their social background, then the *habitus* may be independent of social

stratification. As it appears from this study's observations from eighth grade students, the universal basic education has been conducted for decades, and both working and middle-class families may possess sufficient knowledge to cultivate an eighth-grade student. However, we should be cautious in interpreting the results as revealing that educational inequality is small in China, because differences may arise later, especially at the higher education level.

This chapter contributes to a growing literature on cultural reproduction in four ways. First, it provides an integral SDP model to present the cultural reproduction process. Previous research barely considered parents' disposition separately and neglected the interconnection between social-economic background and the *habitus*. This study draws a full picture of the reproduction procedure. Second, it shows the peculiar cultural reproduction process in China, in which social structure has a smaller impact on academic achievements, and the process is closer to a cultural mobility process rather than to a reproduction one during the compulsory education period. Third, this study uses a CFA method to construct the *habitus* to reduce the possibility of reverse causality, which previous quantitative studies ignored; moreover, the parents' and students' cognitive *habitus* include attitudes on learning and schooling, which reflect the characteristics of the education field. Last, our study distinguishes cultural practice from cultural capital empirically, according to the theory that cultural activities should belong to practices rather than cultural capital, and for students in the eighth grade, cultural activities are more likely to represent the practices of their parents rather than themselves. Despite these contributions, due to the limitation of the data set, this chapter could only investigate the eighth-grade students and could not include parents' embodied cultural capital. Social background may play a more important role in the higher education period, and we may have found a more powerful explanation of students' embodied cultural capital if we could include

the measurement of parent's embodied cultural capital. Future research on the cultural reproduction process could extend our model to these two areas.



## 8. Conclusion

Almost 60 years have passed since Mao's remark on the education of peasants. Since then, China's socioeconomic development has been a great success in recent decades, but the problem of education for rural people remains. After establishing the PRC in 1949, China experimented with its own socialist education system. This could be explained as an invention born of necessity, out of the drive to be self-sufficient and fight for the nation's life with the limited resource (Williamson, 1979). That socialist education movement was suddenly terminated in 1978 and replaced by a market economy. In the meantime, a Western-style urban-centred education system has replaced the previous egalitarian educational policies. However, people's adaption process seems much slower than the changes of social rules, reflected in the remaining high educational motivation for rural people. Meanwhile, the *hukou* system still plays a vital role in sorting Chinese people's social positions. The rural-urban education gap in China shows a different pattern to other countries: first, the education gap between rural and urban people is widening in the post-industrial period. Second, it seems the social barriers have not discouraged rural people from pursuing higher education; there is very little difference in educational inspiration or expectation between rural and urban people. Third, my results suggest the differences in educational outcomes are mainly due to the unequal distribution of educational resources between rural and urban students, not due to differences in their familial socioeconomic position. It is difficult to rationalise these results without connecting them to historical experiences and the current social structure in China.

### ***8.1 Social changes and educational gap between rural and urban Chinese people***

Regression results in Chapter 5 suggest the educational gap between rural and urban *hukou* holders may persist or even widen. Unlike in developed countries, nearly 50 per cent of the total population are rural *hukou* holders in China. Low educational attainment for rural *hukou*

holders may lead to serious social problems, such as waste of human capital and persistence of inequality. In the socialist period, when China aimed to reduce inequality in its society, the educational gap between rural and urban people was lesser. The effects of the egalitarian socialist policy even lasted through the transition period, when educational resources gradually became concentrated in urban areas. Due to the limited educational resources, overall education attainment was low. The sharply increasing educational gap began during the modernization period, when higher education began to expand, and a market-oriented economic system and neoliberal policies gained the dominant position. The extension of the B-O decomposition analysis clearly shows the different drivers of educational inequality between rural and urban Chinese people in different periods. I explained how the reducing educational gap from Cohort 1 to Cohort 2 is mainly due to the lessened differences of socioeconomic positions between rural and urban Chinese people. However, the increasing educational gap from Cohort 2 to Cohort 3 is mainly due to the increase of unexplained differences between rural and urban people. Some scholars suggest these unexplained differences could be interpreted as discrimination among different social groups (Blinder, 1973; Oaxaca, 1973). According to these results, the educational expansion might have little effect in reducing the inequality between rural and urban Chinese people.

## ***8.2 Educational resources and outcomes***

Chapter 6 aims to identify which kind of unequal distribution in supply-side educational resource has significant impact on educational gap between rural and urban Chinese people. I use the value-added model to investigate the causal effects of some institutional characteristics on cognitive development. Cognitive skills feed directly into academic performance, future schooling, and the labour market; and contribute to rural-urban disparities in lifetime earnings and occupational prestige. These results highlight some aspects of the complex impact of



school characteristics in the growth of rural and urban *hukou* students' cognitive achievement gap. The central finding was that the proportion of rural *hukou* students does not significantly impact the growth of cognitive scores for rural or urban *hukou* students except for urban students in the bottom initial test score quartile. However, the expenditure per student and student dropout rate has a significant impact on rural *hukou* students' educational outcomes. Expenditure per student showed a positive and significant impact on improving of cognitive scores for rural *hukou* students in the lower two initial test score quartiles. The student dropout rate has a significant negative impact on the growth of cognitive scores for rural *hukou* students in the highest two initial quartiles and the bottom quartile. According to these findings, the most efficient public policy to address this situation would be to increase the spending on rural *hukou* students and prevent students from dropout from school, especially in schools with a higher proportion of rural *hukou* students.

