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Abstract

Using longitudinal data from the China Family Panel Studies (CFPS), this study provides insights on comparative wellbeing outcomes for older people who are institutionally segregated into clusters that produce uneven social capital. We present the first study that examines how institutionalized social capital inequality, measured by the social capital gap generated by *hukou* (household registration) status in China, affects the wellbeing of older people. Our results show that high levels of social capital inequality are associated with lower subjective wellbeing, measured by life satisfaction. This general conclusion is robust to a number of sensitivity checks including alternative ways of measuring subjective wellbeing and inequality. We also find that the negative relationship between social capital inequality and subjective wellbeing is strongest for people with a non-urban *hukou* living in urban areas. Our findings highlight the need for policies aimed at narrowing the social capital gap and the dismantling of institutional structures that hinder upward social capital mobility.

Keywords: social capital, social networks, trust, social capital inequality, *hukou*, China

1. Introduction

Faced with a globally aging population, a growing body of literature has sought to better understand, measure and improve the wellbeing of older people (Horley and Lavery, 1995; Smith et al., 2004). One of the key factors that has been shown to influence the wellbeing of older people is social capital. Social capital refers to the resources and value outcomes that are embedded in a person's social network (Lin, 2000). Like other forms of socio-economic capital, social capital is understood as an investment that can yield valuable returns for those who invest in building social networks (Lin and Erickson, 2008). Research focussed on both developed and developing countries has shown that an increase in social isolation among many old people is due to a lack of social support and social connections, and that this negatively affects their physical and mental wellbeing (see, e.g., Cornwell and Waite, 2009; Gray, 2009; Nieminen at al., 2008; Nilsson et al., 2006; Shadi et al., 2018). At the same time, it has been shown that social capital provides trusted social networks, social and emotional support and a sense of belongingness that has a positive effect on the physical and mental wellbeing of older people (see, e.g., Casey, 2004; Forsman et al., 2013; Nyqvist et al., 2013).

As is the case for all other resources, not every individual or collective has the same level of social capital; some have more, or less, leading to social capital inequality. Aging is an important individual-level antecedent contributing to social capital inequality (Lin, 2000; Lin and Erickson, 2010; Shadi et al., 2018). Following retirement, some people face a loss of important formal or organisational networks (Zhang and Zhang, 2015). For others, kin, and non-kin-based, social networks may be reduced as family and friends pass away. Reduced mobility in old age also limits some older people's ability to participate frequently in social activities. Considering the noted positive effects of social capital for individual and group wellbeing (Klein, 2013; Helliwell, 2006), one would expect that inequalities in social capital could have negative effects on wellbeing. This will be more pronounced if such social capital inequality is institutionalized with little room for upward mobility.

Older people are likely to experience more social capital inequality over time compared with other demographic groups, as their networks shrink with aging. This inequality can be exacerbated because those of similar age will have different levels of social capital, depending on their baseline social networks at similar stages of their earlier life. Moreover, it is possible that an older person's social capital might still be better than younger people, when the latter are embedded in disadvantaged social and institutional structures. For example, younger people living in extremely disadvantaged communities with increased violence, as well as those institutionalised in prisons and juvenile centres, and those from disadvantaged backgrounds like racial minorities are more likely to have lower, and less beneficial, social capital than older people who do not have similar disadvantages (De Coster et al., 2006; Deuchar, 2009).

What accounts for inequalities in social capital between generations and within groups of older people and how does it affect wellbeing? One main explanation offered in the literature is structural inequalities based on race, ethnicity, gender, caste, religion and socioeconomic position (see e.g., Gray, 2009; Nieminen et al., 2008). Men are known to have more non-kin social networks than women, and American whites have more resourceful social networks than

blacks, even controlling for education and income levels (Lin, 2000). Compared to the rich, the poor also have less formal and informal ties, access to valuable contacts and networks of reciprocity (Cleaver, 2005; Offer, 2012). These structural differences are not just manifest at the individual or community level, but also at the macroeconomic level. For example, in post-socialist countries, such as Ukraine, levels of social capital are low, compared to more stable welfare states (Rostila, 2013). Political institutions can play an instrumental role in the stratification of socio-economic inequalities (Freitag, 2006). Noted examples include America's Jim Crowe segregation policy and the apartheid system in South Africa, which, decades after their formal abolishment, have left a legacy of institutional inequality.

To the best of our knowledge, research has not examined how instances of social capital inequality among older people affect their wellbeing, especially when structurally supported by an institutional system that stratify social inequalities. Our contribution is to better understand comparative outcomes of wellbeing for older people who are institutionally segregated into clusters that produce uneven social capital. Using longitudinal data from the China Family Panel Studies (CFPS), we present the first study that examines how institutionalized social capital inequality, measured by the social capital gap generated by *hukou* (household registration) status in China, affects the wellbeing of older people.

Consistent with the existing literature, we use the level of individual involvement in social groups to measure social capital but in robustness checks, we also employ a measure of generalized trust (see, Awaworyi Churchill and Mishra, 2017).

Our study contributes to at least two strands of literature. The first is those that have broadly examined the determinants of subjective wellbeing in China including other forms of inequality particularly, income inequality (see, e.g., Huang, 2019; Jiang et al., 2012; Smyth & Qian, 2008; Zhang & Awaworyi Churchill, 2020). The second is studies that have focussed on the role of social capital in shaping various outcomes including wellbeing in China (see, e.g., Awaworyi Churchill & Mishra, 2017; Wu et al., 2015; Yip et al., 2007).

These studies have enhanced our understanding about how disparities in income as well as social capital as a resource influence subjective wellbeing, however, they are less able to speak to how disparities in social capital (i.e., inequalities in social capital), entrenched in institutional policies, influence subjective wellbeing. We differ from the extant literature on the impact of social capital in that our focus is on understanding the effect of inequalities in social capital. Understanding the impact of social capital inequality is vital for informing policies designed to improve people's economic and mental wellbeing (Cleaver, 2005; Shadi et al., 2018).

