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Life satisfaction in urbanizing China: The effect of city size and pathways to urban residency

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ABSTRACT

Although Durkheim, Simmel, and other early social theorists posited causal links between urban life and individual despair or distrust, most contemporary analyses of subjective well-being attribute variations primarily to individual characteristics. However, China's recent warp-speed urbanization requires a more dynamic and multi-level analysis that simultaneously models individual and geographic attributes. Using a representative survey conducted in 2011 of adults living in urban China, we find that, while age, marital status, and household wealth have an impact on life satisfaction, the characteristics of the surrounding county or city district, the size of the city, as well as the route by which an individual became an urban resident, often have an independent impact. Our results indicate that after controlling for individual socio-demographic characteristics, health status, and household wealth, the new urbanites (rural-to-urban migrants and *in situ* urbanized rural residents) who settle in cities with urban populations between 200,000 and 500,000 are more satisfied with their lives than those who settle in either larger or smaller cities. We argue that in China, where urban centers vary greatly in size, research on individual life satisfaction should factor in the characteristics of the urban location and the means by which individuals become urban residents. Our work suggests a new research and policy direction for small cities undergoing urbanization and their future trends.

1. Introduction

To date, research in wealthy economies shows that living in very dense cities lowers both the affective and cognitive dimensions of subjective well-being (Morrison, 2011). For example, in a study of American cities between 1972 and 2008, Berry and Okulicz-Kozaryn (2011) found the lowest levels of happiness in large central cities and the highest levels in the small-town rural periphery. Morrison (2007, 2011) surveying 12 areas in New Zealand in 2004 similarly found that the growth of the most populous cities is associated with a decrease in the residents' subjective appreciation of quality of life, even after controlling for individual characteristics. Brereton, Clinch, and Ferreira (2008) study of subjective well-being in Ireland, using GIS-based techniques to explore the impact of local factors, found that residents of Dublin had lower life satisfaction scores than country dwellers. Empirical evidence from economically less-developed countries, however, reveals the opposite pattern: subjective well-being is highest in urban areas (Veenhoven, 1994; Veenhoven & Ehrhardt, 1995). Berry and Okulicz-Kozaryn's (2009) analysis of World Values Survey (WVS) data for 81 countries between 1995 and 2004 shows that in many parts of Asia undergoing particularly rapid urbanization, life satisfaction is consistently highest in big cities.

Yet, with the exception of geographers, few scholars have systematically developed models and theories that attempt to look at the interaction of geographic variation and individual attributes when examining subjective well-being (Bian, Zhang, Yang, Guo, & Lei, 2015; Diener, 2000; Dolan, Peasgood, & White, 2008; Layard, 2010; McGillivray & Clarke, 2006; Qiu & Li, 2012; van Hoorn, 2008). And when scholarship does add in the larger context, they favor the impact of economic development as measured by gross domestic product (GDP) per capita (e.g., Easterlin, 2013; Easterlin, McVey, Swite, Sawangfa, & Zweig, 2010; Stevenson & Wolfers, 2008; Veenhoven & Vergunst, 2013).

To address both the conflicting findings in developed Western economies and rapidly developing Asia and the challenge of

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integrating characteristics of a city and attributes of residents, our project uses a representative sample of adults residing in urban China to document how characteristics of the city of residence may increase or lessen the impact of individual variables on life satisfaction after controlling for variation in individual socio-demographic characteristics, health status, and household wealth. Before presenting our results, however, we outline how our study of Chinese urbanites relates to the broader literature on subjective well-being and provide a brief overview of the somewhat distinctive Chinese urbanization process where urbanization has been "urbanization of place" as much as "urbanization of people." We then describe our sample and core variables, and discuss our findings in some detail before summarizing our argument.

1.1. Subjective well-being (SWB)

The literature on subjective well-being (SWB) is contentious. Some herald a new "science of happiness" (Ballas, 2013), with enormous potential to guide government policy (Layard, 2010; McGillivray & Clarke, 2006; van Hoorn, 2008). For others, SWB is an abroad category of both emotional and evaluative phenomenon that defy easy measurement (Diener, Suh, Lucas, & Smith, 1999), and some even question its value, arguing that it is too adaptive or distorted to capture any underlying construct (Jordan, 2008; Scott, 2012). We do not intend to enter into these debates but employ the generally accepted focus on a global cognitive assessment of life satisfaction which scholars such as Appleton and Song (2008) and Diener, Oishi, and Lucas (2015) have used and validated.

We also would like to emphasize how the choice of words that is used in Chinese makes a difference to what elements of subjective well-being the respondent may be evaluating. In English language research on SWB, "happiness" and "life satisfaction" (*xingfu* and *manyi* in Chinese) are often used interchangeable. In fact, the two terms are not identical and also are not identical in English and Chinese. In English, "life satisfaction" refers to an overall evaluation of one's life and has a much wider scope than "happiness" (Helliwell & Putnam, 2004). The relationship between the two terms, however, is reversed in Chinese. That is, happiness when translated as x*ingfu* is closest to an overall evaluation of one's life especially in terms of interpersonal relationships, whereas life satisfaction when translated as *manyi* invokes concern with relative standard of living or material comforts (Hsu & Zhang, 2014). Since we are primarily focused on the impact of economic development and urbanization, our dependent variable for operationalizing life satisfaction, uses a response to the question "Are you satisfied (*manyi*) with your current life?" rather than "How happy (*xingfu*) are you now?" Then using responses to this single question, we argue for the importance, even necessity, of incorporating analysis of the characteristics of the surrounding county or city district, the size of the city, as well as the route by which an individual became an urban resident, in research on SWB particularly in the urbanizing context of China.

1.2. Urbanization in China

In 2011, for the first time in Chinese history, the majority of the population lived in towns and cities (National Bureau of Statistics of China, 2012a). The speed and scale of population migration and city expansion in China is without precedent in human history. In 1978, 17.92% of the population lived in urban areas; by 2013, the percentage had risen to 53.73 (National Bureau of Statistics of China, 2014). Between 1978 and 2010, the total number of cities increased from 193 to 659, among which the number of megacities increased from 2 to 16, large cities from 27 to 124, medium–sized cities from 35 to 138, and small cities from 129 to 380. The number of towns leapt from 2173 to 19,410 (Central Committee of the Communist Party and State Council of China, 2014).

Driving this massive demographic shift was the migration of over 200 million rural residents who left their home villages to start new lives in cities as migrant labor (Chan, 2013; National Bureau of Statistics of China, 2012b). Equally momentous was the incorporation of former villages into new urban districts (Lin, 2007). Between 1981 and 1999, the annual expansion of urban areas averaged 800 km^2/annum. After 2000, the growth rate more than doubled to 1700 km^2/annum. By 2011, urban space was almost six times that of 1981 (Ministry of Housing and Urban–Rural Development of China, 2012; Yeh, Xu, & Liu, 2011) and more than 200 million villagers became urbanites without ever having left their hometown (Friedmann, 2005; Liu, He, Wu, & Webster, 2010). Thus the urbanization in China is the result of two distinct and somewhat independent transformations. On one hand, there is the pattern of cities and towns growing because people leave their villages and move to urban centers. On the other, there is the phenomenon of *in situ* urbanization, where villagers become urban residents not because they decided to try their luck in the city but because their land was reclassified as urban. Rather than go to the city, the city came to them.

