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URBANIZATION AND RISK PREFERENCE IN THE PEOPLE'S REPUBLIC OF CHINA: A DECOMPOSITION OF THE SELF-SELECTION AND ASSIMILATION EFFECTS

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Abstract

This paper argues that urbanization reshapes individual's risk preference by exerting self-selection and assimilation effects. Taking advantage of the unique *hukou* system in the People's Republic of China, we initiate a quasi-experiment method to elicit the two effects, employing the 2013-wave dataset of Chinese General Social Survey (CGSS). We find strong evidence supporting our two-effect theory and the magnitudes of both effects are sizable and near in scale. The assimilation effect reduces the migrant's risk aversion measurement by 0.606 while the self-selection effect reduces it by 0.715, on average. Overall, urbanization improves migrants' risk appetite, and mediated by this improvement, migrants are more likely to get engaged into the economic activities under uncertainty than their rural peers, as indicated by the evidence we have when applying the two-effect theory to investigate how households decide on risky financial asset investment.

Keywords: risk aversion, migration, urbanization, assimilation, self-selection

JEL Classification: P25, R23, D1, J61, Q5

Contents

1. INTRODUCTION

Urbanization concretizes in waves of migrations from rural to urban. Inevitably, such an economic and social transformation has profound effects on individual's behavioral attributes. This paper focuses on how urbanization involves in individual's risk preference which underpins economic decisions under uncertainty, using the People's Republic of China (PRC) as the context. Departing from the previous and unluckily sparse literature on this theme, we decompose and quantify two effects, namely, self-selection and assimilation effects, on the individual's risk preference by urbanization, using a novel quasi-experiment econometric strategy; and furthermore, we apply the two-effect theory to the household decision on the investment in risky financial assets.

The previous literature mainly addresses the self-selection effect of urbanization on risk preference. It partially answers what risk preferences are like of the individuals who choose to migrate out of rural areas. Earlier literature (Stark and Levhari 1982; Stark and Lucas 1988; Rosenzweig and Stark 1989) argues that aversion to risks in agricultural production is an important motivation for a portion of family members to move to non-agricultural industry, aiming to form risk-sharing to the household in the rural. Nguyen (2015) presents supportive evidence for this argument from developing countries finding that migration to jobs outside rural areas helps mitigate the losses from risks and shocks in family's agricultural production. More recent literature (e.g., Jaeger et al. 2010; Dohmen et al. 2011; Akgüc et al. 2016) finds that less risk-averse family members tend more to migrate out of rural areas. Jaeger et al. (2010) use a German Socio-Economic Panel dataset finding that the more willing-to-take-risks migrate. Similarly, Akgüc et al. (2016) present alike evidence employing Rural Household Survey (RHS) of the RUMiC 2009 dataset of the PRC. However, the literature has not yet reached consensus on the self-selection argument. For instance, Hao et al. (2014) find that the difference of risk preference between migrants and non-migrants is insignificant under state uncertainty using a field experiment method to elicit risk preference in the PRC. This also motivates us to re-examine the self-selection effect of urbanization on risk preference using a large dataset from the PRC.

However, to what extent urbanization reshapes risk preference remains a gap. Urbanization supplies migrants with new and more opportunities of jobs, working and learning (e.g., Lucas 2004; Bacolod, Blum and Strange 2009); exposes them to new neighborhoods (e.g., Glaeser 1999; Henderson 2005); inspires them with more and intensive competitions (e.g., Hao et al. 2014); as well as places them in a more unfamiliar, uncertain and unknown world than rural (e.g., Akay, Bargain and Zimmermann 2012; Henderson 2010; Nguyen 2015). All these changes engendered by urbanization have the potential to reshape the migrant's risk preference, at least to some extent, to reach an adaption balance. We term such an effect the assimilation effect in this paper. Clearly, assimilation needs time to build. Only after the migrants living in urban pretty long, can the assimilation effect of urbanization on risk preference become manifest. Our main purpose of this paper is to decompose and quantify the self-selection and assimilation effects of urbanization on individual's risk preference.

In fact, quite a little literature in fields other than urbanization has provided supporting evidence on the reshaped risk preference. This validates indirectly the relevance of our notion of assimilation effect. Earlier literature on uncertainty (e.g., Pratt and Zeckhauser 1987; Kimball 1993; Eekhoudt, Gollier and Schlesinger 1999) argues the presence of uninsurable background risk increases individual's aversion towards risks. More recently, Gollier (2000) and Guiso and Paiella (2008) find that income uncertainty and

liquidity constraint are associated with increase in risk aversion. Interestingly, Guiso, Sapienza and Zingales (2013) find evidence that emotional response to scary experience alters individual's risk preference, using the 2008 financial crisis as the background. In one word, individual's risk preference is not invariant, but adapts to fundamental changes. Urbanization is exactly such a complex economic-social transformation engendering fundamental changes, which could reshape individual's risk preference.

The PRC sets up an ideal context to explore the self-selection and assimilation effects of urbanization on individual's risk preference. As the largest developing economy in transition, the PRC is undergoing grand and rapid urbanization. The PRC's urbanization is unique with respect to the *hukou* system. It divides the large volume of migrants into two parts: one with *hukou* changes from rural to urban; the other is floating population living in urban but still with a rural identity. By 2025, a total of 250 million floating population is anticipated in the PRC (Yusuf and Saich 2008). This system lends us a unique opportunity to design quasi-experiments to decompose the two effects of urbanization on risk preference. Basically, a portion of migrants' *hukou* was changed passively due to exogenous events, especially, the land expropriation by the local governments for the purpose of urbanization. Obviously, this group of *hukou*-changed migrants bears no self-selection effect, their difference of risk preference from the rural-stayer peers, provided the difference did exist, measures the assimilation effect of urbanization on risk preference. On the other hand, the new comers of floating migrants to the urban have not yet been assimilated for the time being, hence the difference of their risk preference from the rural-stayer peers, provided the difference did exist, measures the self-selection effect of urbanization on risk preference. Equipped with these experimental designs, we employ the Chinese General Social Survey (CGSS) 2013 dataset to run estimations. This dataset is rich in demographic, household, personal and especially social-environmental information, which are all requisite in exploring risk preference shaping.

We use the Chetty's (2003) classic method to measure risk aversion. A preliminary analysis of risk preference differences across groups of urban natives, *hukou* migrants, floating migrants and rural stayers indicates that risk aversion increases gradually along this sequence. Equivalently, urban population, regardless of *hukou* identity, is significantly more risk-loving than the rural population in the PRC.