On the other hand, Chapter 7 investigates the effects of demand-side unequal distribution in educational resources on educational outcomes for Chinese people. Using a path analysis, the results suggest *hukou* status directly affects neither parents' *habitus* nor the educational outcomes for eighth grade students but does have a significant impact on the quantity of education-related activities. Unlike in Western countries, a Chinese familial social position has lesser effects on reproducing student's educational outcomes. One possible explanation is that the way young people obtain information has changed rapidly in the information explosion era; they can access information easily regardless of their familial backgrounds. Their cultural preference is highly affected by their peers, media, and fashion trends rather than their parents. On the other hand, rural *hukou* parents show no less educational expectation about their children than their urban *hukou* counterpart, despite the fact that rural *hukou* students have a much lower probability of accessing higher education.

Overall, my findings suggest that the cultural reproduction process could explain cognitive development better than academic achievement in China for eighth grade students. I also suggest that families' social backgrounds are weakly connected to academic achievements, but moderately connected to cognitive development. Parents' *habitus* is an essential variable in reproducing students' *habitus*, embodied cultural capital, and daily schedule arrangement, but it has a relatively small direct impact on cognitive scores and academic achievement. Previous quantitative studies neglected the indirect effects of parents' *habitus*, which may have led researchers to ignore this key factor in explaining educational inequality. The differences in cultural reproduction processes between cognitive scores and academic achievements indicate that students' cognitive development is more dependent on their familial social backgrounds, but their academic achievements are more independent to family social background due to the exam-oriented education system in China. These results support some experts' concern in the current education reform debate, in which middle-class parents in big cities are against the exam-oriented education system because, in their words, it suppresses students' creativity and happiness, and school education should focus on students' cognitive development rather than rigid knowledge from books. But some experts worry that changing the exam-oriented school education system may increase educational inequality (Wang, 2019). Based on my results, these concerns are reasonable, and the educational reform should take the risk of widening the education gap into account. Exam-oriented education does provide an equal educational environment during the compulsory education period.

### ***8.3 Implications for educational inequality and social structure research***

The Chinese case studies make two core contributions to a broader debate about how changes in social structure affect educational outcomes. First, the Chinese case studies show why it is important to consider the time space dimension of social development and the inequality of

educational outcomes between rural and urban Chinese people with a relational perspective. A structuralist approach shows that the educational gap between rural and urban Chinese people is caused by a complex constellation of social changes: the historical exploration of the socialist system, political and economic transformations that concentrated economic and educational opportunities in urban areas, the legalised segregation policies, and the urbanization of the good life. These settings of social rules and resources create the educational gap between rural and urban Chinese people, and they also shape their behaviour.

A focus on only the economic side of social change can lead to an inadequate understanding of the current situation. Social structure and institutions may constrain individual choices, but social structure and systems include broad characteristics of the environments that shape not only what is rational, but whether people are oriented rationally in the first place (Dobbin, 2001). For example, the dissertation shows rural Chinese people achieve lower educational attainment and have fewer opportunities to access higher education. However, rural Chinese students and parents still have higher expectations towards and motivation for education. Economic explanations may conclude that rural Chinese people's perceptions of education are not rational, which misses the socially constructed mobility that leads the previous generation of rural Chinese to move upwardly from rural to urban areas and may motivate the next generation to pursue higher education for a better life. On the other hand, institutional barriers and the devaluation of farming may lead rural Chinese people to have no other livelihood options--obtaining higher education may be the only way to get a better life. This also happened in other developing countries, for example in rural India, Morrow (2013) finds the widening access to formal education has generated new aspirations for professional futures among children and their families; part of this aspirational shift is a concomitant devaluation of farming, even among those who have no other livelihood option.

In Peru, Crivello (2011) shows that young people and their parents see education as the only way to ‘become somebody in life’. (Crivello, 2011: p409; Crivello, 2015). Thus, as I argued before, when analysing educational inequality, structural factors such as the development stage of the society and the historical experiences should play an important role to shape people’s behaviour. The status attainment theory alone is inadequate to explain these situations.

The second core contribution of this research is to show why the distribution of educational resources should be taken as seriously as the status attainment on educational outcomes when analysing the educational inequality between different categories of people. The Chinese case shows that the economic differences do not explain the differences in educational outcomes between rural and urban people. Rather, the differences in returning of familial resources, the government expenditure per student, the school’s milieu. The rural Chinese parents have not discouraged to have a higher education expectation on their children because of their inferior economic situation. Kong (2017) suggests that rural parents in China share many behaviours of urban Chinese parents and middle-class parents in the United States and England; meanwhile, they have a clear realisation of the social constraints on their rural status. The unequal distribution of educational resources might use as the last resort when the country was poor and only had very limited resource, now it is an urgent need to redistribute the educational resources. As Chapter 7 shows that the rural Chinese students already has a slightly lower cognitive *habitus* compare to urban Chinese students, despite it does not affect the educational outcomes directly. However, the cultural capital and *habitus* are accumulating through time and personal experiences, and if the educational system will change from an exam-oriented to a competence-oriented system, familial resources may play a more important

role on educational outcomes, then it will be more difficult to fill the educational gap between rural and urban Chinese people.