Another government policy that has had a crucial effect on the conditions of urban life in China is the household registration (*hukou*) system, which was introduced in the 1950s to guarantee social stability and to balance an agricultural surplus with urban industrialization (Chan & Zhang, 1999; Solinger, 1999). Through the *hukou* system, each Chinese citizen is categorized as either rural or urban. Those who live in villages and on farms are responsible for growing their own food and for delivering a set amount of grain to the state at state prices. When the *hukou* system was introduced, villagers were not allowed to leave their village unless it was to marry another rural person, to join the army, or to attend college. Before the 1980s, the approximately 20% of the population who lived in urban areas were paid cash salaries, and qualified for subsidized food, housing, and medical care. If they wished to change residence, they were required to seek the approval of the local police station.

In the 1980s, the most rigid constraints on movement were lifted. If rural residents could feed themselves with products grown in their village, they could leave to find other types of employment. Millions left at once for jobs in construction and peddling. When food rationing eventually ended in 1993 and the new factory jobs opened in coastal export zones, the number of people leaving their home villages soared. However, because the urbanization process in China is still very much "urbanization of place" rather than "urbanization of people", the overwhelming majority of these new urbanites still are officially registered as rural *hukou* holders. Even though they live in towns and cities, they are denied most of the subsidies and protections that urban *hukou* residents have been granted since the early 1950s. For this reason, we add an additional element to our analysis: the pathway to urban residency. Did the respondents move from a village to the city (rural-to-urban migrants)? Or, did the city come to them (*in situ* urbanized rural residents)? The reference group is established urban residents (urban *hukou* residents).

In November 2014, the State Council of China issued the Circular on Adjusting the Criteria for the Classification of City Sizes (State Council [2014] No. 51) in which the original criteria for classification were adjusted and new criteria introduced. Henceforth, cities may be divided into five classes and seven grades ranging from Type II small cities with populations below 200,000 to megacity behemoths with populations over 10 million (see Table 1). We have adopted a simplified version of the new classifications in our analysis: cities with less than 200,000 urban residents (Type II small cities), cities with more than 200,000 but

Table 1
Categories of city size in China according to the 2014 criteria. *Source:* Circular on adjusting the criteria for the classification of city sizes (State Council [2014] No. 51).

Categories	Number of urban residents
Small cities	Below 500,000
Type I small cities	Between 200,000 and 500,000
Type II small cities	Below 200,000
Medium-sized cities	Between 500,000 and 1 million
Large cities	Between 1 million and 5 million
Type I large cities	Between 3 million and 5 million
Type II large cities	Between 1 million and 3 million
Megacities	Between 5 million and 10 million
Megacity behemoths	Above 10 million

less than 500,000 urban residents (Type I small cities), and cities with more than 500,000 urban residents (medium-sized, large, and mega cities). By contrast, in the United States and the European Union, a city with a population greater than or equal to 250,000 in its urban center is already defined as a large city (Dijkstra & Poelman, 2012).

According to the National New-type Urbanization Plan (2014–2020), the Chinese government aims to raise the proportion of urban population to 60% by 2020, which would involve the relocation of an additional 100 million villagers. Still, in the case of China, as we have noted, living in a city is not the same as being an "officially registered" urban resident. In 2012, 52.6% of Chinese citizens lived in cities, but only 35.3% were registered as official urban *hukou* residents, a disparity that draws attention to the approximately 250 million people who are either rural-to-urban migrants or *in situ* urbanized rural residents. The new plan hopes to address this disparity by gradually granting permanent urban status to 100 million rural-to-urban migrant workers, so that by 2020, 60% of Chinese should be living in cities, with 45% enjoying full urban status.

In July 2014, the State Council of China introduced the Suggestions for Advancing the Reform of the Household Registration System (State Council [2014] No. 25) to promote the orderly re-registration of long-term rural-to-urban migrants with stable employment as urban residents and to expand basic public services to cover them. If implemented, the new policy would allow rural-to-urban migrants residing in small cities and towns to apply for official urban status with almost no restrictions. Those who live in medium-sized cities will experience some restrictions, but these will gradually be phased out for those with legitimate and stable occupations and housing. For those who wish to settle in large cities, however, the restrictions will remain stringent, and the population of key megacities will continue to be strictly controlled.

These new government policies will ensure that rapid urbanization will continue in China over the next decade. The time has definitely come to explore if China will follow the pattern of other Asian developing countries where life satisfaction increases with the urbanization process or if it will resemble Western developed countries where people report the lowest level of life satisfaction in large cities.

1.3. Researching life satisfaction in China

The first wave of research on life satisfaction in China focused on the impact of individual attributes (Appleton & Song, 2008; Knight & Gunatilaka, 2010; Knight, Song, & Gunatilaka, 2009; Liu, Xiong, & Su, 2012), and confirmed the key role of age, gender, and income (Bian et al., 2015; Qiu & Li, 2012). More recently, researchers have become increasingly interested in evaluating individual attributes within a larger context. Easterlin, Morgan, Switek, and Wang (2012) link reported life satisfaction with macro-economic shifts. Using data derived from six surveys conducted by five organizations, they found that China's long-term pattern of life satisfaction is similar to that of other transitional countries: a decline early in the transition, followed by a recovery. The shifts arose from changes in relative income and reference groups, rapid urbanization, and rising urban insecurity. A recent study on SWB by Bian et al. (2015), based on the 2010 China Survey of Social Change conducted in 12 western provinces, also found that people's assessments of happiness tend to be higher in richer and more developed provinces (although the level of provincial development does not directly affect the relationship between income and happiness). Drawing on six waves of the Chinese General Social Survey from 2003 to 2011, Wu and Tam (2015) also observed a positive effect of socio-economic status on individuals' happiness, but only in provinces with lower levels of economic development. In provinces with high levels of economic development, the effect becomes negligible. In all of these studies, the analyses dealt only with a simple urban–rural dichotomy; there was no consideration of how variations across urban settlements might have an effect. Nor did the studies address the interactions between the personal attributes and environmental factors that we know to be critical.