Our central estimates present strong evidence supporting the decomposition of self-selection and assimilation effects of urbanization on individual's risk preference. The passively *hukou*-changed migrants due to land expropriation as well as the new floating migrants are both significantly less risk averse than the rural stayers. The difference of the absolute risk aversion of the former from that of the rural stayers, namely, 0.606, quantifies the assimilation effects of urbanization on individual's risk aversion. While the difference of the absolute risk aversion of the latter from that of the rural stayers, namely, 0.715, quantifies the self-selection effects of urbanization on individual's risk aversion.

We also apply the pair-matched treatment estimation to address the sample asymmetry issue of the classified subgroups and to elicit purer effects of urbanization. We match untreated rural stayers in pairs to the treated groups of passive *hukou* and new comers of floating migrants respectively, and then run treatment-effect estimations for self-selection and assimilation effects separately. The pair-matched treatment estimations present similar evidence to our main results.

Furthermore, we test the self-selection and assimilation effects on the household risky financial assets investment decisions. Using the standard three-equation method testing mediation effect, we find strong evidence that household investment in risky financial assets decreases significantly with risk aversion; risk aversion decreases significantly for the passive *hukou* migrants and new floating migrants; and, the coefficients of risk aversion shrink significantly or even render insignificance when related the risky asset investment together with dummies of passive *hukou* migrants and new floating migrants. These results suggest that the self-selection and assimilation effects of urbanization mediate changes in the individual's risk preference, which leads to changes in household investment in risky assets.

To ensure the reliability of our evidence, we run an array of robustness checks. Firstly, taking advantage of the ample information in dataset, we compose the benchmark group of rural stayers in a slightly and reasonably alternative manner. Re-estimations indicate that our main results are robust. Secondly, the distribution of risk aversion measurement displays a long right-swing tail. We apply a right-hand-side truncation to risk aversion to mitigate the impact of outliers. The results are consistent with our main results. At last, definitions of various types of migrants are in fact subtle. We slightly and reasonably alter the definitions of passive *hukou* migrants and newly floating migrant and find our evidence remains.

In the small body of literature, Akgüc et al. (2016) is perhaps the one closest to ours, from which ours is different in three ways. Above all, we quantify both assimilation and self-selection effects of urbanization on risk preference while Akgüc et al. (2016) largely focuses on the latter effect. Secondly, we employ a quantitative measurement of risk aversion based on the Chetty's (2003) classic method taking advantage of the detailed and classified income information in CGSS dataset. Instead, Akgüc et al. (2016) use an ordered answer from 0 to 10 to the question of risk attitude directly as the proxy of risk preference. This ordered value renders difficulty to quantify the difference of risk aversion across groups. Our measurement, numerical in nature, is free of this difficulty. Thirdly, we create a novel quasi-experiment method to quantify the effects in a pretty clean manner, which circumvents endogeneity issues. This essentially departs from Akgüc et al. (2016).

Our contribution to the literature in this paper is twofold. Conceptually, we identify the two effects, namely, self-selection and assimilation effects of urbanization on individual's risk preference. This improves substantially on the previous literature, which in fact focuses on self-selection effect only. More important, our evidence suggests that the assimilation effect is not only significant in econometrics but also plays a pivotal role in economic decisions. Methodologically, we use a novel quasi-experiment method to quantify the two effects taking advantage of the unique *hukou* system in the PRC. This method merits in circumventing endogeneity issues and hence presenting cleaner estimations. Moreover, this method also provides an alternative approach to the assimilation literature which is the emerging theme attracting more and more research attentions.

The policy implications of our results are threefold. The first piece is encouraging the role of local government in nurturing entrepreneurship. Our evidence indicates that migrants to urban are more risk-seeking than their peers and hence have larger risk-bearing potential to set up their own business. However, a large portion of such migrants lack necessary knowledge, experience and management skills to start their entrepreneurship. Local government hence should provide them special training programs to improve their human capital and ultimately unleash their entrepreneur potential.

Secondly, financial institutions need to be innovated to accommodate the migrant's business-financing needs. The dominant form of formal financing in the PRC is asset-based loans. But they are inaccessible to the risk-seeking migrants who want to set up their business. Hence, novel solutions to smooth the financial constraint are especially called for. At the current stage of the PRC's financial market development, we recommend: (1) innovate a special sector in the banks to serve this niche market; (2) modify some P2P lending platforms to encompass this niche market.

Thirdly, the larger appetite of the migrant's household demand for risky financial assets suggests that financial markets could be more proactive to satisfy such needs. Usually used incentive policies such as preferential taxation, subsidy, and other forms of financial support to stimulate the innovations in the financial market are all possible policy options to be considered on the agenda.

The rest of the paper is arranged as follows. Section 2 frames our hypotheses on the basis of relevant theories. Section 3 specifies our econometric models and describes the dataset we use. Section 4 presents the evidence of the two effects and their estimations. Section 5 applies the two-effect theory to the household decisions on risky financial assets investment. Section 6 checks the robustness of our main results and Section 7 concludes.

2. THEORIES AND HYPOTHESES

In the same vein as the literature on the self-selection in the international immigration (e.g., Borjas 1987; Chiswick 1999; Gibson and McKenzie 2009), internal migration from rural to urban in the process of urbanization in the PRC places the migrants in much larger uncertainty than stay in rural. The benefits of migration are contingent on the volatile job market condition of the migrant-host cities (Kennan and Walker 2011) and how human capital and working skills of the migrants match the job opportunities (Borjas, Bronars, and Trejo 1992; Chiswick and Miller 2009). The net gain of migration, i.e., benefits of migration minus the fixed cost of migration and the benefits forgone when stay rural, is thus a "lottery", as termed by Heitmueller (2005). Given other things equal, risk aversion matters for the migrants' expected utility of such a lottery. Clearly, less risk aversion leads to a larger certainty equivalence to the lottery. It follows immediately that when urbanization supplies uncertain but more profitable job opportunities, a separating equilibrium emerges where more risk-loving peasants select themselves out to pursue the opportunities by migration due to larger expected utility. Hence, we have

Hypothesis 1: Migrants from rural to urban are more risk-loving than the rural stayers.