China makes a particularly apt setting in which to investigate this issue for at least two reasons. First, China's *hukou* system offers the opportunity to examine the lived consequences of institutional structures that create social inequalities and restrict upward mobility within social hierarchies. The *hukou* system provides an illustrative political economic system that has created structural inequalities in terms of social capital for people in China (Liu, 2005). Research has shown that people with urban *hukou* have better social networks and social support compared to people with rural *hukou*, with restricted rural-migration mobility resulting

in reduced social capital mobility (Chan and Buckingham, 2008; Cheng and Selden, 1994; Liu, Wang and Tao, 2013). Chan and Buckingham (2008) argue that the urban-rural gap, which is well-documented for China, is linked to development strategies stemming from the 1950s when the Chinese government emphasized capital-intensive heavy industry in the urban sector by extracting agricultural resources, and implemented the *hukou* system as a means to control the resources moving away from the agricultural sector. Over time, the *hukou* system became a formal means of institutionalising spatial hierarchization of rural-urban locations in the Chinese social system (Cheng and Selden, 1994). As a mandatory system of registration, *hukou* is used to collect demographic and geographic information about Chinese citizens to formally record their identity, citizenship and social status. Through this system, the government has instituted administrative boundaries between the country's rural and urban spaces, with urban spaces becoming the government's responsibility. The government provides housing, transportation, education, jobs, food, water and medical facilities for city residents. Rural residents have, however, traditionally been largely left without, or with very little, state support and have had to provide these amenities for themselves. Strict regulations are maintained to control rural-urban mobility and people are often confined to the urban or rural *hukou* of their births. Rural migrants in urban areas are denied access to these state-provided amenities because they do not have formal urban *hukou* status (Chan and Buckingham, 2008; Cheng and Selden, 1994). Thus, the *hukou* system has created an institutionalised social capital inequality in China that gives little room for upward mobility (Chan and Buckingham, 2008; Lu, Ruan, and Lai, 2013).

Second, China has one of the fastest aging populations in the world (Norstarand and Xu, 2011; Zhang and Zhang, 2015). China has been experiencing a much more rapid aging process than what occurred in developed countries. For example, it took China only 36 years for the proportion of the population aged 60 and above to increase from 7% to 14%, which is around one third of the time taken in France (115 years) and half the time taken in Australia (73 years) and the US (69 years) (UN 2015). The UN predicts that by 2030, China will be one of the few upper-income-countries that is as aged as today's high-income countries. Hence, it is important for policy makers, and other relevant stakeholders, to understand if, and how, institutionalized social capital inequalities like the *hukou* system affect the wellbeing of people as they age.

2. Social capital inequality and wellbeing

2.1. How does social capital inequality emerge?

Since Karl Marx's theories on inequalities of economic resources and class, "capital" has become an important way to represent resources in the social sciences and social scientists have examined other socioeconomic resources as capital (Lin, 2000). French sociologist Pierre Bourdieu (1984), for example, distinguishes between cultural capital (linked to education), symbolic capital (linked to social status) and social capital (linked to social networks). Often, people with high quantities of one capital tend to have more of the other forms of capital.

Since the 1980s, researchers have sought to understand the benefits of social capital, in particular, as a valuable socioeconomic resource (Bourdieu, 1984; Kawachi et al, 1997;

Niemenen et al, 2008; Putnam et al., 1993). Defined as a common good, social capital is perceived as a resource that is available for all members of a community (Kawachi & Subramanian, 2018; Moore & Kawachi, 2017). It is often linked with social networks, which include kin (e.g. family) and non-kin (e.g. friends and work colleagues) networks (Lin, 2000). Social capital can be measured as an individual and collective attribute (Moore & Kawachi, 2017; Poortinga, 2006) and as formal or informal (Putnam, 2000).

The benefits of social capital for individuals, communities and even states have been discussed extensively in the literature (Cleaver 2005). For example, research suggests that people with more social capital are more likely to be employed in better jobs, get promotions more quickly and earn higher incomes. Those with more social capital also have higher life satisfaction and better physical and mental wellbeing (Kawachi et al., 1997). Collectives with better social networks have access to more information, make better decisions and are better able to influence policy in their favour (Cleaver, 2005; Narayan, 2002; Narayan et al. 2000). Overall, studies have consistently shown that all forms of social capital are positively associated with higher socioeconomic positions (Eriksson et al., 2010; Ziersch, 2005).

However, studies indicate that social capital is not distributed equally between different population sub-groups and that consequently this unequal distribution of social capital may contribute to facilitating further inequalities (Ferlander, 2007; Lin, 2000). At the individual level, inequality is manifested in differences in the composition—number, size, depth and resource value—of individuals' social networks. This also includes differences in returns people realize from their social networks. Research shows that returns from social capital is disproportionate between rich and disadvantaged people (Lin, 2000). As a result, groups in which resources are scarce may try to make connections, and strengthen their ties, with groups to which the resources that they lack are allocated (Lin, 2000; Poortinga, 2006). Another factor that deepens social capital inequality is what Lin (2000) calls a homophily of social groups; people of similar socioeconomic status and characteristics tend to cluster or form networks with each other. When it comes to social networks, therefore, often, like attracts like, and this is not mutually exclusive of structural forces that create and are perpetuated by inequality. Poor (rich), less (more) educated, and disadvantaged (affluent) people with low (high) social capital can more easily access and network with others like them. It is possible for people with lower social capital to trade up and increase their networks—through education, for example. But this is often the exception, rather than the norm (Lin, 2000; Lin and Erickson, 2008). For example, educated African Americans struggle to trade up into networks of similarly educated white people, and, therefore, end up forming closed networks of their own that are isolated from those of lower educated African Americans and higher educated whites (Crockett, 2017; Lin, 2000).

2.2. Why might social capital inequality affect the wellbeing of older people?

Several arguments can be advanced for why we expect social capital inequality to affect the wellbeing of older people. First, as noted above, social capital is often a proxy for other forms of capital, most notably income. People with higher levels of income also have better social capital than those with lower income. Research has, thus, established a strong relationship between income inequality and social capital inequality (Bakkeli, 2019; Lin, 2000).

Considering that income inequality negatively affects the wellbeing of people in general, and older people in particular (Bakkeli, 2019; Ichhida et al., 2009), we expect that social capital inequality will also negatively affect the subjective wellbeing of older people.

A second, more direct, reason why social capital inequality may affect wellbeing is envy or jealousy. Research has demonstrated that envy, defined as the emotional pain one feels for lacking what others have, is one of the main causes of unhappiness (Russell, 1985). Envy is the outcome of social comparison where people's sense of happiness is relative to how better or worse off they are compared to certain reference groups like siblings, friends, neighbours and colleagues. According to social comparison theories, people feel better about themselves when they compare themselves to people of lower resources. But people are unhappy when they compare themselves with people of higher resources, and this may lead to envy (Bakkeli, 2019; Boyce, Brown and Moore, 2010; Luttmer, 2005; Rutledge et al., 2016). In the case of social capital inequality, those with lower social capital may envy those with more social capital because the latter may have better social networks, enjoy more social support and receive better instrumental outcomes due to the quality of their social networks.