By linking county-level economic measures and city size with the data from a 2011 survey of China's urban population, this study evaluates how variation in city size and the means by which individuals establish urban residency affect self-reported life satisfaction. The analysis not only incorporates individual- and societal-level variables into one model but also addresses several of the shortcomings of previous research. First, we develop a measure of urbanization according to the new classification of city sizes rather than a simple urban–rural dichotomy. Second, we look specifically at how variations in city sizes affect residents' life satisfaction, independent of personal characteristics, household wealth, and county-level economic development. Third, our lines of causality are clear: our county-level economic measures and classifications of city size were developed using data recorded in 2010, and individual life satisfaction was measured using the 2011 Migration and Quality of Life Survey. Fourth, we pay particular attention to the interactions between personal and environmental factors, and examine how the impact of city size varies according to an individual's path to city residency and current *hukou* status.

2. Data and measures

2.1. Sample and data collection

The individual life satisfaction and socio-demographic data for this study come from the Migration and Quality of Life Survey we completed in collaboration with the Research Center for Contemporary China (RCCC) at Peking University in May and June of 2011. The survey employed spatial probability sampling specifically designed to target urban residents regardless of their official *hukou* status (Chen, Chen, Landry, & Davis, 2014; Landry & Shen, 2005). The actual sampling procedure was carried out in several stages. First, we randomly selected 26 primary sampling units (PSUs), that is, cells of spatial grids defined as half square degrees (HSDs) of latitude and longitude, within strata from a spatial sampling frame of China taken by our partners at RCCC. The strata represent seven geographical areas. We then randomly selected two secondary sampling units (SSUs), which are half square minutes (HSMs) of latitude and longitude in each PSU. The SSUs were chosen from areas where the average nighttime light was higher than 30 on a scale of 0–63 at the pixel level based on the Operational Linescan System nighttime light data provided

by the Defense Meteorological Satellite Program in 2009 (for details of using the DMSP-OLS nighttime light data in the survey sample design, see Chen et al., 2014). We chose a threshold of 30 to define the sample frame of physical areas deemed "urban" iteratively, which closely corresponds to the definition of urban areas in national standards (National Bureau of Statistics of China, 2011).

From these 26 PSUs and 52 SSUs, spread over 19 provinces, 27 prefectures, and 31 counties or city districts, we randomly sampled 1906 households and successfully interviewed 1288 individuals between the ages of 18 and 70 for a response rate of 67.6%. All interviews were conducted in person by trained interviewers. The average length of the interviews was 38.3 min. Survey weights were developed to adjust for unequal selection probabilities and non-response rates. Post-stratification weights were calculated based on the age and gender distribution of the urban population reported in the 2010 Chinese Population Census (see Table A1). Fourteen cases from the survey are excluded due to missing data on variables used in the present study, leaving a sample of 1274 for the analysis. We apply weights and address the problems inherent in a multi-layered clustered sampling design by using the "svy" (survey) commands in Stata 12.0, which estimates corrected standard errors in the presence of stratification and clustering for individual characteristics.

2.2. Measures

Our dependent variable, derived from responses to the question "Are you satisfied (*manyi*) with your current life?" is rated on a seven-point scale. The measure is coded as a continuous variable ranging from 1 indicating "very unsatisfied" to 7 indicating "very satisfied." Individual demographic information includes age (years), gender (1 = female), ethnicity (1 = ethnic minority), and marital status (1 = married). The measures of socio-economic status used are education (years of schooling), occupation (1 = professional/managerial), and household wealth (an index based on ownership of a number of consumer items, such as a television and car, ranging from 0 to 12). To measure health status, chronic conditions are assessed using the World Mental Health Composite International Diagnostic Interview (WMH-CIDI): respondents were asked if they had ever had any of the listed physical or psychophysiological disorders. The count ranges from 0 to 10. The respondents' length of residence at their current locale is measured in years ranging from 0.083 (one month) to 70. Migration and *hukou* status are coded into three categories: urban *hukou* residents (those with urban *hukou*), rural-to-urban migrants (those with rural *hukou* who had moved from a village to an urban area), and *in situ* urbanized rural residents (those who did not move and still retained their rural *hukou* but whose village had been incorporated into an urban district).

County-level economic measures and categories of city size are developed based on data from the 2010 Chinese Population Census, local gazetteers, and various statistical yearbooks. County economic development is measured using the GDP per capita in 2010 and ranges from 4.418 thousands RMB to 92.791 thousands RMB among the 31 counties or city districts. A logarithmic transformation is used in the regression analysis to approximate a normal distribution. Cities in China can be categorized according to the governmental level of their administration; there are centrally administered cities, prefectural-level cities, and county-level cities (Ma, 2005). Among the 31 county-level units in our sample, there are 11 counties, 9 county-level cities, and 11 urban districts belonging to prefectural-level or centrally administered cities of various sizes. Using the total urban resident population recorded in the 2010 Chinese Population Census and the new criteria for the classifications of city size, we code the 31 counties or urban districts according to three categories: there are six counties with an urban population below 200,000; 15 counties, county-level cities, or urban districts in prefectural-level cities with urban populations between 200,000 and 500,000; and 10 county-level cities or urban districts in prefectural-level or centrally administered cities with urban populations above 500,000.

3. Results

Table 2 presents the descriptive statistics of the respondents based on the survey and the economic measures for the 31 counties or city districts of the sample. When we compare the characteristics of respondents in the three categories of city size, we

Table 2
Descriptive statistics of individual and county characteristics for the whole sample and by categories of city size.

	Whole sample	Category of city size (urban population)		
		Below 200,000	200,000–500,000	Above 500,000
Individual characteristics				
Life satisfaction (1–7, mean)	4.881 (0.160)	4.519 (0.140)	5.144 (0.168)	4.654 (0.156)
Age (years, mean)	39.266 (2.374)	39.579 (1.161)	42.222 (1.754)	36.225 (3.331)
Gender (female, %)	50.312	52.474	49.570	50.821
Ethnicity (ethnic minority, %)	2.985	3.792	0.449	5.473
Marital status (married, %)	80.764	91.637	84.467	75.765
Education (years of schooling, mean)	9.839 (1.045)	10.484 (0.464)	8.145 (0.761)	11.488 (1.209)
Occupation (professional/managerial, %)	17.605	13.183	7.407	28.479
Household wealth (0–12, mean)	6.410 (0.660)	6.107 (0.359)	5.301 (0.475)	7.572 (0.544)
Chronic health conditions (0–10, mean)	0.502 (0.157)	0.514 (0.228)	0.451 (0.086)	0.553 (0.320)
Length of residence in current locale (years, mean)	24.155 (5.061)	22.087 (3.264)	33.750 (1.604)	14.629 (4.745)
Migration and *hukou* status (%)				
Urban *hukou* residents	56.605	60.129	55.720	57.105
Rural-to-urban migrants	20.296	20.544	13.496	27.186
Urbanized rural residents	23.099	19.327	30.784	15.710
County characteristics				
GDP per capita (in RMB 1000, mean)	29.204 (19.059)	19.633 (10.771)	21.191 (10.944)	46.965 (21.012)
GDP per capita (natural logarithm, mean)	3.175 (0.663)	2.861 (0.520)	2.909 (0.596)	3.764 (0.438)
Sample N				
Number of respondents	1274	285	651	338
Number of counties or city districts	31	6	15	10

Note: Survey design effects (strata, clusters, and individual weights) are adjusted in the mean/percentage estimations of individual characteristics.
Means/percentages are reported; standard errors in parentheses.

identify three patterns: respondents residing in cities with populations between 200,000 and 500,000 reported the highest level of life satisfaction; cities with populations above 500,000 have the highest percentage of rural-to-urban migrants (27.2%), whereas cities with populations between 200,000 and 500,000 have the highest percentage of *in situ* urbanized rural residents (30.8%); and, not surprisingly, the GDP per capita is the highest in cities with populations above 500,000.