In the meantime, migrants from rural to urban experience fundamental transformations with respect to living, working, education and culture, and hence are exposed to assimilation by the urban world, according to the veteran "Melting Pot" theory (Gordon 1961; Alba and Nee 1997; Cleveland et al. 2009). While previous literature agrees that the local environment of the host cities exerts effect on the personal traits of the migrants (e.g., Dohmen et al. 2012), yet, how assimilation affects is not uncontroversial. In a celebrated paper questioning the traditional melting-pot theory, Bisin and Verdier (2000) model the cultural transmission as a mechanism of socialization. They separate the vertical or direct socialization within the family from the "oblique" socialization from outside the family, and assume both take effect in transmitting cultural values. Under some conditions, the technology of family socialization is more efficient than the outside one; and when the values transmitted

from inner and outside family differs; the game reaches a family inherited value persistence equilibrium rather than assimilated values. They succeed in explaining why it fails to assimilate certain immigrant minorities along some ethnic and religious traits. Under Bisin and Verdier's (2000) framework, the assimilation effect of urbanization on risk preference of migrants is not clear, provided that it is deemed as a personal trait with a cultural root. On one hand, the migrants are subject to the original rural family's socialization technology of culture transmission; on the other hand, they are exposed to outside socialization from the urban local environment. When the former dominates, the migrants' risk aversion differs insignificantly from the rural stayers; otherwise, it differs.

Furthermore, Chiswick (1978) conceptualizes "economic assimilation" and uses it to explain the convergence of the earnings of immigrants towards local natives (Adsera and Chiswick 2007; Izquierdo, Lacuesta, and Vegas 2009; and Blau, Kahn, and Papps 2011 are among the recent literature). In essence, this theory claims that, after residence for a certain length of time, the immigrants become accustomed to the local labor market and their human capital accumulates as well. Accordingly, the economic assimilation theory predicts that the risk preference of the migrants would be reshaped to imitate the urban natives, and differentiated from the rural stayers, provided that risk aversion is treated as largely a personal trait with economic root.

In summary, we form the following Hypothesis 2 to test. Given supporting evidence for this hypothesis, the economic assimilation theory of risk aversion by urbanization is largely supported. While failed, the acculturation of risk aversion in the balance of vertical and oblique socialization could be a plausible explanation. Our Hypothesis 2 is as stated follows:

Hypothesis 2: The risk preference of rural-to-urban migrant is assimilated to the local urban peers.

Combining hypotheses 1 and 2 forms our two-effect theory of urbanization on migrant's risk preference. In short, our theory argues that the effect of urbanization on the migrant's risk preference is decomposed into two components, namely, self-selection effect and assimilation effect. We next seek the empirical evidence and the quantifications of the two components.

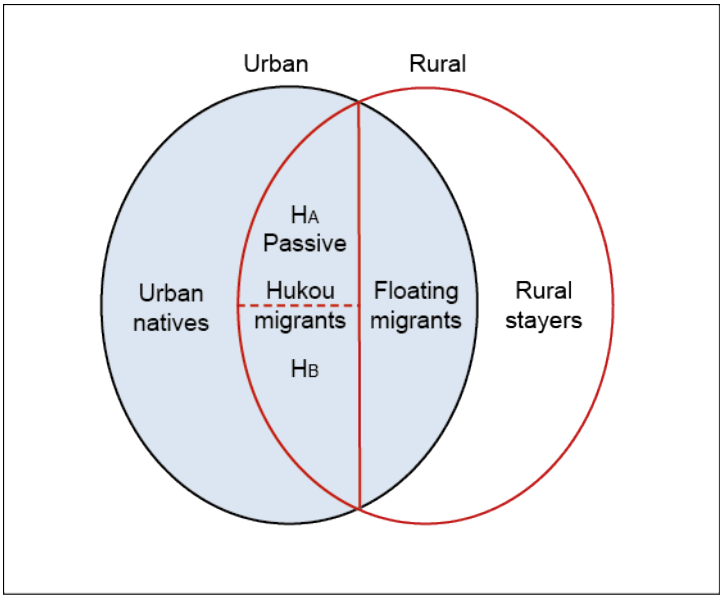
3. EMPIRICAL STRATEGY, ECONOMETRIC MODEL SPECIFICATION, DATA, AND VARIABLES

3.1 Empirical Strategy and Econometric Model Specification

Migrations from rural to urban areas incarnate urbanization. The changes of risk preferences of migrants from their rural stayer peers hence capture the effects of urbanization on individual's risk preference reshaping. Following this thought and taking advantage of the unique *hukou* system in the PRC, we classify the PRC's rural and urban population into four groups, namely, urban natives, *hukou* migrants, floating migrants without *hukou* identity change and rural stayers. Furthermore, *hukou* migrants are sub-grouped into passive *hukou* migrants due to exogenous events such as land expropriation by the local government for the purpose of urbanization and the active *hukou* migrants due to their own efforts such as by going to universities. Figure 1 displays the classification. Passive and active *hukou* migrant subgroups are denoted as H_A and H_B respectively in the figure. This classification enables us to

design two experiments to capture the self-selection and the assimilation effects of urbanization on individual's risk preference separately.

Figure 1: Population Space and the Classification of Migrants in the PRC



PRC = People's REPUBLIC of China.

Notes: This figure displays the population space and the classification of migrants according to the unique *hukou* system in the PRC. The grey space circle covers the urban-living populations, including, in turn, urban natives, *hukou* migrants, and floating migrants. Furthermore, *hukou* migrants are classified in to two categories, namely, passive *hukou* migrants due to exogenous events such as land expropriation and others, which are denoted as H*A* and H*B* respectively in the figure. The *ex ante* rural population space include not only rural stayers but also floating and *hukou* migrants. However, in the process of urbanization, the *expost* population space with a rural identity covers floating migrants and rural stayer sonly. Since the identity of the *hukou* migrants changes to urban *ex post*, they compose rural population *ex ante* but switch to urban population *ex post*.

Since the identity change of the passive *hukou* migrants is due to exogenous force rather their own choices and efforts, they are free of self-selection effect. Meanwhile, the passive migrants reshape their risk preference through the assimilation effect engendered by urbanization according to the theories underpinning Hypothesis 3. Hence the passive *hukou* migrants carry assimilation effect only. It follows immediately that the gap of risk aversion between the passive migrants and their rural-stayer peers measures the assimilation effect in a pretty clean manner.