Finally, this dissertation used quantitative methods to apply structuration theory and empirically analyse the causes of the educational gap between rural and urban Chinese people. I argue there are two recursive paths between social structure and people's behaviour: one is a reproducing process, which has been adequately discussed in the sociology literature; another is the process of adaption. In an unstable society, the social rules change within a short time. People need time to adapt to new rules, and their previous experiences may still orient their behaviour. The adaption process has not been widely discussed in the literature, but it is a crucial structural factor to understand educational inequality between rural and urban Chinese people, as well as in other developing societies which have experienced social-political shifts in a short time.



## Appendix A

### A.1 Statistic model for Chapter 5

I use separate models to measure rural and urban *hukou* holders based on the assumption that they are in different circumstances that independent variables may have different slopes for each of them. A Chow test was undertaken to show the sufficiency of their differences. The results of the Chow test show that the F value is 7.25 for cohort 1, 172.42 for cohort 2, and 139.82 for cohort 3; therefore, the difference between rural and urban hukou holders is sufficient enough to use separate models. In the meantime, it is undoubted that the market reform has caused the structural change, but whether the later education reforms lead to structural change from the transition to the modernisation periods also need to be tested. The F value between Cohort 1 and Cohort 2 is 50.30, and the F value is 199.09 between Cohort 2 and Cohort 3. The result suggests that the structure of the estimated relationship for Cohort 1 differs from that of Cohort 2 and that Cohort 2 and Cohort 3 are different from each other.

The educational attainment in the sample has six categories in each wave; the educational attainments are explained according to the following mode:

$$E^r = \alpha^r + X^r \beta^r + \epsilon^r \quad E^u = \alpha^u + X^u \beta^u + \epsilon^u$$

Where E represents the educational attainment,  $\alpha$  is the constant term, X is the vector of explanatory variables,  $\beta$  are the coefficients of X which generalised by the OP process, and  $\epsilon$  represents the error term.

The educational attainment  $E_i = 1, 2, \dots, 6$ ,  $E_i^*$  is the observed outcome given by a set of threshold levels  $\mu_k$ , the threshold level of follows the well-defined order, where:

$$\mu_1 < \mu_2 < \dots < \mu_k$$

$$E_i = 1 \quad \text{if} \quad E_i^* < \mu_1$$

$$E_i = 2 \quad \text{if} \quad \mu_1 < E_i^* < \mu_2$$

$$E_i = 3 \quad \text{if} \quad \dots \dots \dots E_i^* < \mu_k$$

The conditional probability that individual  $i$  will be located in the educational level can be represented as:

$$P_{ij}|X_i = \Phi(\mu_k - X_i\delta) - \Phi(\mu_{k-1} - X_i\delta)$$

Where  $X$  is the vector of characteristics of individual  $i$ , the  $\delta$  is the returns of the independent variables,  $\mu$  is the scale which represents the observing schooling level, and  $\Phi$  means the cumulative density function follows the standard normal distribution.

The overall differences between urban and rural residents in a time point can be written as:

$$G^{u,r} = \bar{E}^u - \bar{E}^r = (\alpha^u - \alpha^r) + (\bar{X}^{u'}\beta^u - \bar{X}^{r'}\beta^r)$$

I denote  $G^{u,r}$  as the overall difference in the educational attainment between urban and rural hukou holders. The relationship of the educational attainment and other characteristics is presented in the linear regression model in the paper, and the decomposition of the gap of educational attainment between urban and rural Chinese people could be written as follows:

$$G^{u,r} = \bar{E}^u - \bar{E}^r$$

$$= (\alpha^u - \alpha^r) + (\bar{X}^u - \bar{X}^r)\hat{\beta}^r + \bar{X}^r(\hat{\beta}^u - \hat{\beta}^r) + (\bar{X}^u - \bar{X}^r)(\hat{\beta}^u - \hat{\beta}^r)$$

In this equation, the left-hand side is the difference in the average of educational attainments between rural and urban *hukou* holders. The first term is the difference due to the constant term representing the original difference of educational attainment. The second term is the difference that can be attributed to the difference in the mean of endowments. The third



term is the portion of differential attributable to the differing coefficients. The fourth term is an interaction term, which refers to the interaction between the difference in independent variables and coefficients (Jones and Kelley 1984). Alternatively, I combine the interaction term with the return of coefficient, then it becomes a general model to estimate the “Deprivation” (Oaxaca, 1973; Blinder, 1973; Jones and Kelley, 1984). We can rewrite the equation as:

$$G^{u,r} = Q + U$$

Jones and Kelley (1984) interpret the difference in the right-hand side as the “group membership”, which refers to the capability of the group.

$$Q = \widehat{\beta}^u(\overline{X}^u - \overline{X}^r)$$

Where the explained part Q is the first term, which refers that the outcome needs to be “explained” by the difference of the characteristics. U is the unexplained part, and many scholars interpret it as discrimination, it also generates the effects of difference in unobserved variables (Oaxaca, 1973; Blinder, 1973; Jones and Kelley, 1984):

$$\begin{aligned} U &= (\alpha^u - \alpha^r) + \overline{X}^r(\widehat{\beta}^u - \widehat{\beta}^r) + (\overline{X}^u - \overline{X}^r)(\widehat{\beta}^u - \widehat{\beta}^r) \\ &= (\alpha^u - \alpha^r) + \overline{X}^u(\widehat{\beta}^u - \widehat{\beta}^r) \end{aligned}$$