We next estimate how individual and household characteristics, county-level fixed effects, county-level economic development, and city size are associated with respondents' life satisfaction. In Model 1, the baseline model, only individual socio-demographic characteristics, health status, migration and *hukou* status, and household wealth are included as independent variables. Model 2 controls for the county-level fixed effects. Model 3 includes the category of city size, and Model 4 further controls for the county-level GDP per capita in 2010 and its squared term, in addition to individual and household characteristics. In Model 5, we include the interactions of individual migration and *hukou* status with city size. The models are estimated using ordinary least square (OLS) regressions and the results are reported in Table 3.

Among individual characteristics, we find that household wealth is the most consistent and significant predictor for life satisfaction throughout the models estimated. Its effects follow a linear pattern and the coefficients on the squared term are not significant, which means that respondents living in wealthy households are, on average, more satisfied with life than those in poor households. The results are consistent with Diener's (2015) finding that wealthier people are happier on average when wealth is measured within countries. They are also consistent with the empirical data collected by Bian et al. (2015) and Wu and Tam (2015) showing that, within China, people who have higher socio-economic status are happier than their counterparts.

After controlling for individual and household characteristics, Table 3, Model 2, which introduces county fixed effects, shows significant variations across counties. At this macro level, we see the predicted county average life satisfaction ranges from 3.539 to 5.757 (results not shown but available upon request). The results indicate that, in addition to individual and household characteristics, the county-level geographical and socio-economic context plays an independent role in shaping residents' life satisfaction.

Next, we examine two specific measures of urbanization and economic development: city size and county GDP per capital. In Model 3 of Table 3, we include two dummy variables: cities with populations between 200,000 and 500,000 and cities with populations above 500,000. Cities with populations below 200,000 belong to the reference group. The coefficients on the two dummy variables (0.747 and 0.066) indicate a non-linear relationship between city size and residents' life satisfaction. Respondents residing in cities with populations between 200,000 and 500,000 reported a higher level of life satisfaction (predicted life satisfaction = 5.241, standard error = 0.174) on average than those residing in cities with populations either below 200,000 (predicted life satisfaction = 4.493, standard error = 0.060) or above 500,000 (predicted life satisfaction = 4.559, standard error = 0.118).

Several studies of SWB in China have considered the impact of local economies but have primarily relied on provincial measures. In Table 3, Model 4, we include the county-level GDP per capita in 2010 and its squared term, in addition to the categories of city size, controlling for individual socio-demographic characteristics, health status, and household wealth. The effect of city size on individual life satisfaction remains the same: respondents residing in cities with populations between 200,000 and 500,000 are still more satisfied with life than those in the other two categories. The impact of county-level GDP per capital on individual life satisfaction is consistent with the findings of the existing research on happiness (Bian et al., 2015; Wu & Tam, 2015), which shows that the impact is stronger when economic development is low and gradually decreases as economic development increases, following a reverse U-shaped pattern (see Fig. A1).

To determine whether the effect of city size on residents' life satisfaction varies among the different migrant and resident groups, in Model 5 of Table 3 we allow the interaction between individual migration and *hukou* status and categories of city size. Designating urban *hukou* residents in cities with populations below 200,000 as the reference group, we find negative and significant coefficients on the two interaction terms of rural-to-urban migrants (coefficient = −0.546, $p < 0.05$) and *in situ* urbanized rural residents (coefficient = −0.485, $p < 0.01$) with cities with populations below 200,000; positive and significant coefficients on the three interaction terms of urban *hukou* residents (coefficient = 0.364, $p < 0.05$), rural-to-urban migrants (coefficient = 0.623, $p < 0.01$), and urbanized rural residents (coefficient = 0.707, $p < 0.01$) with cities with populations between 200,000 and 500,000; and non-significant coefficients on the three interaction terms of urban *hukou* residents (coefficient = 0.353, $p > 0.05$), rural-to-urban migrants (coefficient = −0.311, $p > 0.05$), and urbanized rural residents (coefficient = −0.260, $p > 0.05$) with cities with populations above 500,000. To better illustrate the group differences by categories of city size, in Table 4 we show the predicted life satisfaction for urban *hukou* residents, rural-to-urban migrants, and *in situ* urbanized rural residents by city size. In Fig. 1, we graph the predicted effects of city size on life satisfaction for urban *hukou* residents, rural-to-urban migrants, and *in situ* urbanized rural residents. It is clear that the levels of life satisfaction of the new urbanites (rural-to-urban migrants and *in situ* urbanized rural residents) are the lowest in cities with populations below 200,000 and the highest in cities with populations between 200,000 and 500,000. When compare to established urban *hukou* residents, new urbanites are more satisfied with life in cities with populations between 200,000 and 500,000 and less satisfied in cities with populations below 200,000 or above 500,000.

4. Conclusion and discussion

Linking county-level economic measures and city size to a 2011 national survey of China's urban population, this study shows that variations in city size have an independent impact on residents' life satisfaction, particularly among the newest city dwellers. Specifically, our analysis indicates that, after controlling for the individual and household characteristics such as gender, health, and wealth, there remain marked county-level fixed effects, which suggest that the characteristics of the county or urban district have an independent influence on residents' life satisfaction. In addition, to capture variation across cities, we code the 31 counties or urban districts in our study sample into three categories according to the new criteria for the classification of city sizes (State Council [2014] No. 51): cities with urban populations below 200,000, cities with urban populations between 200,000 and 500,000, and cities with urban populations above 500,000.

The regression results indicate that respondents residing in cities with populations between 200,000 and 500,000 in China report the highest level of life satisfaction. Caution must be exercised, however, when comparing this finding with findings from other countries or regions due to variations in the criteria used for the classifications of city size and development stage (Berry & Okulicz-Kozaryn, 2009). The finding does, however, advance our understanding of the association between urbanization and life satisfaction and offer insight into the differences between less-developed and developed countries. As China moves from the former to the latter, the non-linear relationship we observe

Table 3
Ordinary least square (OLS) regression results on life satisfaction.