Akin to the tunnel hypothesis of inequality (Hirschman and Rothschild, 1973), theoretically, social capital inequality may engender optimism rather than envy. Hirschman and Rothschild (1973) argue that inequalities in society may serve as an indication of better prospects for those with poor resources, in our case social capital. Thus, in such a scenario, envy may be positive because it can drive a person's desire to improve their socioeconomic circumstance. In the case of social capital inequality, however, we think it is unlikely that inequality will engender optimism and increase wellbeing. When inequality does generate an increase in wellbeing it is in circumstances when the success of others is a signal that they too can be successful in the near future. For example, if a co-worker in my work unit receives a pay rise for meeting certain key performance indicators, I might feel happy because I know that if I meet those key performance indicators, I too will receive a raise. However, as discussed in Section 2.1, social capital mobility is infrequent and people mostly remain segregated in a hierarchy of social capital that self-perpetuates, and reflects inequalities in other forms of capital and socio-economic status. In instances in which social capital inequalities are institutionalized— such as with the *hukou* system in China— social capital inequalities become structured and upward mobility is seldom achieved. Hence, social capital inequality is unlikely to promote a positive signalling effect. This applies *a fortiori* for older people who are generally retired and lack the resources to enable them to generate additional social capital late in their lives.

Cultural values may also play an important role in explaining why social capital inequality may affect wellbeing. In our context, East Asian cultures are known to be more collectivist and communal. Individualism is frowned upon and not encouraged (Bakkeli, 2019; McKay, 2010; Yuki, 2003). Considering the homophily of social networks, people with more social capital may stand out from the rest of their network, inviting envy and social disapproval. Particularly in the case of older people, who hold more traditional communal views (Bakkeli, 2019), social capital inequality may be a source of unhappiness and social discontent for both the person with higher social capital and other members of their network who have less social capital.

On the basis of these arguments we have the following hypothesis:

H1: *Social capital inequality will have a negative influence on subjective wellbeing.*

3. Data

We use longitudinal data from the CFPS, which is a nationally representative survey of Chinese communities, families and individuals (Xie, 2012; Xie & Hu, 2014). The CFPS focuses on the economic, as well as the non-economic, wellbeing of the Chinese population, with a wealth of information covering such topics as economic activities, education and health, among others.[1] The CFPS was launched in 2010 with a total of 14,960 households from 635 communities, located in 25 provinces/municipalities/autonomous regions (Xie, 2012). Since 2010, the CFPS has released four waves with the second, third and fourth waves in 2012, 2014 and 2016, respectively. In this paper, given that our focus is on the wellbeing of older people, we use all available waves, but limit our analysis to individuals who are aged 55 and above.

3.1.Subjective wellbeing

We measure subjective wellbeing using responses to the single-item question on overall life satisfaction. In each wave of the CFPS, respondents are asked the question: "are you satisfied with your life?" with responses provided on a five-point scale (very unsatisfied=1, very satisfied=5). This is a commonly used measure of wellbeing in the literature (see, e.g., Awaworyi Churchill & Mishra, 2017; Helliwell et al., 2014; Pinquart & Sörensen, 2000; Welsch & Biermann, 2017), and responses to the life satisfaction question have been found to have adequate validity and reliability (Diener et al., 1999). In robustness checks, instead of using life satisfaction, we also employ a measure of subjective wellbeing which capture the positive expectation of the future. This is another commonly used measure of wellbeing in the literature (see, e.g., Arampatzi et al., 2019; Diener et al., 2017; Jackson & Bergeman, 2011; Zhang & Awaworyi Churchill, 2020). We find that our results are robust to using this alternative measure.[2]

3.2.Social capital inequality

To measure social capital inequality, we need to identify a measure of social capital. The existing literature presents several variations on how social capital is defined and measured. In the theoretical literature, social capital is mainly defined in terms of consisting of networks, high levels of interpersonal trust and norms of mutual aid and reciprocity (Coleman, 1990; Putnam, 1993). Based on the argument that social capital is a resource derived from social ties or networks (Coleman, 1988; Morrow, 1999), one of the most prominent measures of social capital that is used in the empirical literature on social capital are social networks (Lochner et

[1] Refer to Xie and Hu (2014) for a detailed description about CFPS.
[2] The CFPS collected information on respondent's happiness in selected waves. However, we did not use it as the measure of subjective wellbeing given that this variable is not available in all waves of the survey and, in some waves, more than 90 per cent of the respondents were not asked this question.

al., 1999; Villalonga-Olives & Kawachi, 2015). Consistent with this empirical literature, our main measure of social capital inequality is based on social networks.

Specifically, we use the level of individual involvement in social groups to measure social networks. The CFPS asks questions regarding the involvement of respondents in various groups. First, the CFPS asks respondents about their membership of the Chinese Communist Party (CCP) (*Party*). In China, CCP membership has advantages for getting ahead in the labour market. For example, when applying for jobs in state-owned enterprises (SOE) and public service positions, CCP membership is required or preferred (Dickson & Rublee, 2000). CCP membership is, therefore, considered an important proxy for social capital in the literature on Chinese labour markets (Knight & Yueh, 2008). The CFPS also asks respondents about their membership of religious groups (*religion*) and trade unions (*union*). To capture these various dimensions of social networks simultaneously, we take the average of all three measures of social network (*social*). Specifically, based on the average measure of these three forms of social networks, we construct a measure of (between group) social capital inequality (*SCI*). Consistent with the income inequality literature that has focused on the *hukou* household registration identity in China (see, e.g., Jiang et al., 2012), we calculate social capital inequality (SCI_{social}) as the ratio between the average social capital of urban *hukou* residents and the average social capital of non-urban *hukou* residents within the same province. This measure of inequality can be thought of as the social capital gap generated by one's *hukou* status and other associated rural-urban segmentation policies. In a robustness check as an alternative proxy for social capital we use trust. We find that the results are robust to using trust. We also examine the sensitivity of our results to the Gini and Theil indices as measures of overall social capital inequality for each province. Again, we find that our results are robust to using these measures.

3.3.Covariates

Consistent with the existing wellbeing literature (see, e.g., Cheng et al., 2016; Hu, 2013; Jiang, et al., 2012; Knight & Gunatilaka, 2010), we control for other relevant factors that have been associated with subjective wellbeing: rural-urban residential status, *hukou*, gender, age and its quadratic term, health status, education, marital status, homeownership status, employment status (employed or unemployed) and household income per capita.[3] We also control for social capital proxied by the social networks' variables used to calculate the inequality variable as well as province level characteristics including GDP per capita and population growth. Table 1 presents a description of variables used in the analysis.