When investigating the details of the evolution of the gap, I apply Wellington’s decomposition (1993) and add time t and cohort c to the previous model. Here, t refers to the year of significant change happening, and c refers to the cohort of birth who are affected by the changes. For example, suppose I want to investigate the effects of 1978 reforms on the gap of educational attainment. In that case, I need to compare the links between residence types and other characteristics for the cohort born between 1955-1964(Cohort 1) and cohort born between 1965-1974 (Cohort 2).

$$\begin{aligned}
G_t^{u,r} &= \left[ \overline{E}_{c2}^u - \overline{E}_{c2}^r \right] - \left[ \overline{E}_{c1}^u - \overline{E}_{c1}^r \right] \\
&= [(\alpha_{c2}^u - \alpha_{c1}^u) - (\alpha_{c2}^r - \alpha_{c1}^r)] + \left[ \widehat{\beta}_{c2}^u (\overline{X}_{c2}^u - \overline{X}_{c1}^u) - \widehat{\beta}_{c2}^r (\overline{X}_{c2}^r - \overline{X}_{c1}^r) \right] \\
&\quad + \left[ \overline{X}_{c1}^u (\widehat{\beta}_{c2}^u - \widehat{\beta}_{c1}^u) - \overline{X}_{c1}^r (\widehat{\beta}_{c2}^r - \widehat{\beta}_{c1}^r) \right]
\end{aligned}$$

On the right-hand side of the first equation above, which measures the changes of the gap in the mean educational attainments of urban and rural forc1 and c2. The right-hand side of the second equation is the decomposition of the change. The first term in the square brackets is the unexplained changes for rural and urban Chinese people. The second term measures the portion of changes that links to the changes of characteristics of urban and rural Chinese people (e.g., the average measurement of father's education of rural people increases relative to urban people). The last term in the square bracket measures the portion of changes due to changes of coefficients (or it could be interpreted as the changes due to difference in the return of the independent variable). Using the same mode decompose the urban-rural gap of educational attainment between Cohort 1 and Cohort 2 to investigate the influence of educational expansion.

## A.2 Statistic models for Chapter 6

The value-added multiple levels fixed effect model with a lagged dependent variable is applied in the analysis to estimate the variation in peer and school quality effects on different hukou types of students with sorted initial achievement.

The Equation below is the value-added model with the identification issues we mentioned in the section of the analytical strategy.

$$A_{iCsr} = \alpha_{iCsr} + \beta X_{iCsr} + \delta S_{iCsr} + \lambda P_{iCsr} + \varepsilon_{iCsr}$$

Where  $A_{iCsr}$  represents the cognitive achievement for student  $i$  in class  $C$  and school  $s$  in city  $r$ .  $\alpha$  is an individual-specific intercept to class  $C$  in city  $r$  captures the cumulative effects of student, family, school experiences, and the initial knowledge and skills that each student

brings when they enter grade G, which is a function for lagged achievement. X captures ascribed characteristics, P and Q are our interest variables, the peer composition, and school qualities.  $\varepsilon$  is the stochastic term. Since P and S may correlate with  $\alpha$  and  $\varepsilon$  as I mentioned in the analytical strategy; therefore, I control other individuals, class and school characteristics, also the fixed city effect.

$$\alpha_{iCSR} = \theta_1 X_{iCSR} + \theta_2 C_{CSR} + \theta_3 S_{SR} + \mu_r$$

Here,  $X_{iCSR}$  represents other achieved characteristics include educational inspiration, friendship in school, and friend's behaviour.  $C_{CSR}$  refers to the attributes of the class, which include class size, homeroom teacher's education, and teaching experiences.  $S_{SR}$  represents the school-specific characteristics that exclude the *hukou* composition and school quality, which are used as interest variables.  $\mu_r$  is the fixed city effect.

## Appendix B

Table B.1 Logistic regression of educational differences between rural and urban Chinese people (all cohorts)

Variables	Poll	Urban	Rural	Decomposition Explained	Difference% Unexplained
Intercept	-4.47***	-5.31***	-3.81***		-30.5
Father' s Education	0.26***	0.44***	0.15***	5.3	14.6
Mother' s Education	0.35***	0.38***	0.41***	2.5	-1.3
Father' s Political	0.10*	0.34***	0.06	1.3	0.7
Mother' s Political	0.09***	0.08	0.29*	0.1	-0.1
Minority	0.20***	-0.14	0.24***	0.1	-0.7
Age	0.08***	0.11***	0.07***	1.2	25.2
Female	0.28***	-0.10*	0.49***	-0.1	-4.8
<b>Region</b>					
Middle	-0.05	-0.13*	0.08*	0.0	-1.5
West	-0.03	-0.10	0.09*	0.0	-1.1
Northeast	-0.08	-0.43	0.2**	-0.1	-0.9
<b>Cohorts</b>					
1965-1974	1.06***	0.77***	1.11***	0.1	-3.1
1975-1984	-0.08*	1.10***	-0.70**	-2	14.6
Hukou(Urban)	0.56***				
Explained%				8.50	
Unexplained%					11.04
Total difference%				19.5	
Pseudo R <sup>2</sup>	0.138	0.134	0.160		
Sample Size	24731	10274	14457		

Note: Omitted categories are illiteracy (in coeducational level), east region (in region). Political is a dummy variable ( Communist party member = 1, noncommunist party member= 0); minority is a dummy variable (Han=0, minority =1); female is a dummy variable (male = 0, female = 1).