	Life satisfaction				
	Model 1	Model 2	Model 3	Model 4	Model 5
Individual characteristics					
Age (years)	−0.056	−0.066	−0.073	−0.078	−0.086
	(0.039)	(0.041)	(0.042)	(0.042)	(0.043)
Age (squared)	0.001*	0.001*	0.001*	0.001*	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Gender (female)	0.157	0.128	0.153	0.138	0.126
	(0.152)	(0.131)	(0.136)	(0.137)	(0.136)
Ethnicity (ethnic minority)	0.756	1.097***	0.908	1.040*	1.103*
	(0.498)	(0.276)	(0.443)	(0.382)	(0.388)
Marital status (married)	0.728	0.821	0.811	0.834	0.881*
	(0.443)	(0.423)	(0.420)	(0.417)	(0.408)
Education (years of schooling)	−0.019	−0.003	−0.014	−0.012	−0.017
	(0.026)	(0.028)	(0.023)	(0.025)	(0.028)
Occupation (professional/managerial)	0.045	0.115	0.047	0.030	0.006
	(0.155)	(0.189)	(0.165)	(0.161)	(0.167)
Household wealth (index)	0.354**	0.320*	0.292**	0.310**	0.321*
	(0.096)	(0.119)	(0.099)	(0.101)	(0.114)
Household wealth (squared)	−0.019	−0.012	−0.011	−0.013	−0.015
	(0.010)	(0.009)	(0.009)	(0.008)	(0.009)
Chronic health conditions (index)	−0.332	−0.207	−0.310	−0.307	−0.327
	(0.186)	(0.198)	(0.172)	(0.166)	(0.168)
Length of residence in current locale (years)	0.002	−0.009	−0.003	−0.003	0.003
	(0.005)	(0.005)	(0.007)	(0.006)	(0.006)
Migration and *hukou* status					
Urban *hukou* residents (reference)	–	–	–	–	
	–	–	–	–	
Rural-to-urban migrants	−0.421	−0.440*	−0.386	−0.338	
	(0.308)	(0.196)	(0.252)	(0.252)	
Urbanized rural residents	−0.020	0.259	−0.001	0.032	
	(0.168)	(0.192)	(0.143)	(0.175)	
County fixed effects		Available upon request			
County characteristics					
Categories of city size					
Population below 200,000 (reference)			–	–	
			–	–	
Population between 200,000 and 500,000			0.747**	0.775***	
			(0.201)	(0.162)	
Population above 500,000			0.066	0.180	
			(0.126)	(0.212)	
GDP per capita (natural logarithm)				3.389*	3.154*
				(1.399)	(1.386)
GDP per capita (natural logarithm, squared)				−0.545*	−0.518*
				(0.239)	(0.232)
Interaction: migration and hukou status × categories of city size					
Urban *hukou* residents × Population below 200,000 (reference)					–
					–
Urban *hukou* residents × Population between 200,000 and 500,000					0.364*
					(0.131)
Urban *hukou* residents × Population above 500,000					0.353
					(0.226)
Rural-to-urban migrants × Population below 200,000					−0.546*
					(0.254)
Rural-to-urban migrants × Population between 200,000 and 500,000					0.663**
					(0.171)
Rural-to-urban migrants × Population above 500,000					−0.311
					(0.260)
Urbanized rural residents × Population below 200,000					−0.485**
					(0.150)
Urbanized rural residents × Population between 200,000 and 500,000					0.707**
					(0.170)
Urbanized rural residents × Population above 500,000					−0.260
					(0.276)
Constant	4.022***	4.003***	3.952***	−1.157	−0.377
	(0.502)	(0.591)	(0.642)	(2.316)	(2.277)
Wald F statistics	30.59	6567.81	46.19	40.53	92.04
	(13, 19)	(43, 19)	(15, 19)	(17, 19)	(21, 19)

Note: Survey design effects (strata, clusters, and individual weights) are adjusted in the model estimations.
Coefficients are reported; standard errors in parentheses.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

Table 4
Predicted life satisfaction for urban *hukou* residents, rural-to-urban migrants, and urbanized rural residents by categories of city size.

	Categories of city size (urban population)		
	Below 200,000	200,000–500,000	Above 500,000
Migration and hukou status			
Urban *hukou* residents	4.613 (0.102)	4.977 (0.131)	4.967 (0.197)
Rural-to-urban migrants	4.067 (0.230)	5.276 (0.173)	4.302 (0.202)
Urbanized rural residents	4.128 (0.131)	5.320 (0.138)	4.353 (0.211)

Note: The predicted levels of life satisfaction are calculated based on Table 2, Model 5; standard errors in parentheses.

between city size and life satisfaction reflects the transition. On the one hand, China now appears to display a pattern similar to that of Western developed countries where people report the lowest level of life satisfaction in large cities (defined as cities with more than 500,000 residents); on the other hand, China is still following a path comparable to that observed in Asian developing countries where life satisfaction increases as the urbanization process continues in small cities and towns (with populations less than 500,000).

Our analysis further demonstrates that the effect of city size on residents' life satisfaction differs depending on whether one is an established urban resident or a new urbanite. In cities with populations below 200,000 or above 500,000, rural-to-urban migrants and *in situ* urbanized rural residents are less satisfied with life than established urban *hukou* residents; however, the new urbanites report higher levels of life satisfaction than established urban *hukou* residents in cities with populations between 200,000 and 500,000. These results draw attention to the differential effect of city size on life satisfaction according to the means of achieving urban residency. One limitation of our analysis is that it does not identify the specific aspects of city size that are either beneficial or detrimental to the life satisfaction of each group of citizens: we are not in a position to determine what increases life satisfaction, particularly for new urbanites in cities with populations between 200,000 and 500,000. It is probable, however, that these mid-sized cities have many more amenities than smaller cities and consequently better living conditions. For example, the percentage of homes with tap water, kitchens, toilets, and bathrooms is much higher in cities with populations between 200,000 and 500,000 than in cities with populations below 200,000 (National Bureau of Statistics of China, 2012b). It is also likely that new urbanites have access to better education facilities, health care, and social services in cities with populations between 200,000 and 500,000 where access is not very constrained by the distinctions of the urban–rural *hukou* system.