On the other hand, the new comers of the floating migrants are pretty clean carriers of self-selection effect and are practically clear of assimilation effect. Above all, they choose by their own, i.e., *self-select*, to migrate to urban rather to stay in rural. Hence, their risk preference relative to the rural-stayer peers carries the self-selection effect. Furthermore, the assimilation effect is not formed at one stroke, rather, needs time to accumulate. The new comers' exposure to urban living is too short to breed such an assimilation effect. Hence, the new comers are clear of assimilation effect. Accordingly, the gap of risk aversion between the new comers of the floating migrants and their rural-stayer peers quantifies the self-selection effect in a pretty clean manner.

In econometrics, our main model carrying out the above experiments is specified as follows:

$$arra_{ij} = \alpha + \beta_g X_{ij}^g + \phi_1 Z_{ij}^p + \phi_2 Z_{ij}^h + \mu_j + \varepsilon_{ij}, \quad (1)$$

where $arra_{ij}$ is the absolute risk aversion measurement of individual i in place j, based on Chetty's (2003) method and normalized by personal income; X_{ij}^{g} is our central variable, namely, the corresponding dummy variable characterizing the grouping of population of interest; Z_{ij}^{p} and Z_{ij}^{h} are controls of personal and household attributes respectively; μ_j represents the county or province fixed effects which effectively controls heterogeneity in the sample and other potential latent factors such as local culture possibly having effects on risk preference; and ε_{ij} accounts for residuals.

Specifically, in the two experiments designed above, X_{ij}^{g} is the dummy for the passive *hukou* migrants versus rural stayers when estimating the assimilation effect; while X_{ij}^{g} is the dummy for the new comers of the floating migrants versus rural stayers when estimating the self-selection effect. Detailed definitions of these dummies are put in the variable section below. Moreover, we employ robust estimation method of the standard errors to yield robust estimates of the test statistics.

Furthermore, we subject our results to the clustering estimation of the standard errors to correct the possible residual correlation across observations (Petersen 2009; Cameron, Gelbach and Miller 2011). Our data has two possible levels of clustering, namely, county and province levels. According to Cameron, Gelbach and Miller (2011), we use the provincial clustering level as it nests the county one.

3.2 Data

We employ the 2013-wave dataset of Chinese General Social Survey (CGSS) in this paper. Three merits make this dataset advantageous in exploring our theme.

Firstly, it is a nation-wide survey jointly conducted by Department of Social Development Research, the Development Research Center of the State Council and Renmin University of China starting from 2003 on. The 2013 wave surveyed 11,438 individuals in total, almost half in rural and half in urban, covering 127 counties in 28 provinces (including the 4 municipalities of the PRC). The extensive coverage and the strict sampling procedures ensure the representativeness and quality of the data.

Secondly, the dataset has rich information on demography, migrations, labor market participation, income, household and personal attributes, household financial portfolio, social attitudes and etc. It sufficiently meets the data requirement to execute our econometric estimations. It documents in details the information on *hukou* status and its transfer which enables us to carry out the experiments to quantify the two effects. More important, it has detailed information on the labor income and non-labor income of individual, which is requisite to apply Chetty's (2003) classic method to yield risk aversion measurement. Such classified income information of individual rather than household is rare in other dataset on the PRC.

Finally, the dataset records household investment in risky financial assets, especially stocks and funds. This lends us an opportunity to extend our two-effect theory of urbanization on risk preference to real applications, as risk preference underpins such investment decisions under uncertainty.

3.3 Variables

3.3.1 Risk Preference

Our measurement of individual's risk aversion is based on Chetty's (2003) classic method and further normalized by personal income. Specifically, relative risk aversion coefficient of an individual is computed using equation 2:

$$R = -(1+\frac{wl}{y})\frac{\varepsilon_{l,y}}{\varepsilon_{l^c,w}} / (1-(1+\frac{y}{wl})\mu_{c,l}), \quad (2)$$

where R is the relative risk aversion coefficient, w and y are labor income and non-labor income respectively, l is labor supply in terms of working hours, c is consumption, $\mu_{c,l}$ stands for complementarity between consumption and labor supply, and $\varepsilon_{l,y}$ and $\varepsilon_{l^c,w}$ are income elasticity and compensated elasticity of labor supply respectively.

The values for individual w and l are collected directly from the dataset, and y equals total income, also available in the dataset, minus w. Noteworthy to mention that the questionnaire on labor and income is the same for all respondents regardless of the urban or the rural, and the interviewers are all trained, experienced and ready in explaining the meanings of the terms to the respondents whenever they feel confused. This ensures at best an unbiased basis in comparing risk aversion across groups.

In consistence with Chetty (2003), we also assume additive utility which renders zero for the complementarity between consumption and labor supply $\mu_{c,l}$.

Income elasticity $\varepsilon_{l,y}$ and *uncompensated* elasticity $\varepsilon_{l,w}$ are computed as follows. In the first step, we find the marginal changes of labor supply with respect to marginal changes in y and w, i.e., $(\partial l / \partial y)$ and $(\partial l / \partial w)$, by relating l to y and w with other controls (including age, education, ethnicity, number of children) using a Tobit specification, following Eissa and Hoynes (1998) and Friedberg (2000). And next, we specify the individual's income elasticity $\varepsilon_{l,y}$ by $(\partial l / \partial y)\times(y / l)$; and *uncompensated* elasticity $\varepsilon_{l,w}$ by $(\partial l / \partial w)\times(w / l)$. While the compensated elasticity $\varepsilon_{l^c,w}$ is computed by using equation 3 given by Chetty (2003):

$$\varepsilon_{l^c,w} = \varepsilon_{l,w} - \frac{wl}{y}\varepsilon_{l,y}, \quad (3)$$

In our estimations, the absolute risk aversion, which is Chetty's relative risk aversion normalized by the personal income, is employed instead as the left-hand variable.

3.3.2 Population Grouping

The grouping of population is central in our experiments. We include respondents who were living in rural at the moment of interview in the rural-stayer group. The urban natives include the respondents who were born urban and have been living in urban, in addition with those who have acquired the urban *hukou* identities more than 13 years (i.e., before the year 2000). The floating migrants group consists of peasants with Nongye (agricultural) *hukou* identity but has been on leave from their hometown. The *hukou* migrants are those who have transferred from a Nongye identity to an urban *hukou* identity. Specifically, *hukou* migrants whose *hukou* transfer was due to land

expropriation by the local government for the purpose of urbanization and marriage with urbanite are assigned to the passive subgroup H_A. While other *hukou* migrants, whose *hukou* transfer was due to their own efforts such as going to colleges, employment, and etc., are labeled as H_B. Finally, the new comers of the floating migrants are those who left their hometown for the first time after 2012. That is, the time span of the new comers' living in urban was less than 2 years before interviewed.