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

**Table B.2 Logistic regression of educational differences between rural and urban Chinese people (Cohort 1:1955-1964)**

Variables	Poll	Urban	Rural	Decomposition Difference%	
				Explained	Unexplained
Intercept	-7.96***	-8.41	-7.7***		-13.8
Father' s Education	0.23***	0.39***	-0.01	6.1	16.1
Mother' s Education	0.22***	0.26***	0.21***	3.6	1.7
Father' s Political	0.33***	0.33**	0.30*	1.7	0.1
Mother' s Political	0.05	-0.01	-0.07	-0.0	0.0
Minority	-0.01	0.11	-0.15	-0.1	0.5
Age	0.21**	0.21***	0.21***	6.2	-4.1
Female	0.10*	-0.13	0.35***	-0.1	-3.9
<b>Region</b>					
Middle	0.18*	0.14	0.13	0.0	0.1
West	0.15*	0.13	0.17	-0.0	-0.3
Northeast	-0.06	-0.33*	0.33*	-0.2	-1.1
Hukou(Urban)	-0.18**				
Explained%				17.3	
Unexplained%					-4.9
Total difference%				12.3	
Pseudo R <sup>2</sup>	0.206	0.195	0.218		
Sample Size	4577	2479	2098		

Note: Omitted categories are illiteracy (in coeducational level), east region (in region). Political is a dummy variable ( Communist party member = 1, noncommunist party member= 0); minority is a dummy variable (Han=0, minority =1); female is a dummy variable (male = 0, female = 1).

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Table B.3 Logistic regression of educational differences between rural and urban Chinese people (Cohort 2: 1965-1974)

Variables	Poll	Urban	Rural	Decomposition Difference%	
				Explained	Unexplained
Intercept	-3.09***	-2.5***	-3.48**		27
Father' s Education	0.24***	0.44***	0.07*	6.2	27
Mother' s Education	0.19***	0.29***	0.23***	1.5	3.7
Father' s Political	0.28***	0.39***	0.07	1.8	1.4
Mother' s Political	0.32**	0.12	0.10	0.3	0.0
Minority	0.26**	-0.18	0.34**	0.2	-1.6
Age	0.08***	0.05***	0.09***	-2.3	-37
Female	0.44***	-0.19**	0.80***	-0.3	-12
<b>Region</b>					
Middle	0.23***	-0.12	0.39***	-0.0	-5.0
West	0.17**	-0.21*	0.38***	0.0	-5.4
Northeast	0.34***	-0.41**	0.69***	-0.0	-2.9
Hukou(Urban)	-0.07*				
Explained%				9.5	
Unexplained%					-4.6
Total difference%				4.9	
Pseudo R <sup>2</sup>	0.05	0.09	0.06		
Sample Size	11336	4756	6580		

Note: Omitted categories are illiteracy (in coeducational level), east region (in region). Political is a dummy variable ( Communist party member = 1, noncommunist party member= 0); minority is a dummy variable (Han=0, minority =1); female is a dummy variable (male = 0, female = 1).

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

**Table B.4 Logistic regression of educational differences between rural and urban Chinese people (Cohort 3: 1975-1984)**

Variables	Poll	Urban	Rural	Decomposition Difference%	
				Explained	Unexplained
Intercept	1.54***	-0.10	3.26***		-63.5
Father' s Education	0.34***	0.47***	0.26***	3.5	9.7
Mother' s Education	0.32***	0.39***	0.29***	1.9	4.6
Father' s Political	0.02	0.10	-0.05	0.1	0.1
Mother' s Political	0.74**	1.46**	0.56*	0.9	0.2
Minority	0.13	0.23*	-0.0	0.1	-0.9
Age	-0.11***	0.01*	-0.16***	-0.0	91.4
Female	0.06	-0.08	0.11	-0.1	-1.4
<b>Region</b>					
Middle	-0.49***	-0.56***	-0.47***	0.2	-0.6
West	-0.45***	-0.57***	-0.42***	0.3	-0.8
Northeast	-0.81***	-1.17***	-0.60***	-0.2	-0.5
Hukou(Urban)	2.20***				
Explained%				6.8	
Unexplained%					38
Total difference%				45	
Pseudo R <sup>2</sup>	8231	2861	5370		
Sample Size	0.281	0.193	0.188		

Note: Omitted categories are illiteracy (in coeducational level), east region (in region). Political is a dummy variable ( Communist party member = 1, noncommunist party member= 0); minority is a dummy variable (Han=0, minority =1); female is a dummy variable (male = 0, female = 1).