4. Empirical Strategy

[3] The rural-urban dummy variable is not to be confused with the *hukou* dummy variable. The rural-urban dummy variable equals one if a respondent lives in an urban area and zero if he or she lives in a rural area, whereas the *hukou* dummy variable equals one if a respondent has an urban *hukou* and zero if he or she has a non-urban *hukou*. A respondent who has a non-urban *hukou* status may not necessarily live in a rural area, and could move to an urban area because there are more opportunities and better infrastructure. In our main regressions, health status enters the model as cardinal scores, however, in robustness checks (not reported here) we find that the effect of social capital remains robust even when health is measured as binary variables capturing different health status. We are unable to control for long term illness or disability because such a variable is not available in the dataset.

We estimate the following subjective well-being equation:

$$SW_{ijt} = \beta_0 + \beta_2 * SCI_{jt} + \beta_1 * SC_{ijt} + \beta_3 * X_{ijt} + \delta_i + \mu_p + \varphi_t + \varepsilon_{ijt} \quad (1)$$

where SW is the life satisfaction of the ith individual living in province j at time t; SCI_{jt} is the measure of social capital inequality (described above) in province j at time t; SC is the measure of individual social capital; X a set of control variables that are known to influence individual life satisfaction or wellbeing; ε_{it} is the error term; δ_i represents controls for time-invariant unobserved individual characteristics; φ_t represent controls for unobserved wave or time characteristics and μ_p represent controls for unobserved province characteristics. Given the ordinal nature of subjective wellbeing measures or life satisfaction scores, the existing literature uses either ordinary least squares (OLS) or ordered logit regressions. In our baselines estimates we report panel fixed effect (FE) regressions with heteroskedasticity robust standard errors clustered at the province level. For comparison, we also report both pooled OLS and ordered logit regressions, which show that our findings are not sensitive to treating life satisfaction as cardinal or ordinal, consistent with Ferrer-i-Carbonell and Frijters (2004).

While our FE model address issues of omitted variable bias, simultaneity bias may be a source of endogeneity. Previous research has shown that reverse causality may be an issue in the relationship between life satisfaction and social capital (Awaworyi Churchill & Mishra, 2017). Given that social capital inequality is likely to be endogenous, the pooled OLS and ordered logit estimates will be biased. Our identification strategy is to use two stage least squares (2SLS), in which we instrument for social capital inequality using past measures of ethnic diversity at the province-level. The existing literature suggests that demographic factors, such as ethnic diversity could influence social capital, social integration and other dimensions of social networks including network strength and size (Alesina & La Ferrara, 2002; Alesina & Zhuravskaya, 2011; Farley et al., 1994; Havekes et al., 2016). This strand of literature suggests that the level of ethnic diversity within a society is an important factor that influences the length of time people stay in a community and even their decisions to interact with other community members. Accordingly, a large body of literature has demonstrated a negative effect of ethnic diversity on trust, social networks and other measures of social capital (Alesina & La Ferrara, 2002; Awaworyi Churchill et al., 2019; Leigh, 2006).

We instrument for social capital inequality using measures of ethnic diversity computed from a previous census, which is the 2000 census. Previous literature examining different dimensions of social capital, such as network composition and social integration, have used indices of ethnic diversity from previous censuses to address endogeneity (Appau et al., 2019; Awaworyi Churchill & Smyth, 2019a). The exclusion restriction is that historical measures of ethnic diversity at the province level should be correlated with current levels of social capital or inequalities associated with social capital, but not with any unobserved factors that change current levels of life satisfaction. Specifically, trends in ethnic diversity from the past may persist and, thus, determine the level of interaction or social capital within communities.

Further, given that we control for unobservable province and time shocks, previous levels of ethnic diversity at the province level are unlikely to be affected by unobserved contextual shocks, especially after controlling for such shocks. One might be worried about potential self-selection. We, however, do not believe that this is a problem. The existing ethnic diversity literature has demonstrated that the use of older census years makes for a strong instrument, given that older censuses ensure that any potential selection into locations that may predate the census are adequately taken into account (Dustmann et al., 2005; Glennerster et al., 2013). Thus, the older the census year, the stronger the instrument. In our case, indices of ethnic diversity from the 2000 census predate the first wave of the CFPS survey by a decade. The use of older census data operates like a lag and, thus, should address potential self-selection issues.

We use province-level indices of ethnic diversity drawn from Alesina and Zhuravskaya (2011), who present data on indices of ethnic fractionalization for Chinese provinces. Using the 2000 census information, the indices of fractionalization are based on the Herfindahl formula (Greenberg, 1956), and measure the probability that two randomly selected individuals in a given province are from different ethnic groups. The index is $FRACTIONALIZATION_j = 1 - \sum_{e=1}^{N_j} S_{ej}^2$ where s_{ej} is the share of ethnic group e in province j.

A possible limitation of our instrument, however, is that it is drawn from a single year and, thus, it represents a cross-sectional measure of province level ethnic diversity. In the context of our study, which is based on panel data, the instrument, therefore, lacks variation across years when used to instrument for social capital inequalities. To address this problem, we conduct a wave-by-wave analysis, in which we use ethnic diversity to instrument for social capital inequality in alternating models that focus on each of the four waves of the CFPS. We also include results based on the entire panel, although these results should be taken with caution given the lack of variation in the instrument in the case of the panel.

For further robustness, we also use the Lewbel (2012) 2SLS technique, which uses heteroskedastic covariance restriction to construct internal instruments with a precondition for identification being the presence of heteroskedasticity in the data. Specifically, we use the Lewbel approach to provide 2SLS estimates that combine both external and internal instruments. This approach is often used in the literature as robustness checks for findings based on external instruments or used in combination with external instruments to enhance estimates (Arcand et al., 2015; Awaworyi Churchill & Smyth, 2019b; Emran & Shilpi, 2012).