The lower level of life satisfaction reported by new urbanites in cities with populations above 500,000 may be accounted for by several factors. Although living conditions, education, health facilities, and social services are superior in big cities, housing prices and the cost of living are much higher. New urbanites often cannot afford to buy a house or partake in the higher standard of living (Li & Zhang, 2011). Many rural-to-urban migrants end up renting rooms in the city periphery and commute to the city center for work. Typically, their apartments are in poorly constructed buildings that are

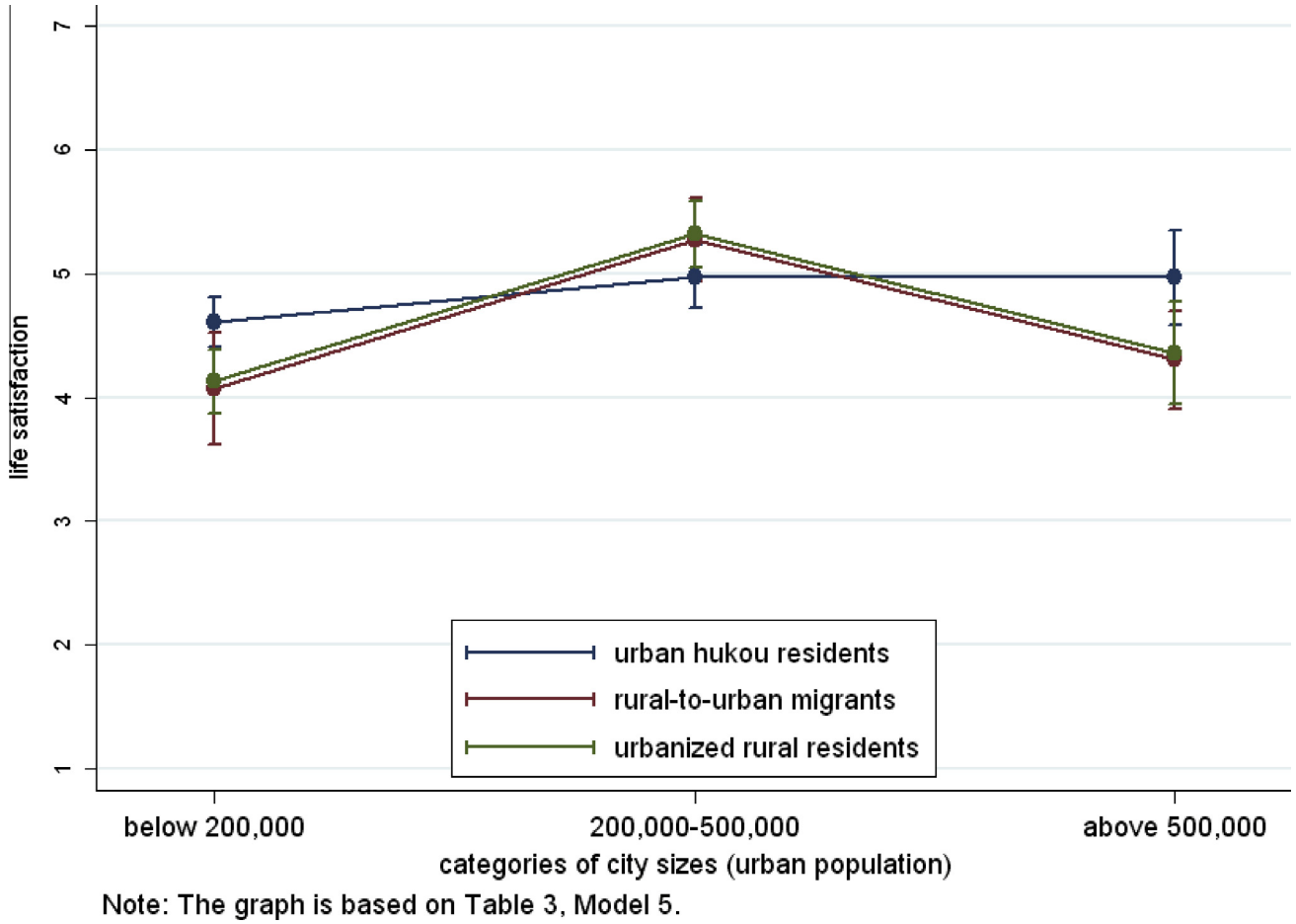

Fig. 1. Predicted effects and 95% of confidence intervals of categories of city size on life satisfaction by migration and *hukou* status.

overcrowded and insecure. The surrounding environment is often neither hygienic nor healthy (Chen, Wu, & Sung-Chan, 2012; Liu et al., 2010; Zhou & Cai, 2008). New urbanites also face greater constraints when accessing public services in megacities where newcomers without urban *hukou* registration encounter higher levels of discrimination. In addition, scholars have identified relative income as an important factor for life satisfaction (Knight & Gunatilaka, 2011). In cities with populations over 500,000, income disparities are apt to be wide. New urbanites often feel more deprived in big cities, where they cannot hope to afford many material status symbols. Social networks also positively affect residents' life satisfaction: people who are more integrated into society are happier than those who are less so (Bian et al., 2015). It is likely to be easier for new urbanites to develop and maintain social networks in small cities than in large ones. Finally, it is also probable that self-selection plays a role during the migration and urbanization process (Lu & Qin, 2014; Tong & Piotrowski, 2012). Perhaps those who move to cities with populations above 500,000 have higher aspirations. When their expectations are not easily met, they may report lower levels of life satisfaction.

The findings from this study contribute to the current state of knowledge on the relationship between life satisfaction and individual and geographic attributes, particularly in the context of rapid migration and urbanization. It is misleading to portray China as divided between coastal cosmopolitan cities and under-developed rural areas. We need to move beyond an urban–rural dichotomy and consider how variations in city size affect outcomes. Our findings show that new urbanites experience more satisfactory lives when they settle in cities with populations from 200,000 to 500,000. While much has been written on megacities such as Beijing and Shanghai—their infrastructure, service facilities, and migrant conditions—our work points to a new research direction: a focus on smaller cities and their future paths. The current policies promoting further urbanization in China have concentrated on the infrastructure, education and health services, recreation facilities, and job opportunities in megacities (Ministry of Housing and Urban–Rural Development of China, 2014). Our results suggest that the government should adopt policies that promote balanced urbanization in small cities, rather than focus primarily on further development of large cities.

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Appendix A

See Fig. A1 and Table A1.