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Table B.5 Multiple imputation: linear regression (all cohorts)

Variables	Poll	Urban	Rural
Intercept	1.67***	0.99***	1.59**
Father' s Education	0.13***	0.16***	0.08***
Mother' s Education	0.12***	0.15***	0.11***
Father' s Political	0.10***	0.18***	0.08
Mother' s Political	0.16**	0.16***	-0.01
Minority	-0.01	-0.05	0.01
Age	0.04***	0.05***	0.03***
Female	-0.17***	-0.18***	-0.17***
<b>Region</b>			
Middle	-0.01	0.04*	-0.04**
West	-0.03**	0.09***	-0.12***
Northeast	-0.05**	-0.11***	0.01
<b>Cohorts</b>			
1965-1974	0.68***	0.58***	0.72***
1975-1984	0.55**	0.86***	0.42**
Hukou(Rural)	-0.66***		
Sample Size	46678	18496	28182

Note: Omitted categories are illiteracy (in coeducational level), east region (in region). Political is a dummy variable ( Communist party member = 1, noncommunist party member= 0); minority is a dummy variable (Han=0, minority =1); female is a dummy variable (male = 0, female = 1).

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Table B.6 Multiple imputation: linear regression (Cohort 1 (1955-1964))

Variables	Poll	Urban	Rural
Intercept	0.99***	0.05	1.25**
Father' s Education	0.14**	0.17***	0.09**
Mother' s Education	0.13**	0.13**	0.14***
Father' s Political	0.12**	0.17***	0.06*
Mother' s Political	0.15*	0.21*	-0.03
Minority	-0.10**	-0.03	0.12**
Age	0.06***	0.09***	0.05***
Female	-0.38***	-0.24***	-0.48***
<b>Region</b>			
Middle	-0.07***	0.17***	-0.01
West	0.04*	0.21***	-0.11***
Northeast	-0.05*	-0.07*	0.01
Hukou(Rural)	-0.55***		
Sample Size	21845	18496	11789

Note: Omitted categories are illiteracy (in coeducational level), east region (in region). Political is a dummy variable ( Communist party member = 1, noncommunist party member= 0); minority is a dummy variable (Han=0, minority =1); female is a dummy variable (male = 0, female = 1).

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.



Table B.7 Multiple imputation: linear regression (Cohort 2 (1965-1974))

Variables	Poll	Urban	Rural
Intercept	1.99***	2.73	1.06***
Father' s Education	0.10**	0.13***	0.06**
Mother' s Education	0.08***	0.10***	0.09***
Father' s Political	0.05*	0.15***	-0.07**
Mother' s Political	0.16***	0.12**	0.03
Minority	0.07**	-0.05	0.10***
Age	0.05***	0.03***	0.07***
Female	-0.00	-0.17***	0.09***
<b>Region</b>			
Middle	0.02	-0.19	0.02
West	0.01	0.03	0.01
Northeast	0.03	-0.10**	0.08**
Hukou(Rural)	-0.57***		
Sample Size	18017	6679	11350

Note: Omitted categories are illiteracy (in coeducational level), east region (in region). Political is a dummy variable ( Communist party member = 1, noncommunist party member= 0); minority is a dummy variable (Han=0, minority =1); female is a dummy variable (male = 0, female = 1).

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Table B.8 Multiple imputation: linear regression (Cohort 3(1974-1985))

Variables	Poll	Urban	Rural
Intercept	4.92***	3.22***	4.67***
Father' s Education	0.14**	0.18***	0.10**
Mother' s Education	0.10***	0.17***	0.07***
Father' s Political	0.14*	0.27***	-0.06*
Mother' s Political	0.23***	0.21**	0.17*
Minority	-0.04	-0.10	-0.02***
Age	-0.03***	0.01*	-0.05***
Female	-0.03*	-0.04	-0.04***
<b>Region</b>			
Middle	-0.20	-0.25***	-0.18***
West	-0.25	-0.18**	-0.27***
Northeast	-0.27	-0.33***	-0.20***
Hukou(Rural)	-1.12***		
Sample Size	10727	3136	7591

Note: Omitted categories are illiteracy (in coeducational level), east region (in region). Political is a dummy variable ( Communist party member = 1, noncommunist party member= 0); minority is a dummy variable (Han=0, minority =1); female is a dummy variable (male = 0, female = 1).

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

## Appendix C

Table C.1 Estimated effects of proportion of rural hukou students on math scores by *hukou* and initial test score quartile

	M1	M2	M3	M4	M5
Student' s characteristics	No	Yes	Yes	Yes	Yes
Class characteristics	No	Yes	Yes	Yes	Yes
School characteristics	No	No	No	Yes	Yes
Fixed city effect	No	No	No	No	Yes
<b>Rural hukou students</b>					
Bottom quartile	0.010* (0.004)	0.010* (0.004)	0.006 (0.004)	0.005 (0.003)	-0.009** (0.003)
Second quartile	0.006 (0.004)	0.008 (0.004)	0.007 (0.004)	0.009* (0.005)	0.000 (0.003)
Third quartile	0.004 (0.005)	0.005 (0.005)	0.004 (0.004)	0.005 (0.006)	0.001 (0.003)
Top quartile	0.006* (0.003)	0.006* (0.003)	0.005* (0.003)	0.004 (0.004)	0.006* (0.002)
<b>Urban hukou students</b>					
Bottom quartile	0.001 (0.003)	0.002 (0.003)	-0.002 (0.003)	-0.005 (0.003)	-0.012*** (0.003)
Second quartile	0.001 (0.003)	0.001 (0.002)	-0.001 (0.003)	0.001 (0.004)	-0.000 (0.003)
Third quartile	-0.000 (0.002)	0.000 (0.002)	-0.001 (0.003)	0.003 (0.003)	0.006* (0.002)
Top quartile	0.001 (0.002)	0.002 (0.002)	0.001 (0.002)	0.005 (0.004)	0.008*** (0.002)