5. Results

5.1.Baseline estimates

Table 2 presents baseline estimates for the association between social capital inequality and life satisfaction. In Column 1, we consider a panel FE model which includes only social capital inequality as our explanatory variable. Column 2 adds controls for province fixed effects and time trends. Column 3 adds the standard set of individual and province-level covariates, but does not control for province fixed effects and time trends. Column 4 adds fixed effects and time trends. For comparison, Column 5 reports pooled OLS results based on the full model

estimated in Column 4, while Column 6 reports ordered logit results based on the same model. Across all columns, we find a negative association between social capital inequality and subjective wellbeing. In Columns 1 and 2, the FE models without individual and province level covariates suggest that a standard deviation increase in social capital inequality is associated with a 0.017 and 0.027 standard deviation decline in life satisfaction, respectively. In Columns 3, we find that with the inclusion of the relevant control variables, a standard deviation increase in social capital inequality is associated with a 0.040 standard deviation decline in life satisfaction. The control of province characteristics in Column 4 increases the effect of social capital inequality. Here, a standard deviation increase in social capital inequality is associated with a 0.052 standard deviation decline in life satisfaction. Turning to the pooled OLS and ordered logit estimates in Columns 5 and 6, we find that a standard deviation increase in social capital inequality is associated with a 0.066 and 0.117 standard deviation decline in life satisfaction, respectively. The association between social capital inequality and life satisfaction is relatively weaker in the fixed effects estimates compared to the pooled OLS and ordered logit estimates, albeit still negative. This lower magnitude in the case of the fixed effect model could be because the fixed effect model controls for unobserved individual characteristics, for which the pooled OLS and ordered logit do not control.

Overall, across all specifications, the results suggest that living in an area with higher levels of social capital inequality is associated with lower life satisfaction. Reassuringly, the results for other variables are consistent with the existing literature including the positive association between social capital and life satisfaction (see, e.g., Awaworyi Churchill & Mishra, 2017; Elgar et al., 2011; Helliwell & Putnam, 2004; Helliwell & Wang, 2011).

Given that those with an urban *hukou* have higher social capital, an increase in social capital inequality is likely to increase, or at the minimum will not influence, the SWB of those with an urban *hukou*. Our discussion in Section 2, however, suggests that an increase in social capital inequality is likely to increase or decrease SWB of those with non-urban hukou, depending on whether the jealousy or tunnelling effect is at play. Our findings here suggest that the jealousy effect is at play and, thus, the overall negative effect is likely to be driven by non-urban *hukou* holders experiencing lower SWB in response to higher social capital inequality. Put differently, one might expect social capital inequality to have different effects for those with, and without, urban *hukou* given that they have different levels of social capital. Our results are consistent with the jealousy effect among non-urban *hukou* holders, which is driving the results.

We conduct a heterogeneity analysis, which examines the effects of social capital inequality for different sub-groups based on hukou status and place of residence to examine if the results support the arguments presented here. We argue that people are more likely to experience social capital inequality or feel the social capital gap when they compare themselves to people in other groups. Thus, to better understand how the *hukou* system shapes the effects of social capital inequalities, we consider four sub-samples: 1) respondents with urban *hukou* living in urban areas, 2) respondents with urban *hukou* living in rural areas, 3) respondents with non-urban *hukou* living in urban areas, and 4) respondents with non-urban *hukou* living in rural areas. We examine the impact of social capital inequality on wellbeing across these four sub-

groups. The results, reported in Table 3, show evidence of a statistically insignificant association between social capital inequality and wellbeing for respondents with urban *hukou* living in urban areas, and those with urban *hukou* living in rural areas. However, we find evidence of a negative effect of social capital inequality on subjective wellbeing for people with non-urban *hukou* living in urban areas. We also find evidence of a statistically insignificant effect for those with non-urban *hukou* living in rural areas.

This latter result suggests that older rural-urban migrants living in urban areas feel the effects of social capital inequality the most because they invariably compare themselves with those living in the cities with an urban *hukou* who have higher levels of social capital. Having no opportunity to emulate the social capital of those with an urban *hukou,* social capital inequality engenders feelings of envy, lowering subjective wellbeing. This result is consistent with findings from studies such as Knight and Gunatilaka (2010, 2012), who found that the subjective wellbeing of first generation rural-urban migrants in China (i.e., those born before 1980) is lower than both those remaining in rural areas and urban locals. The reason is that rural-urban migrants feel relative deprivation, when comparing themselves with urban locals. This finding also confirms the argument that our results are being driven by the jealousy effect, and particularly, non-urban hukou holders living in urban areas who are experiencing lower SWB in response to higher social capital inequality.

5.2.Endogeneity corrected estimates

Table 4 presents the 2SLS results. Panel A presents 2SLS estimates using the lag of ethnic diversity as the external instrument, while Panel B presents Lewbel 2SLS results which combine internal and external instruments. Column 1, 2, 3 and 4 report cross-section results based on waves 1, 2, 3 and 4 of the CFPS, respectively. Column 5 presents results for the panel which includes all four waves. Across all columns, findings from the first stage point to the validity of our instrument. First, the observed positive effect of ethnic diversity on social capital inequality is consistent with expectations. Second, the first-stage *F* statistics are greater than 10 throughout, indicating that, at the 10% significance level, our instrument is not weakly correlated with social capital inequality. Further, from Panel B, in which regressions have multiple instruments (i.e., external and internal instruments combined), at the 5% significance level, we do not reject the null hypothesis for the overidentifying restriction test, which suggests that the instruments from the first stage are not overidentified, except for columns 4 (wave 4) and 5 (panel) and, thus, results in these columns should be viewed with caution.

In Table 4, we find that the coefficient on social inequality is negative, consistent with the baseline estimates and that endogeneity generates a downward bias in our baseline estimates. Specifically, in Panel A, a standard deviation increase in social capital inequality is associated with a decline of 0.086 – 0.247 standard deviations in life satisfaction, depending on the sample that is used. In Panel B, the 2SLS estimates are also larger than the baseline estimates. In Panel B a standard deviation increase in social capital inequality is associated with a decline of 0.039 – 0.160 standard deviations in life satisfaction depending on the sample that is used. Across all the columns, the relationship between social capital and life satisfaction is consistent with expectations, reinforcing the results from the baseline estimates.

5.3.Robustness checks and extensions

We conduct a series of checks to examine the sensitivity and robustness of our results. First, we examine the robustness of our results to alternative measures of social capital inequality. Our main set of results are based on social network as a measure of social capital. However, another important measure discussed in the literature which is often used as a proxy for social capital is trust. Trust is considered a major element of social capital that plays an important role in promoting social ties and networks, especially because it acts as a vehicle for information flow and health interactions (Coleman, 1988; Morrow, 1999). We examine how sensitive our results are if we define social capital using trust and, thus, base our measure of social capital inequality on this construct. We take advantage of the general trust question in the CFPS, which is only available in waves 2, 3 and 4. On an eleven-point scale, in which 0 represents 'not at all' and 10 represents 'absolutely', the CFPS asks the question: "how much do you trust your neighbour?" We calculate the ratio between mean level of trust of urban *hukou* residents and non-urban *hukou* residents within the same province and use this as an alternative measure of social capital inequality that focuses on the trust dimension.