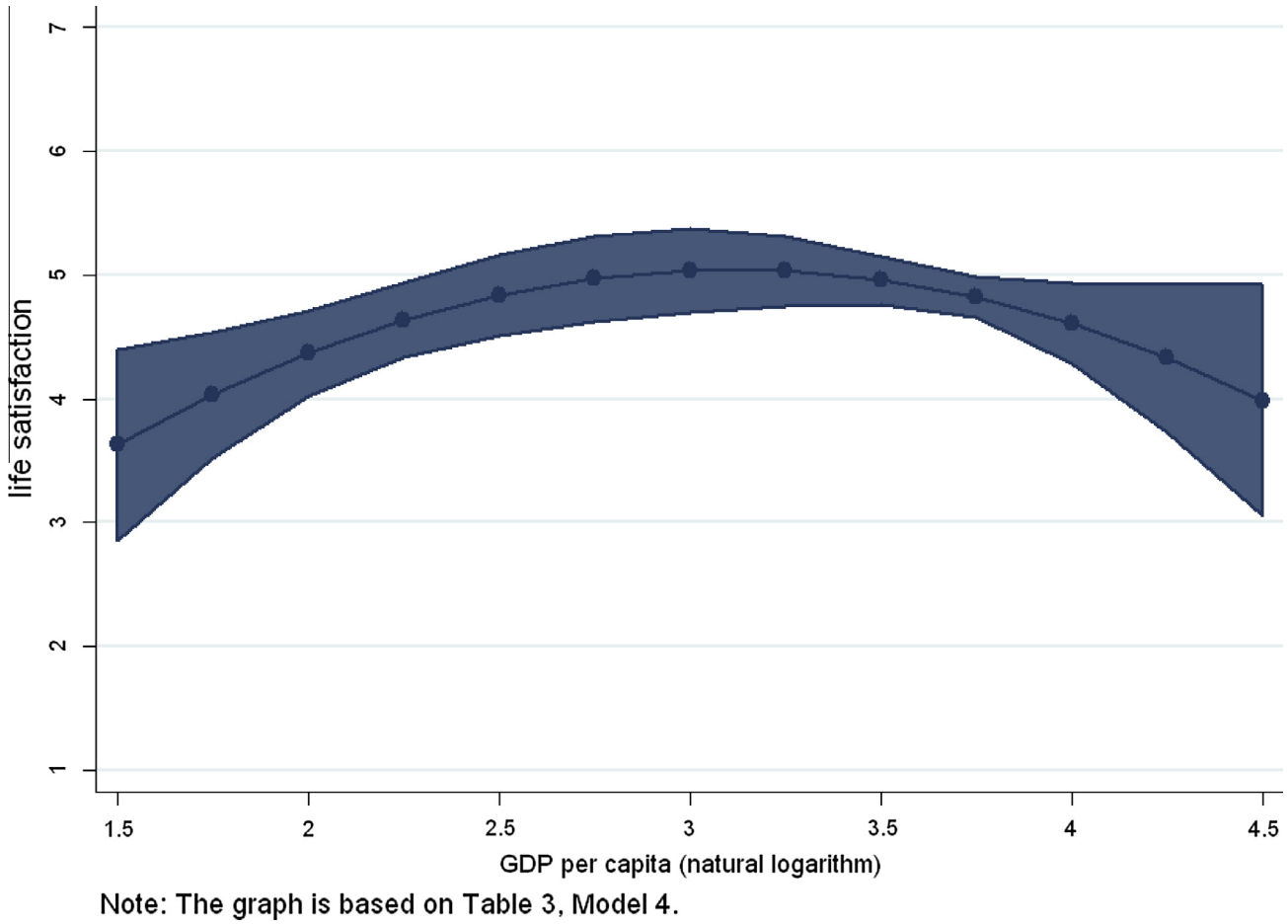

Fig. A1. Predicted effects and 95% of confidence intervals of county GDP per capita on life satisfaction.

Table A1
Sample with and without weights compared to the 2010 Chinese Population Census.

	Unweighted sample		Weighted sample		2010 Population Census (urban population)	
	Frequency	%	Frequency	%	Frequency	%
Age						
18–24	120	9.317	177.937	13.815	94480561	18.364
25–29	126	9.783	179.676	13.950	57679956	11.211
30–34	134	10.404	172.978	13.430	56010957	10.886
35–39	167	12.966	115.791	8.990	65025365	12.639
40–44	182	14.130	197.484	15.333	63786496	12.398
45–49	160	12.422	137.945	10.710	53629541	10.424
50–54	131	10.171	119.655	9.290	39186388	7.616
55–59	99	7.686	81.273	6.310	37437535	7.276
60–64	61	4.736	71.385	5.542	26036917	5.061
65–70	108	8.385	33.617	2.610	21226117	4.126
Gender (female)	689	53.490	647.864	50.300	252653239	49.107
Marital status (married)	1113	86.410	1042.250	80.920	40807749	80.489
Ethnicity (ethnic minority)	79	6.130	38.125	2.960	76953182	14.957
Education						
Less than middle school	336	26.128	297.132	23.069	80347691	15.617
Middle school	450	34.992	362.574	28.150	212786356	41.358
High school	295	22.939	332.638	25.826	118331732	22.999
College and above	205	15.941	295.657	22.955	103034054	20.026
Missing	2					
Occupation (professional/managerial)	170	13.200	225.014	17.470	5276398	16.422

References

Appleton, S., & Song, L. (2008). Life satisfaction in urban China: Components and determinants. *World Development, 36*(11), 2325–2340.

Ballas, D. (2013). What makes a 'happy city'? *Cities, 32*(S1), S39–S50.

Berry, B. J. L., & Okulicz-Kozaryn, A. (2009). Dissatisfaction with city life: A new look at some old questions. *Cities, 26*(3), 117–124.

Berry, B. J. L., & Okulicz-Kozaryn, A. (2011). An urban–rural happiness gradient. *Urban Geography, 32*(6), 871–883.

Bian, Y., Zhang, L., Yang, J., Guo, X., & Lei, M. (2015). Subjective wellbeing of Chinese people: A multifaceted view. *Social Indicators Research, 121*(1), 75–92.

Brereton, F., Clinch, J. P., & Ferreira, S. (2008). Happiness, geography and the environment. *Ecological Economics, 65*(2), 386–396.

Central Committee of the Communist Party and State Council of China (2014). *National new-type urbanization plan (2014–2020).* <http://www.gov.cn/zhengce/2014-03/16/content_2640075.htm> Retrieved 05.05.15.

Chan, K. W. (2013). China, internal migration. In I. Ness & P. Bellwood (Eds.), *The encyclopedia of global human migration*. Oxford: Wiley-Blackwell.

Chan, K. W., & Zhang, L. (1999). The hukou system and rural–urban migration: Processes and changes. *The China Quarterly, 160*, 818–855.

Chen, J., Chen, S., Landry, P. F., & Davis, D. S. (2014). How dynamics of urbanization affect physical and mental health in urban China. *The China Quarterly, 220*, 988–1011.

Chen, J., Wu, K., & Sung-Chan, P. (2012). Families on the move in China: Challenges, strategies, and implications. *China Journal of Social Work, 5*(2), 109–122.

Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist, 55*(1), 34–43.

Diener, E., Oishi, S., & Lucas, R. E. (2015). National accounts of subjective well-being. *American Psychologist, 70*(3), 234–242.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*(2), 276–302.

Dijkstra, L., & Poelman, H. (2012). Cities in Europe: The new OECD-EC definition. *European Commission: Regional Focus* (1).

Dolan, P., Peasgood, T., & White, M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology, 29*(1), 94–122.

Easterlin, R. A. (2013). Happiness and economic growth: The evidence. *IZA discussion paper no. 7187*. Available at SSRN: http://ssrn.com/abstract=2210847.

Easterlin, R. A., McVey, L. A., Swite, M., Sawangfa, O., & Zweig, J. S. (2010). The happiness-income paradox revisited. *Proceedings of the National Academy of Sciences of the United States of America, 107*(52), 22463–22468.