3.3.3 Controls

Consistent with the literature on the determinants of risk attitudes, we control for personal, household and parents attributes. Regarding personal attributes, we control age, age square, gender, height, physical health, marital status and political association. Family size and number of children under 18year'sold controls household attributes. Parents' education levels are proxies used to control the parents' influences on individuals' risk attitude.

Table 1: Variables and Definitions

Variables	Definition
Left-hand Side Variable	
arra	Absolute risk aversion measurement based on Chetty's (2003) method and personal income.
Right-hand Side Variables	
unative	Urban natives include born urbanites and those who have acquired the urban *hukou* more than 13 years (i.e., before the year 2000).
hmigra	*hukou* migrants are those who have transferred from a Nongye (i.e. agricultural) identity to an urban *hukou* identity and living in urban. To form exclusive grouping, this category includes migrants after and in 2000.
hamig	The passive *hukou* migrants due to land expropriation and marriage.
nhmigra	Floating migrants include peasants with Nongye (agricultural) *hukou* on leave from their hometown, and now living in urban.
newnhm	The new comers of floating migrants whose living in urban were less than 2 years.
rstayer	Rural stayers are those living in rural at the moment of interview and with a Nongye *hukou*.
age	Respondent's age.
agesq	Age square.
male	Male = 1.
han	Han ethnicity = 1; other = 0.
edu	Education degree: 1 = Obtain no school education; 6 = primary school; 9 = middle school; 12 = high school; 13 = technical school; 15 = junior college; 17 = bachelor; 20 = master and above.
phyhth	Self-reported health status: 1 = very bad health; 2 = bad health; 3 = neither good nor bad; 4 = good health; 5 = very good health.
party	Political association with Communist party membership = 1.
married	Married = 1.
height	The logarithm of height.
fsize	Family size, i.e., number of family members.
childnum	Number of children under 18 years old.
faedu	Father's education degree 1 = Obtain no school education; 6 = primary school; 9 = middle school; 12 = high school; 13 = technical school; 15 = junior college; 17 = bachelor; 20 = master and above.
moedu	Mother's education degree1 = Obtain no school education; 6 = primary school; 9 = middle school; 12 = high school; 13 = technical school; 15 = junior college; 17 = bachelor; 20 = master and above.

Table 1 details the variable definitions and Table 2 presents the summary statistics. The size of the sample used in our estimations depends on the availability of the data to compute risk aversion. Finally, we have a usable sample of 5,420 respondents. Among them counts around 39%, 19%, and 42% urban natives, migrants and rural stayers in turn. This distribution of population corresponds pretty well with the reality in the PRC. The median and mean are almost identical for age and height. This indicates that the sample is symmetrically distributed around age and height. Moreover, the sample covers an extensive range of age from 20 to 87. All these statistics verifies the randomness of the sampling and the representativeness and quality of the sample data.

Table 2: Summary Statistics

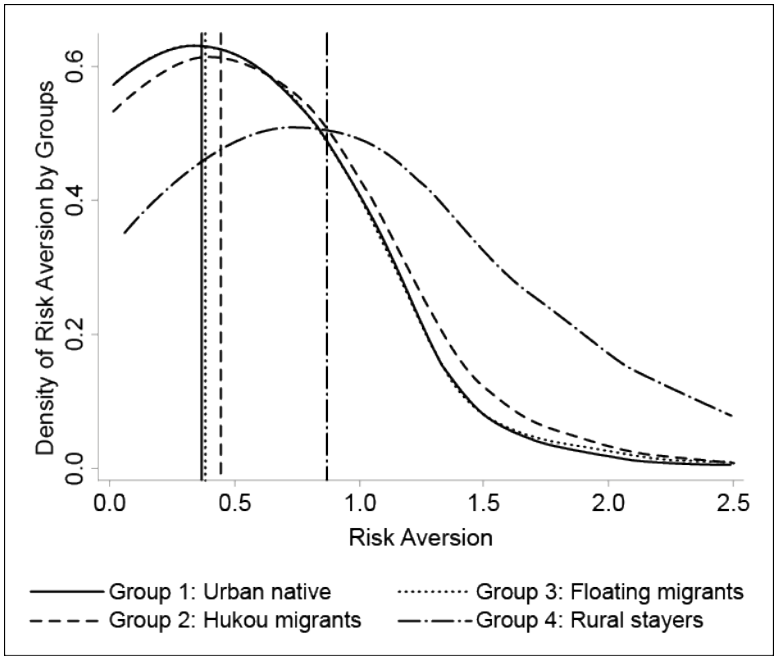
Variables	N	Min	Median	Mean	Max	S.D.
arra	5,420	0.010	0.5	1.330	62.3	2.750
unative	5,420	0	0	0.395	1	0.489
hmigra	5,420	0	0	0.121	1	0.326
hamig	5,420	0	0	0.041	1	0.197
nhmigra	5,420	0	0	0.075	1	0.263
newnhm	5,420	0	0	0.012	1	0.111
rstayer	5,420	0	0	0.428	1	0.495
age	5,420	20	46	47	87	12.600
agesq	5,420	400	2,116	2,363	7,569	1,242
male	5,420	0	1	0.599	1	0.490
han	5,420	0	1	0.914	1	0.280
edu	5,420	1	9	9.680	20	4.460
phyhth	5,420	1	4	3.930	5	0.982
party	5,420	0	0	0.108	1	0.311
married	5,420	0	1	0.846	1	0.361
height	5,420	4.16	5.11	5.110	5.260	0.050
fsize	5,420	1	3	3.170	12	1.330
childnum	5,420	0	1	1.500	8	1.040
faedu	5,420	1	6	5.590	20	4.340
maedu	5,420	1	1	4.140	20	3.920

4. EMPIRICAL RESULTS

4.1 A Preliminary Analysis

Figure 2 displays the density of risk aversion measurement (truncated at 2.0 on the right side) across the four main groups, namely, urban natives, *hukou* migrants, floating migrants and rural stayers, with their respective means. The means read 0.365; 0.4408; 0.38120; and 0.8769 for the four groups in turn. Vivid pattern exhibits that the density shapes and means of urban natives and the two migrant groups are clustered closely while depart dramatically from those of the rural stayers. This provides preliminary supportive evidence for the two central hypotheses.