We also examine the sensitivity of our results to the Gini and Theil indices as measures of overall social capital inequality for each province. While the Gini index does not allow for decomposition into different components of inequality, the Theil index allows for the decomposition of inequality into a within-group and between-group component. We take advantage of this and also calculate a measure of between-group inequality based on the Theil formula. Table 5 presents the results for the alternative measures of social capital inequality, which are consistent with the results for the main composite index.

Next, we examine the sensitivity of our results to alternative ways of measuring subjective wellbeing. In addition to life satisfaction, the existing literature has also used variables that capture positive expectations about the future to measure subjective wellbeing (Arampatzi et al., 2019; Diener et al., 2017; Jackson & Bergeman, 2011). To examine the robustness of our results to other ways of measuring subjective wellbeing, we take advantage of the positive expectation question asked in the CFPS. The CFPS asks respondents about their level of confidence in the future on a five-point scale (not confident=1, very confident=5). We also consider alternative ways of measuring wellbeing using a dummy variable. To examine the sensitivity of results in life satisfaction regressions, some studies identify a threshold for which they create a split to distinguish between respondents with high wellbeing and those with low wellbeing (Welsch & Biermann, 2017). We follow a similar approach where we generate a dummy variable for high life satisfaction which equals to one if respondents indicate that they are very satisfied on the five-point scale, and zero otherwise. We do the same for respondents who indicate that they are very confident about their future. Results for this exercise are reported in Table 6. The findings are generally consistent with the baseline results.

We examine if the effects of social capital inequality differ across age and gender. Previous research has demonstrated that levels of social capital differ across different groups including gender and age groups (Kim, 2014; McDonald & Mair, 2010). For instance, it is argued that men accumulate more social capital than women (Addis & Joxhe, 2017; Karhina et al., 2019),

and a negative association exists between age and social capital (Addis & Joxhe, 2017; Awaworyi Churchill & Mishra, 2017). To examine if effects differ by gender, we conduct a sub-sample analysis focussed on the male and female sub-samples. To examine the age effect, we split our sample into two age groups, consisting of respondents with ages above, and below, the mean age 65 years. Results for the sub-sample analysis are reported in Table 7.

Consistent with our baseline estimates, we find a negative relationship between social capital inequality and life satisfaction for both the male and female sub-samples as well as the younger cohort sub-sample, but statistically insignificant effects in the case of the older cohort sub-sample. Comparing the magnitude of effects in the gender sub-samples, we find that the effect of social capital inequality is relatively stronger for men. These findings highlight how sub-groups that tend to accumulate more resources are likely to suffer negative consequences in situations of unequal distribution of such resources. Specifically, this result is consistent with studies suggesting that men have higher levels of social capital relative to women and that younger people have higher levels of social capital than older people.

Next, we examine if our results differ between groups with different levels of social capital. In a study of the relationship between income inequality and subjective wellbeing in Chinese cities, Smyth and Qian (2008) posit that income inequality will generate jealousy among low-income earners, but high-income earners will not be as adversely affected. Consistent with this reasoning we expect that someone with a high level of social capital will not necessarily be adversely affected by seeing a high level of social capital inequality, but those with low social capital will feel relative deprivation. To examine if this is the case, we conduct a sub-sample analysis that focuses on respondents with high social capital and those with low social capital. Given that the social networks variable is constructed using multiple dummy variables capturing membership, here we focus on trust as the measure of social capital. We take respondents with trust levels above the median to represent high social capital and those below the median as having low social capital. Results for this exercise are reported in Columns 5 and 6 of Table 7. Consistent with expectations, we find that social capital inequality has a stronger negative effect on wellbeing in case of respondents with low social capital.

As a final check, we include interaction terms to examine the moderating effects of health and hukou status on the relationship between social capital inequality and life satisfaction. Column 1 of Table 8 reports results when *hukou* status is employed as a moderator, while Column 2 contains the results when health status is employed as a moderator. In Column 3, both interaction terms are included. In all cases, the interaction terms are statistically insignificant.

6. Conclusion

Social capital is an important social construct with significant implications for health, wellbeing and quality of life. Like every other important resource, it is unequally distributed across populations. We present the first study that examines how inequalities in social capital influence subjective wellbeing among older people. Using longitudinal data from CFPS we have examined how institutionalized social capital inequality affects the wellbeing of older people. We measure social capital inequality as the social capital gap between migrants without

urban household registration (*hukou*) identity and urban residents. The findings support our hypothesis that social capital inequality will negatively influence wellbeing. Our results show that high levels of social capital inequality are associated with lower subjective wellbeing, measured by life satisfaction. This general conclusion is robust to a number of sensitivity checks including alternative ways of measuring subjective wellbeing and inequality.

We also find that the negative relationship between social capital inequality and subjective wellbeing is strongest for people with a non-urban *hukou* living in urban areas. Due to homophily in social networks, people experience more social capital inequality when they compare themselves to other groups. In the case of those with urban *hukou* living in urban areas, we expect more similarities in terms of social resources. Hence, when individuals with an urban *hukou* living in urban areas make within group comparisons, they are more likely to perceive similarities. However, this is not the case when, for example, an individual with a non-urban *hukou* lives in an urban area. When someone with a non-urban *hukou* living in an urban area compares his/herself with the majority with an urban *hukou,* living in urban areas, he/she is more likely to perceive inequalities that engender dissatisfaction and unhappiness.

These findings highlight two issues that are important to consider in devising policies aimed at promoting the wellbeing of older people. First, they lend support to the importance of developing institutional structures that promote the involvement of older people in social groups in order to close the social capital gap. The negative effects of social capital inequality suggest that it is important to develop policies aimed at narrowing the social capital gap. Second, the Chinese government has undertaken a number of reforms of the *hukou* system in recent years that are often interpreted as watering down its effects (see e.g., Chan & Buckingham, 2008). Our findings with respect to the role of the *hukou* system in promoting social capital inequality, and its associated effects on the wellbeing of older people, provide evidence in support of further dismantling of institutional structures, such as the *hukou* system, which is often referred to as a structure that promotes segregation and discrimination. These policy considerations are important given that China has one of the fastest aging populations in the world (Norstarand and Xu, 2011). With the proportion of the population aged 60 and above now over 15 per cent, relevant policies are likely to affect over 240 million people.