Robust standard errors clustered by school in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table C.1 Estimated effects of expenditure per student on math scores by *hukou* and initial test score quartile

	M1	M2	M3	M4	M5
Student' s characteristics	No	Yes	Yes	Yes	Yes
Class characteristics	No	Yes	Yes	Yes	Yes
School characteristics	No	No	No	Yes	Yes
Fixed city effect	No	No	No	No	Yes
<b>Rural hukou students</b>					
Bottom quartile	0.032 (0.145)	0.023 (0.126)	0.064 (0.104)	0.138 (0.091)	0.071 (0.057)
Second quartile	0.312** (0.118)	0.266* (0.110)	0.238* (0.100)	0.223* (0.100)	0.152** (0.050)
Third quartile	0.211* (0.094)	0.209* (0.090)	0.199* (0.089)	0.143 (0.102)	0.034 (0.043)
Top quartile	0.118 (0.063)	0.111 (0.0620)	0.088 (0.057)	0.061 (0.065)	0.038 (0.039)
<b>Urban hukou students</b>					
Bottom quartile	0.107 (0.122)	0.126 (0.123)	0.175 (0.102)	0.210** (0.080)	0.160** (0.062)
Second quartile	0.156* (0.067)	0.166* (0.067)	0.162** (0.061)	0.157* (0.074)	0.114* (0.055)
Third quartile	0.161** (0.0587)	0.141** (0.0535)	0.128* (0.0500)	0.162* (0.0672)	0.098* (0.0472)
Top quartile	0.079 (0.047)	0.072 (0.046)	0.052 (0.038)	0.055 (0.062)	0.076* (0.036)

Robust standard errors clustered by school in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table C.2 Estimated effects of dropout rate on math scores by *hukou* and initial test score quartile

	M1	M2	M3	M4	M5
Student' s characteristics	No	Yes	Yes	Yes	Yes
Class characteristics	No	Yes	Yes	Yes	Yes
School characteristics	No	No	No	Yes	Yes
Fixed city effect	No	No	No	No	Yes
<b>Rural hukou students</b>					
Bottom quartile	0.022 (0.048)	-0.020 (0.044)	-0.003 (0.049)	-0.083 (0.068)	-0.022 (0.049)
Second quartile	0.061 (0.047)	0.067 (0.042)	0.082 (0.053)	-0.015 (0.081)	-0.051 (0.046)
Third quartile	-0.000 (0.057)	0.008 (0.056)	0.005 (0.061)	-0.050 (0.083)	-0.166*** (0.044)
Top quartile	-0.061 (0.050)	-0.065 (0.050)	-0.049 (0.057)	-0.118* (0.057)	-0.110** (0.039)
<b>Urban hukou students</b>					
Bottom quartile	0.063 (0.033)	0.074* (0.029)	0.100* (0.043)	0.0922 (0.058)	-0.005 (0.071)
Second quartile	0.110 (0.091)	0.120 (0.078)	0.124 (0.085)	0.021 (0.073)	0.019 (0.076)
Third quartile	0.111* (0.050)	0.118* (0.048)	0.118 (0.060)	-0.028 (0.088)	-0.148** (0.056)
Top quartile	-0.119 (0.102)	-0.127 (0.111)	-0.095 (0.109)	-0.114 (0.100)	-0.109* (0.047)

Robust standard errors clustered by school in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table C.3 Estimated effects of all variables on the growth of cognitive scores  
(long table)