Figure 2: The Density of Risk Aversion across Groups



Notes: This figure displays the density of risk aversion measurement across the 4 groups, namely, urban natives, *hukou* migrants, floating migrants and rural stayers; with the irrespective means.

Table 3 tests the differences of groups in pairs using rural-stayer group as the baseline. Model (1) reports a significantly positive coefficient on the grouping variable, which equals 1 for urban natives; 2 for *hukou* migrants; 3 for floating migrants and 4 for the rural stayers. This suggests that risk aversion increases significantly along the sequence of our grouping. Clearly, rural stayers are the most risk-averse amongst the four groups. Urban population are significantly risk-loving than the rural ones. These results are consistent with the literature (e.g., Rosenboim et al. 2010). Models (2) and (3) provide corroborating evidence. The significantly negative coefficient on the urban-native dummy in Model (3) suggests that the risk aversion measurement of the urban natives is averagely 0.360 less than that of rural stayers, given county fixed effect and other factors controlled. Similarly, the decreased risk aversion is also true for the urban population including urban natives and migrants.

Focusing on the two sub-group migrants, we find strong evidence in Models (4) and (5) supporting that their risk preference departs significantly from the rural stayers, as indicated by the sizable and significantly negative coefficients on the *hukou*-migrant and floating migrant dummies. Furthermore, given county fixed effects controlled, the risk preference difference between the two types of migrants renders insignificant. This result implies that the two effects of urbanization on individual's risk preference are both evident, near in magnitude, and therefore cannot be biased.

Moreover, Table 3 also supplies some meaningful regularities on other determinants of risk aversion in the context of the PRC. The significantly negative and positive coefficients on age and age-square respectively suggest that risk aversion varies with age, changing over life-cycle in a nonlinear pattern (similar to Jianakoplos and Bernasek 1998).Males are more risk-loving than females, as indicated by the negative coefficient on the male dummy. This echoes the evidence in the literature (e.g., Borghans et al. 2009; Croson and Gneezy 2009; Dohmen et al. 2011). The coefficients on the human-capital variables, including health, height and education, are

all significantly negative. They suggest that, healthier body makes it possible to take more risks and education broadens risk-bearing. Besides, married couples have expanded capacity to venture than a single. However, family's vertical impacts from parents on risk preference are not evident, which implies that the economic assimilation of risk aversion has more explanatory power in the PRC. Finally, more children under 18 lead to family's reluctance to take risks, as indicated by the significantly positive coefficient on the number of children.

Table 3: Test the Difference of Risk Aversion across the Four Main Groups

Variables	(1)	(2)	(3)	(4)	(5)	(6)
group	0.139***					
	[3.28]					
urban		–0.295***				
		[–3.75]				
unative			–0.360***			
			[–3.28]			
hmigra				–0.394**		
				[–2.31]		
nhmigra					–0.501***	–0.058
					[–2.99]	[–0.92]
age	–0.204***	–0.209***	–0.214***	–0.227***	–0.230***	–0.128**
	[–5.93]	[–6.16]	[–6.18]	[–5.73]	[–5.82]	[–2.47]
agesq	0.002***	0.002***	0.003***	0.003***	0.003***	0.001**
	[6.10]	[6.20]	[6.27]	[5.90]	[6.09]	[2.55]
male	–0.501***	–0.485***	–0.517***	–0.636***	–0.664***	–0.379***
	[–5.82]	[–5.71]	[–4.93]	[–5.29]	[–4.97]	[–2.97]
han	0.512	0.513	0.595	0.889*	0.761	0.366
	[1.37]	[1.37]	[1.50]	[1.71]	[1.61]	[1.57]
phyhth	–0.335***	–0.329***	–0.352***	–0.405***	–0.392***	–0.173*
	[–4.91]	[–4.76]	[–4.96]	[–4.75]	[–4.60]	[–1.76]
party	0.109	0.136	0.066	0.324**	0.053	0.294
	[1.12]	[1.43]	[0.65]	[2.03]	[0.27]	[0.79]
married	–0.314**	–0.299**	–0.379**	–0.380*	–0.487**	–0.068
	[–2.40]	[–2.29]	[–2.38]	[–1.79]	[–2.15]	[–0.57]
height	–2.364***	–2.562***	–2.704***	–4.652***	–4.430***	–0.95
	[–2.73]	[–3.01]	[–2.92]	[–3.48]	[–3.39]	[–0.36]
edu	–0.066***	–0.064***	–0.077***	–0.072***	–0.076***	–0.037*
	[–5.43]	[–5.54]	[–5.35]	[–4.47]	[–4.41]	[–1.89]
fsize	–0.007	–0.012	–0.04	–0.015	–0.02	0.133*
	[–0.16]	[–0.28]	[–0.95]	[–0.26]	[–0.41]	[1.69]
childnum	0.256***	0.262***	0.278***	0.242***	0.238**	0.031
	[3.20]	[3.34]	[2.82]	[2.71]	[2.40]	[0.37]
faedu	–0.014*	–0.015*	–0.007	–0.024**	–0.023*	–0.039**
	[–1.90]	[–1.94]	[–0.79]	[–1.99]	[–1.66]	[–2.24]
maedu	0.012	0.005	0.004	–0.005	–0.019	0.006
	[1.34]	[0.52]	[0.34]	[–0.30]	[–1.02]	[0.64]
cons	18.346***	20.046***	21.324***	31.439***	30.797***	8.747
	[3.84]	[4.36]	[4.23]	[4.36]	[4.34]	[0.61]
county fixed effects	YES	YES	YES	YES	YES	YES
N	4,708	4,708	3,700	2,979	2,673	1,008
R-sq	0.279	0.28	0.287	0.252	0.257	0.161

Notes: This table reports the results of testing risk aversion difference across the four main groups, namely, urban natives, *hukou* migrants, floating migrants and rural stayers. Combining urban native and migrants forms the urban group. Model (1) documents estimation results using the grouping variable as the central regressor of interest. Models (2) to (6) report the results comparing risk aversion of urban vs. rural; urban natives vs. rural; *hukou* migrants vs. rural; floating migrants vs. rural and *hukou* vs. rural migrants, in turn. All the results have county fixed effects controlled and use a robust standard error estimation clustered at province level. Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 level, respectively.