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Table 1 Descriptive Statistics

Variable	Definitions	Mean	SD
Life	Life satisfaction, cardinal scores	3.694	1.067
Future	Level of confidence about future, cardinal scores	3.604	1.180
Social	Average social network	0.058	0.138
Party	Communist Party member=1	0.114	0.318
Union	Trade Union member=1	0.041	0.198
Religion	Religious Group member=1	0.019	0.138
Trust	Degree of trust in the neighbourhood, cardinal scores	6.660	2.233
SCI_{social}	Social capital inequality based on the mean measure of social network	3.793	1.548
Hukou	Household register, urban *hukou*=1	0.341	0.474
Gender	Male=1	0.496	0.500
Age	Age (years)	65.225	7.841
Health	Health status, cardinal scores	4.938	1.355
Education	Highest education attained, cardinal scores	1.485	0.544
Marry	Married=1	0.824	0.381
Employed	Employed=1	0.450	0.498
House	Owns house(s)=1	0.897	0.303
Income	Household income per capita (log)	8.782	1.260
Urban	Urban area=1	0.465	0.499
Children	Number of children	2.491	1.309
GDP per capita	GDP per capita (log)	10.654	0.449
Pop growth	Population growth (‰)	4.432	2.455
Ethnic diversity	Province level index of ethnic fractionalization	0.063	0.057

Data sources: GDP per capita and population growth are obtained from the National Bureau of Statistics of China (http://data.stats.gov.cn). The index of ethnic diversity is obtained from Alesina and Zhuravskaya (2011). Other variables are author's calculation based on the data set from CFPS 2010, 2012, 2014 and 2016 (http://www.isss.pku.edu.cn/cfps).

Notes: 1. *Life* and *Future* is the subjective score of life satisfaction and level of confidence about future of the respondent, respectively. Each respondent was asked the same question: "are you satisfied with your life?" and "how confident are you about your future" with a five-point scale (very unsatisfied/not confident at all =1, very satisfied/very confident =5). 2. Trust is the subjective score of trust in neighbour. Each respondent was asked the same question: "how much do you trust your neighbour?" with an eleven-point scale (distrustful=0, very trustworthy=10). 3. We follow the rural-urban classification from the National Bureau of Statistics China to construct the dummy variable Urban (http://www.stats.gov.cn/tjsj/tjbz/tjyqhdmhcxhfdm/2018/index.html). 4. Respondents' education is measured using a three-point scale (primary school and below=1, middle school=2, college and above=3). 5. Health is the interviewer rated health status score of the respondent. It is a seven-point scale (very poor=1, very good=7).

Table 2 – Baseline Results

	Dependent variable: cardinal life satisfaction scores					
	Panel FE				Pooled OLS	Ordered Logit
	(1)	(2)	(3)	(4)	(5)	(6)
SCI_{social}	-0.012*	-0.019**	-0.026**	-0.034***	-0.043***	-0.076***
	(0.007)	(0.009)	(0.011)	(0.011)	(0.014)	(0.025)
	[-0.017]	[-0.027]	[-0.040]	[-0.052]	[-0.066]	[-0.117]
Social			0.011	0.002	0.266***	0.473***
			(0.096)	(0.102)	(0.055)	(0.091)
			[0.001]	[0.000]	[0.036]	[0.064]
Hukou			0.049	0.051	-0.002	-0.016
			(0.041)	(0.042)	(0.031)	(0.057)
Gender			-	-	-0.061***	-0.120***
					(0.020)	(0.036)
Age			0.108	0.115	0.017***	0.030***
			(0.102)	(0.102)	(0.001)	(0.002)
Health			0.064***	0.066***	0.101***	0.184***
			(0.015)	(0.015)	(0.010)	(0.019)
Middle school			0.086*	0.098*	-0.003	-0.041
			(0.046)	(0.048)	(0.022)	(0.038)
College and above			0.240*	0.262*	0.031	-0.013
			(0.130)	(0.137)	(0.057)	(0.085)
Marry			-0.006	-0.007	0.109***	0.175***
			(0.043)	(0.042)	(0.020)	(0.035)
Children			-	-	0.033**	0.060***
					(0.011)	(0.018)
Employed			-0.023	-0.016	0.000	-0.009
			(0.031)	(0.029)	(0.028)	(0.050)
House			0.064*	0.063*	0.133***	0.234***
			(0.034)	(0.034)	(0.033)	(0.059)
Income			0.032***	0.032***	0.081***	0.143***
			(0.010)	(0.010)	(0.015)	(0.028)
Urban			-0.136**	-0.130**	-0.023	-0.037
			(0.068)	(0.068)	(0.029)	(0.040)
GDP per capita			-0.210	-0.130	-0.332	-0.210**
			(0.387)	(0.261)	(0.214)	(0.107)
Pop growth			0.056***	0.063***	0.118***	0.056***
			(0.017)	(0.020)	(0.032)	(0.018)
Prov. FE	No	Yes	Yes	Yes	Yes	Yes
Prov. - specific time trend	No	Yes	Yes	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes	Yes	No	No
Observations	32,122	32,122	22,172	22,172	22,172	22,172
R^2	0.000	0.026	0.039	0.040	0.072	-

Notes: 1. Cluster-robust standard errors are in parentheses. 2. Standardized coefficients are in brackets. 3. ***, **, * represent significance at 1%, 5%, 10% level, respectively.

Abbreviation: Prov. – Province, FE- Fixed Effects.

Table 3 – Heterogeneous Effects across Groups (Panel FE)

	Dependent variable: cardinal life satisfaction scores			
	(1) Urban *hukou* in Urban Area	(2) Urban *hukou* in Rural Area	(3) Non-urban *hukou* in Urban Area	(4) Non-urban *hukou* in Rural Area
SCI_{social}	-0.016	0.003	-0.085*	-0.027
	(0.034)	(0.049)	(0.049)	(0.021)
	[-0.028]	[0.004]	[-0.120]	[-0.039]
Other controls	Yes	Yes	Yes	Yes
Province characteristics	Yes	Yes	Yes	Yes
Prov. FE	Yes	Yes	Yes	Yes
Prov. - specific time trend	Yes	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes	Yes
Observations	6,015	1,228	3,830	11,099
R^2	0.046	0.068	0.069	0.042

Notes: 1. Cluster-robust standard errors are in parentheses. 2. Standardized coefficients are in brackets. 3. ***, **, * represent significance at 1%, 5%, 10% level, respectively.

Abbreviation: Prov. – Province, FE- Fixed Effects.