Easterlin, R. A., Morgan, R., Switek, M., & Wang, F. (2012). China's life satisfaction, 1990–2010. *Proceedings of the National Academy of Sciences of the United States of America, 109*(25), 9775–9780.

Friedmann, J. (2005). *China's urban transition*. Minneapolis: University of Minnesota Press.

Helliwell, J. F., & Putnam, R. D. (2004). The social context of well-being. *Philosophical Transactions of the Royal Society B, 359*(1449), 1435–1446.

Hsu, B. Y., & Zhang, W. (2014). Surveying happiness in China. *Paper presented at the association for Asian studies 2014 annual conference*. Philadelphia, PA, March 27–30.

Jordan, B. (2008). *Welfare and well-being: Social value in public policy*. Bristol: Policy Press.

Knight, J., & Gunatilaka, R. (2010). Great expectations? The subjective well-being of rural–urban migrants in China. *World Development, 38*(1), 113–124.

Knight, J., & Gunatilaka, R. (2011). Does economic growth raise happiness in China? *Oxford Development Studies, 39*(1), 1–24.

Knight, J., Song, L., & Gunatilaka, R. (2009). Subjective well-being and its determinants in rural China. *China Economic Review, 20*(4), 635–649.

Landry, P. F., & Shen, M. (2005). Reaching migrants in survey research: The use of global positioning system to reduce coverage bias in China. *Political Analysis, 13*(1), 1–22.

Layard, R. (2010). Measuring subjective well-being. *Science, 327*(5965), 534–535.

Li, B., & Zhang, Y. (2011). Housing provision for rural–urban migrant workers in Chinese cities: The roles of the state, employers and the market. *Social Policy & Administration, 45*(66), 694–713.

Lin, G. C. S. (2007). Reproducing spaces of Chinese urbanisation: New city-based and land-centred urban transformation. *Urban Studies, 44*(9), 1827–1855.

Liu, Y., He, S., Wu, F., & Webster, C. (2010). Urban villages under China's rapid urbanization: Unregulated assets and transitional neighbourhoods. *Habitat International, 34*(2), 135–144.

Liu, J., Xiong, M., & Su, Y. (2012). National sense of happiness in the economic growth period: A study based on CGSS data. *Social Sciences in China, 2012*(12), 82–102 (in Chinese).

Lu, Y., & Qin, L. (2014). Healthy migrant and Salmon Bias hypotheses: A study of health and internal migration in China. *Social Science & Medicine, 102*, 41–48.

Ma, L. J. C. (2005). Urban administrative restructuring, changing scale relations and local economic development in China. *Political Geography, 24*(4), 477–497.

McGillivray, M., & Clarke, M. (2006). Human well-being: Concepts and measures. In M. McGillivray & M. Clarke (Eds.), *Understanding human well-being* (pp. 3–15). United Nations University Press.

Ministry of Housing and Urban–Rural Development of China (2012). *China's urban construction statistical yearbook 2011*. Beijing: China Planning Press.

Ministry of Housing and Urban–Rural Development of China (2014). *China's urban–rural construction statistical report 2013*. <http://www.mohurd.gov.cn/zcfg/jsbwj_0/jsbwjcw/201408/t20140805_218642.html> Retrieved 05.05.15.

Morrison, P. S. (2007). Subjective wellbeing and the city. *Social Policy Journal of New Zealand, 31*, 74–103.

Morrison, P. S. (2011). Local expressions of subjective well-being: The New Zealand experience. *Regional Studies, 45*(8), 1039–1058.

National Bureau of Statistics of China (2011). *National standard definition of urban and rural.* <http://www.stats.gov.cn/zjtj/tjbz/tjyqhdmhcxhfdm/2011/> Retrieved 05.05.15.

National Bureau of Statistics of China (2012a). *China statistical yearbook 2012*. Beijing: China Statistical Press.

National Bureau of Statistics of China (2012b). *Tabulation on the 2010 population census of the People's Republic of China*. Beijing: China Statistical Press.

National Bureau of Statistics of China (2014). *China statistical yearbook 2014*. Beijing: China Statistical Press.

Qiu, H., & Li, G. (2012). A review of studies on well-being from multiple perspectives. *Sociological Research, 2012*(2), 224–241 (in Chinese).

Scott, K. (2012). *Measuring wellbeing: Towards sustainability?* Routledge.

Solinger, D. J. (1999). *Contesting citizenship in urban China: Peasant migrants, the state, and the logic of the market*. University of California Press.

State Council of China (2014a). *Circular on adjusting the criteria for the classification of city sizes*. State Council [2014] No. 51.

State Council of China (2014b). *Suggestions for advancing the reform of the household registration system*. State Council [2014] No. 25.

Stevenson, B., & Wolfers, J. (2008). Economic growth and subjective well-being: Reassessing the Easterlin paradox. *Brookings papers on economic activity, economic studies program* (Vol. 39(1), pp. 1–102). The Brookings Institution.

Tong, Y., & Piotrowski, M. (2012). Migration and health selectivity in the context of internal migration in China, 1997–2009. *Population Research and Policy Review, 31*(4), 497–543.

van Hoorn, A. (2008). A short introduction to subjective well-being: Measurement, correlates and policy uses. In OECD (Ed.), *Statistics knowledge and policy 2007: Measuring and fostering the progress of societies* (pp. 215–229). Paris: OECD Publishing.

Veenhoven, R., & Vergunst, F. (2013). The Easterlin illusion: Economic growth does go with greater happiness. *EHERO working papers: Erasmus Happiness Economics Research Organization, 2013*(1).

Veenhoven, R. (1994). How satisfying is rural life? Fact and value. In J. Cecora (Ed.), *Changing values and attitudes in family households, implications for institutional transition in East and West* (pp. 41–51). Bonn, Germany: Society for Agricultural Policy Research in Rural Society (FAA Report 296).

Veenhoven, R., & Ehrhardt, J. (1995). The cross-national pattern of happiness: Test of predictions implied in three theories of happiness. *Social Indicators Research, 34*(1), 33–68.

Wu, H. F., & Tam, T. (2015). Economic development and socioeconomic inequality of well-being: A cross-sectional time-series analysis of urban China, 2003–2011. *Social Indicators Research*. http://dx.doi.org/10.1007/s11205-11014-10803-11207.

Yeh, A. G. O., Xu, J., & Liu, K. (2011). *China's post-reform urbanization: Retrospect, policies and trends*. London, UK: International Institute for Environment and Development (IIED) and United Nations Population Fund (UNFPA).

Zhou, M., & Cai, G. (2008). Trapped in neglected corners of a booming metropolis: Residential patterns and marginalization of migrant workers in Guangzhou. In J. R. Logan (Ed.), *Urban China in transition* (pp. 226–249). Oxford: Blackwell Publishing.