4.2 Main Results: Evidence and Estimations of the Two Effects

Self-selection effect. Table 4 reports estimation results on the self-selection effect. Panel A uses rural-stayer while Panel B uses urban-native group as the baseline. The central variable of interest is the dummy (*newnhm*) of the new comers of the floating migrants. The estimations in Panel A quantify self-selection effect. The estimated coefficient on the new-comer dummy is sizable and significantly negative. This presents compelling evidence supporting H1 that the more risk-lovers of the rural select themselves out and migrate to urban to exploit uncertain but lucrative opportunities. Quantitatively, the magnitude of the coefficient on the dummy suggests that the self-selection effect is sizable, namely, on average it reduces the risk aversion measurement by 0.715, given the unobservable local factors controlled.

Assimilation effect. Table 5 reports estimation results on the assimilation effect. Similarly, Panel A uses rural-stayer while Panel B uses urban-native group as the baseline. The central variable of interest is the dummy (*hamig*) of the passive *hukou* migrants. The estimations in Panel A quantify the assimilation effect; while the results in Panel B present the direct evidence on H2. Economically, we find that the risk aversion of the passive *hukou* migrants has no significant difference from the urban natives, as indicated by the insignificant coefficient on the dummy in Model (4) where county fixed effects are controlled. Meanwhile, the very significant and negative coefficients on the dummy in Panel A suggest that the risk preference of the passive *hukou* migrants departs substantially from the rural stayers. In combination of the two pieces of evidence, H2 is strongly supported. Quantitatively, the magnitude of the coefficient on the dummy in Panel A suggests that the assimilation effect is sizable. On average, the assimilation effect reduces the risk aversion measurement of the passive *hukou* migrants by 0.606 relative to the rural stayers, when the unobservable local factors are controlled.

Economic assimilation or acculturation? Interestingly, Table 5 presents as well evidence of the economic assimilation effect on risk preference rather than acculturation effect by urbanization. Above all, the family socialization technology of vertical transmitting risk preference is not efficient in the PRC, as indicated by the very small and insignificant, in most cases, coefficients on the parents' impact, which is proxied by the education levels of the parents. Furthermore, cultural beliefs are unobservable factors which are lumped in the county fixed effects. The coefficient on the dummy of passive *hukou* migrants shrinks, but slightly from 0.669 to 0.606 (less than 10%), after the cultural factors controlled. This suggests that the assimilation effect on the risk preference of the migrants by urbanization is largely an economic phenomena rather than a sort of acculturation.

Pair-matched treatment estimations. Despite the robust errors estimation justified by clustering at the province level and county fixed effects further controlled, the estimations in Tables 4 and 5 are still prone to cautions due to the asymmetric samples of the subgroups. To correct for this potential issue, we use a pair-matched method to estimate the treatment effect which elicits the self-selection and assimilation effects. Specifically, we employ two most commonly used matching methods, namely, the nearest neighbor matching and the nearest neighbor within a caliper of 0.01. The first step matches the untreated rural stayers in pairs to the treated groups of passive *hukou* and new comers of floating migrants, respectively. All the controls are used as the criteria to match the pairs. Table 6 reports that the pair-matched samples are insignificantly different along all the controls, as the p-values of the t-tests of the means are larger than 0.10 except for only two cases larger than 0.05. And in the second step, the treatment effect (ATT) is estimated. Table 7 reports that the ATTs of the newcomer

group are –1.3948 and –1.4894 under nearest and caliper methods respectively; while ATTs of the passive *hukou*-migrant group are –0.8112 and –0.8218 respectively under the two matching methods. These ATTs are all significant at 1% level. Clearly, pair-matched treatment schemes yield even larger estimations of self-selection and assimilation effects than the above results without loss of significance.

Table 4: Results on Self-selection Effect

	Panel A: Rural as Baseline		Panel B: Urban Native as Baseline	
Variables	**(1)**	**(2)**	**(3)**	**(4)**
newnhm	–0.882***	–0.715***	–0.111*	–0.108
	[–4.41]	[–2.92]	[–1.77]	[–1.44]
age	–0.248***	–0.226***	–0.040***	–0.036***
	[–5.88]	[–5.49]	[–2.84]	[–2.88]
agesq	0.003***	0.003***	0.000***	0.000***
	[6.56]	[5.86]	[2.78]	[3.04]
male	–0.370**	–0.691***	–0.009	–0.036
	[–2.14]	[–4.84]	[–0.25]	[–1.27]
han	0.236*	0.890*	–0.042	0.003
	[1.69]	[1.71]	[–0.72]	[0.05]
edu	–0.079***	–0.085***	–0.038***	–0.033***
	[–3.58]	[–4.43]	[–7.40]	[–5.32]
phyhth	–0.470***	–0.411***	–0.052**	–0.042*
	[–5.57]	[–4.64]	[–2.22]	[–1.92]
party	0.235	0.13	–0.007	–0.044*
	[0.98]	[0.60]	[–0.25]	[–1.91]
married	–0.572**	–0.526**	–0.115***	–0.102**
	[–2.12]	[–2.07]	[–2.89]	[–2.44]
height	–9.761***	–5.104***	–1.017**	–0.642**
	[–5.08]	[–3.61]	[–2.40]	[–2.22]
fsize	0.015	–0.021	0.027	0.03
	[0.26]	[–0.40]	[1.26]	[1.48]
childnum	0.218**	0.232**	0.056*	0.016
	[2.54]	[2.22]	[1.74]	[0.41]
faedu	–0.032**	–0.022	–0.007**	–0.005
	[–1.97]	[–1.47]	[–2.15]	[–1.60]
maedu	–0.014	–0.023	–0.003	0
	[–0.67]	[–1.01]	[–0.86]	[0.17]
county fixed effects	NO	YES	NO	YES
cons	59.276***	34.286***	7.291***	4.962***
	[5.95]	[4.41]	[3.33]	[3.16]
N	2,389	2,389	1,445	1,445
R-sq	0.206	0.243	0.168	0.293

Notes: This table reports the results on the self-selection effects, testing Hypothesis 1. Panel A runs models testing the risk aversion of the newcomers of floating migrants (*newnhm*), whose living in urban was less than 2 years (i.e., migrated after 2012), relative to the baseline of rural stayers; while Panel B relative to the baseline of urban natives. Models (1) and (3) use robust standard error estimations without controlling county fixed-effects. Models (2) and (4) use clustered standard error estimations at the province level with county fixed effects further controlled. Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 level, respectively.