Table 4 – IV Results

	Dependent variable: cardinal life satisfaction scores				
	(1) CFPS 2010	(2) CFPS 2012	(3) CFPS 2014	(4) CFPS 2016	(5) CFPS Panel
Panel A – 2SLS with external instrument					
SCI_{social}	-0.125***	-0.216***	-0.063***	-0.132***	-0.073***
	(0.035)	(0.079)	(0.019)	(0.039)	(0.022)
	[-0.162]	[-0.247]	[-0.086]	[-0.244]	[-0.113]
Social	0.327***	0.388***	0.445***	0.280***	0.336***
	(0.115)	(0.129)	(0.107)	(0.107)	(0.069)
	[0.046]	[0.046]	[0.052]	[0.044]	[0.045]
Other controls	Yes	Yes	Yes	Yes	Yes
Observations	4,279	4,990	5,850	7,053	22,172
First stage					
Instrument	15.459***	10.780***	24.785***	17.260***	17.199***
	(0.228)	(0.370)	(0.203)	(0.372)	(0.175)
F statistics	4,577.546	846.690	14,970.528	2,152.282	9,657.262
Panel B – Lewbel 2SLS with external & internal instruments					
SCI_{social}	-0.085***	-0.034**	-0.062***	-0.086***	-0.048***
	(0.017)	(0.014)	(0.012)	(0.012)	(0.007)
	[-0.110]	[-0.039]	[-0.084]	[-0.160]	[-0.074]
Social	0.337***	0.406***	0.445***	0.270***	0.326***
	(0.113)	(0.118)	(0.106)	(0.078)	(0.049)
	[0.047]	[0.048]	[0.052]	[0.042]	[0.044]
Other controls	Yes	Yes	Yes	Yes	Yes
Observations	4,279	4,990	5,850	7,053	22,172
First stage					
F statistics	1,698.664	1,142.891	2,006.788	220.263	1,182.336
Hansen J *p* value	0.161	0.200	0.552	0.040	0.009

Notes: 1. Cluster-robust standard errors are in parentheses. 2. Standardized coefficients are in brackets. 3. ***, **, * represent significance at 1%, 5%, 10% level, respectively.

Abbreviation: 2SLS, two-stage least squares.

Table 5 - Alternative Measure of Social Capital Inequality (Panel FE)

	Trust (1)	Gini (2)	Theil (3)	BI^{+} (4)
SCI	-1.223*	-1.819***	-4.827***	-3.317***
	(0.679)	(0.436)	(1.162)	(0.966)
	[-0.051]	[-0.086]	[-0.085]	[-0.073]
Other controls	Yes	Yes	Yes	Yes
Province characteristics	Yes	Yes	Yes	Yes
Prov. FE	Yes	Yes	Yes	Yes
Prov. - specific time trend	Yes	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes	Yes
Observations	17,860	22,172	22,172	22,172
R^2	0.082	0.043	0.043	0.041

Notes: 1. Dependent variable is cardinal life satisfaction scores. 2. Cluster-robust standard errors are in parentheses. 3. Standardized coefficients are in brackets. 4. ***, **, * represent significance at 1%, 5%, 10% level, respectively. 5. BI^{+} refers to alternative measure of between group inequality based on the Theil index.

Abbreviation: Prov. – Province, FE- Fixed Effects.

Table 6 – Alternative Measures of Subjective Wellbeing

	(1) Future Panel FE	(2) High Life Panel Probit	(3) High Future Panel Probit
SCI_{social}	-0.063***	-0.071***	-0.090***
	(0.017)	(0.018)	(0.019)
	[-0.088]	[-0.253]	[-0.315]
Other controls	Yes	Yes	Yes
Province characteristics	Yes	Yes	Yes
Prov. FE	Yes	Yes	Yes
Prov. - specific time trend	Yes	Yes	Yes
Individual FE	Yes	-	-
Observations	22,172	22,172	22,172
R^2	0.052	-	-

Notes: 1. Dependent variable: level of confidence about future (cardinal scores) in Column (1), high life satisfaction dummy (=1 if cardinal life satisfaction score equals 5) in Column (2), high level of confidence about future dummy (=1 if cardinal score of level of confidence about future equals 5) in Column (3). 2. Cluster-robust standard errors are in parentheses. 3. Standardized coefficients are in brackets. 4. ***, **, * represent significance at 1%, 5%, 10% level, respectively.

Abbreviation: Prov. – Province, FE- Fixed Effects.

Table 7 – Heterogeneous Effects across Gender, Age and Social Capital (Panel FE)

	Dependent variable: cardinal life satisfaction scores					
	(1)	(2)	(3)	(4)	(5)	(6)
	Male	Female	55<=Age <= 65	Age >65	Low Social Capital	High Social Capital
SCI_{social}	-0.041**	-0.026**	-0.047**	-0.016	-0.103***	-0.036***
	(0.020)	(0.013)	(0.021)	(0.024)	(0.029)	(0.013)
	[-0.064]	[-0.039]	[-0.068]	[-0.027]	[-0.158]	[-0.057]
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Province characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Prov. FE	Yes	Yes	Yes	Yes	Yes	Yes
Prov. - specific time trend	Yes	Yes	Yes	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,141	11,031	14,143	8,029	8,260	13,912
R^2	0.044	0.039	0.036	0.052	0.082	0.054

Notes: 1. Cluster-robust standard errors are in parentheses. 2. Standardized coefficients are in brackets. 3. ***, **, * represent significance at 1%, 5%, 10% level, respectively.

Abbreviation: Prov. – Province, FE- Fixed Effects.

Table 8 – Interaction Effects (Panel FE)

	Dependent variable: cardinal life satisfaction scores		
	(1)	(2)	(3)
SCI_{social}	-0.036***	-0.023*	-0.025**
	(0.010)	(0.012)	(0.012)
	[-0.055]	[-0.035]	[-0.039]
SCI_{social} × Hukou	0.007		0.010
	(0.013)		(0.013)
SCI_{social} × Good health		-0.016	-0.017
		(0.011)	(0.011)
Other controls	Yes	Yes	Yes
Province characteristics	Yes	Yes	Yes
Prov. FE	Yes	Yes	Yes
Prov. - specific time trend	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes
Observations	22,172	22,172	22,172
R^2	0.037	0.037	0.037

Notes: 1. Good health is a dummy variable that equals 1 if the interviewer rated health status score of the respondent – *health* – equals 5 or above. 2. Cluster-robust standard errors are in parentheses. 3. Standardized coefficients are in brackets. 4. ***, **, * represent significance at 1%, 5%, 10% level, respectively.

Abbreviation: Prov. – Province, FE- Fixed Effects.