Variables	M1	M2	M3	M4	M5
<b>Student' s characteristics</b>					
Cognitive scores (lag)	0.527*** (0.029)	0.465*** (0.024)	0.449*** (0.022)	0.427*** (0.019)	0.380*** (0.009)
Hukou(rural=1)	0.079** (0.028)	0.069* (0.027)	0.064* (0.025)	0.055* (0.025)	0.015 (0.016)
Migrant(migrant=1)	-0.034 (0.049)	-0.032 (0.046)	0.007 (0.044)	0.018 (0.029)	0.046* (0.019)
Gender (female=1)	0.043* (0.020)	-0.025 (0.021)	-0.0192 (0.020)	-0.012 (0.020)	0.007 (0.013)
Ethnics (Minority=1)	0.062 (0.070)	0.030 (0.058)	-0.052 (0.055)	-0.060 (0.065)	-0.037 (0.032)
Only child (Yes=1)	0.064 (0.036)	0.048 (0.034)	0.056 (0.032)	0.038 (0.026)	0.025 (0.016)
Mother' s education	0.023*** (0.006)	0.020** (0.006)	0.020** (0.006)	0.017* (0.006)	0.008 (0.005)
Father' s education	0.034*** (0.008)	0.024*** (0.007)	0.017** (0.006)	0.013* (0.006)	0.010* (0.005)
<b>Economic status</b>					
Middle	0.082* (0.031)	0.068* (0.030)	0.062* (0.027)	0.047 (0.029)	0.029 (0.018)
Rich	0.020 (0.059)	0.006 (0.055)	0.002 (0.050)	-0.028 (0.051)	-0.055 (0.032)
Educational expectation		0.072*** (0.008)	0.068*** (0.007)	0.066*** (0.007)	0.062*** (0.003)
Friends in school		0.040* (0.018)	0.041* (0.017)	0.056** (0.018)	0.048*** (0.012)
Friends' learning behavior		0.076*** (0.013)	0.070*** (0.013)	0.069*** (0.011)	0.062*** (0.007)
<b>Class characteristics</b>					
Class size			0.009*** (0.002)	0.011*** (0.003)	0.001 (0.001)
Homeroom teacher' s education			-0.038 (0.032)	-0.048 (0.031)	0.029* (0.012)
Homeroom teacher' s experiences					
5-10 years			-0.038 (0.032)	-0.048 (0.031)	0.029* (0.012)
10-20 years			0.141 (0.120)	0.186 (0.132)	0.220*** (0.0309)
More than 20 years			0.0389 (0.131)	0.0402 (0.133)	0.193*** (0.034)
<b>School characteristics</b>					
Students' composition (%)	-0.001 (0.001)	-0.000 (0.001)	-0.001 (0.001)	0.001 (0.002)	-0.002* (0.001)

Continue:

Variables	M1	M2	M3	M4	M5
Expenditure per student (std)	0.018 (0.033)	0.016 (0.030)	0.024 (0.031)	0.034 (0.037)	0.044*** (0.013)
Dropout rate (%)	0.006 (0.038)	0.002 (0.036)	0.008 (0.035)	-0.058 (0.039)	-0.078*** (0.013)
Teacher-student ratio				2.903** (1.080)	0.292 (0.326)
<b>Students' misbehavior</b>					
Seldom				-0.036 (0.069)	-0.000 (0.018)
Frequently				0.105 (0.101)	-0.089** (0.031)
<b>School local rank</b>					
In the middle				0.073 (0.080)	0.055* (0.024)
Among the best				-0.004 (0.089)	0.030 (0.033)
School size				0.000 (0.000)	0.0001*** (0.000)
School facilities				0.007 (0.007)	-0.005* (0.002)
Teacher with qualification				-2.357** (0.733)	-1.423*** (0.258)
School type				0.0587 (0.132)	-0.047 (0.045)
Average parents' education				0.018 (0.046)	0.049** (0.016)
Average parents' income				-0.024 (0.049)	-0.009 (0.016)
Parents' absence rate				-0.195 (0.235)	0.293 (0.187)
Teacher with higher education				-0.056 (0.134)	-0.040 (0.048)
<b>School location type</b>					
Rural-urban fringe zone				-0.058 (0.073)	0.133*** (0.025)
Towns and rural areas				-0.039 (0.119)	0.054 (0.033)
Community delinquency				-0.090 (0.054)	0.031 (0.021)
_cons	-0.125 (0.103)	-0.611*** (0.124)	-0.895** (0.285)	1.142 (0.794)	0.453 (0.322)
<i>N</i>	9238	9223	9223	9223	9223
adj. <i>R</i> <sup>2</sup>	0.346	0.392	0.410	0.429	0.319

Standard errors in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## Appendix D

Table D.1 Results of the confirmatory factor analyses on intervening variables

Latent variable	Observed variable	Coefficients (SE)	
<u>Parents' habitus</u>	Confidence for the future	.303(.019) ***	
	Expectation of educational attainment	.260(.070) ***	
	Expectation of future occupation	.230(.019) ***	
	Reading habit	.232(.019) ***	
	Care of studying	.659(.023) ***	
	Care of behaviour	.645(.025) ***	
	Care of attendance	.494(.021) ***	
	Care of Internet	.519(.020) ***	
	Care of TV	.533(.022) ***	
	df		54
SRMR		.014	
CD		.665	
<u>Students' habitus</u>	Confidence for the future	.788(.073) ***	
	Expectation of educational attainment	.241(.025) ***	
	Occupational expectation	.124(.019) ***	
	Go to school	.144(.017) ***	
	Finish homework dislike	.284(.025) ***	
	Finish homework long	.290(.027) ***	
	Persist likes and hobbies	.252(.024) ***	
	Quick response	.788(.050) ***	
	Express clearly	.927(.048) ***	
	Fast learner	.478(.068) ***	
	Curious	.513(.028) ***	
	df		77
	SRMR		.031
CD		.277	
<u>Students' embodied cultural capital</u>	Hobby music	.274(.027) ***	
	Hobby art	.440(.029) ***	
	Like read	.358(.027) ***	
	Like craft	-.436(.030) ***	
df		14	
SRMR		.027	
CD		.413	
<u>Parental academic involvement</u>	Attend parents; meeting	.469(.040) ***	
	Contact the teacher	.195(.019) ***	
	Fulfil the requirement	.484(.020) ***	
df		9	
SRMR		.000	
CD		.418	

Standard errors in parentheses.

\* p < .05, \*\* p < .01, \*\*\* p < .001





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