Table 5: Results on Assimilation Effect

	Panel A: Rural as Baseline		Panel B: Urban Native as Baseline	
Variables	**(1)**	**(2)**	**(3)**	**(4)**
hamig	–0.669***	–0.606***	0.193**	0.1
	[–4.58]	[–4.10]	[2.54]	[1.60]
age	–0.249***	–0.226***	–0.066***	–0.061***
	[–6.05]	[–5.60]	[–3.64]	[–3.64]
agesq	0.003***	0.003***	0.001***	0.001***
	[6.72]	[5.96]	[3.50]	[3.53]
male	–0.375**	–0.689***	–0.085*	–0.138***
	[–2.26]	[–4.94]	[–1.88]	[–3.14]
han	0.205	0.876*	–0.027	0.02
	[1.52]	[1.70]	[–0.40]	[0.29]
edu	–0.076***	–0.080***	–0.041***	–0.031***
	[–3.55]	[–4.29]	[–6.66]	[–5.16]
phyhth	–0.461***	–0.405***	–0.058**	–0.048**
	[–5.70]	[–4.76]	[–2.55]	[–2.18]
party	0.24	0.146	–0.021	–0.055**
	[1.09]	[0.71]	[–0.76]	[–2.18]
married	–0.557**	–0.511**	–0.121**	–0.109*
	[–2.16]	[–2.06]	[–2.08]	[–1.98]
height	–9.107***	–4.552***	–0.613*	–0.01
	[–4.98]	[–3.29]	[–1.70]	[–0.03]
fsize	0.013	–0.028	0.023	0.023
	[0.23]	[–0.56]	[1.07]	[1.18]
childnum	0.229***	0.238**	0.093	0.047
	[2.70]	[2.34]	[1.40]	[0.71]
faedu	–0.032**	–0.021	–0.010***	–0.007**
	[–2.08]	[–1.42]	[–2.58]	[–2.04]
maedu	–0.009	–0.015	–0.003	–0.001
	[–0.44]	[–0.70]	[–0.73]	[–0.36]
county fixed effects		YES		YES
cons	55.931***	31.438***	5.874***	2.291
	[5.89]	[4.14]	[3.16]	[1.31]
N	2,524	2,524	1,598	1,598
R-sq	0.208	0.244	0.168	0.246

Notes: This table reports the results on assimilation effects, testing Hypothesis 2. Panel A runs models testing the risk aversion of the passive *hukou* migrants (*hamig*) relative to the baseline of rural stayers; while Panel B relative to the baseline of urban natives. Models (1) and (3) use robust standard error estimations without controlling county fixed-effects. Models (2) and (4) use clustered standard error estimations at the province level with county fixed effects further controlled. Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 level, respectively.

Table 6: T-test of the Difference of Means between the Pair-matched Samples along the Controls

	Self-selection Effect					
	Nearest Neighbor			Nearest Neighbor within Caliper		
Variables	Treated	Control	p>t	Treated	Control	p>t
age	36.448	35.466	0.673	38.000	37.388	0.813
agesq	1,481.500	1,411.500	0.729	1,606.900	1,553.700	0.816
male	0.707	0.810	0.196	0.735	0.776	0.643
han	0.948	0.897	0.302	0.939	0.918	0.698
phyhth	4.121	4.259	0.375	4.061	4.163	0.560
party	0.103	0.069	0.512	0.082	0.082	1.000
married	0.621	0.431	0.041	0.694	0.510	0.064
height	5.116	5.122	0.424	5.116	5.115	0.890
fsize	2.448	2.328	0.605	2.592	2.490	0.693
childnum	0.897	0.724	0.349	1.020	0.857	0.423
edu	10.276	9.328	0.154	9.857	9.082	0.287
faedu	6.655	6.707	0.938	6.306	6.408	0.891
maedu	4.603	5.621	0.112	3.980	5.000	0.111
	Assimilation Effect					
	Nearest Neighbor			Nearest Neighbor within Caliper		
Variables	Treated	Control	p>t	Treated	Control	p>t
age	46.219	46.301	0.939	46.505	46.710	0.848
agesq	2,265.700	2,266.200	0.996	2,291.000	2,299.700	0.933
male	0.438	0.411	0.563	0.444	0.421	0.627
han	0.927	0.922	0.857	0.925	0.921	0.857
phyhth	4.037	4.110	0.404	4.019	4.098	0.371
party	0.114	0.123	0.768	0.098	0.112	0.637
married	0.822	0.863	0.239	0.822	0.883	0.076
height	5.098	5.093	0.198	5.098	5.093	0.257
fsize	3.269	3.429	0.225	3.266	3.425	0.237
childnum	1.269	1.301	0.650	1.285	1.332	0.506
edu	10.068	9.936	0.704	9.907	9.808	0.775
faedu	6.219	6.306	0.828	6.098	6.257	0.693
maedu	4.251	4.416	0.629	4.122	4.322	0.552

Notes: This table reports the t-tests of the means of the matched treated and untreated groups along all control variables employed to form the matches. The left half part reports the results of matched newcomers of floating migrants (treated) and rural stayers (untreated), under the nearest neighbor method and the nearest neighbor method within a caliper of 0.01, respectively. And the right half part reports the results of matched passive *hukou* migrants (treated) and rural stayers (untreated), under the nearest neighbor method and the nearest neighbor method with in a caliper of 0.01, respectively. P-values are reported under the "p>t" columns.

Table 7: Treatment-effect Estimations for Self-selection and Assimilation Effects

Self-selection Effect					
Nearest Neighbor			Within Caliper		
Treated	Control	Difference	Treated	Control	Difference
0.85	1.661	–0.811***	0.861	1.683	–0.822***
		[0.350]			[0.353]
Assimilation Effect					
Nearest Neighbor			Within Caliper		
Treated	Control	Difference	Treated	Control	Difference
0.495	1.89	–1.395***	0.526	2.016	–1.489***
		[0.541]			[0.528]

Notes: This table reports the estimation of the treatment effects regarding risk aversion. The treatment and control groups a repair-matched using the nearest neighbor and within caliper methods respectively. Standard errors are reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 level, respectively.

5. APPLICATION TO THE HOUSEHOLD INVESTMENT IN RISKY FINANCIAL ASSETS

Household investment in the risky financial assets is a typical decision under uncertainty depending crucially on the risk preference of the main members in the family. We throw new light on the migrant's choice of risky financial assets through the lens of our two-effect theory of urbanization on individual's risk preference.

According to our theory, urbanization exerts self-selection and economic assimilation effects on the migrant's risk preference and ultimately reshapes a more risk-loving appetite. The passive *hukou* migrants and the new comers of the floating migrants are pretty pure carriers of the assimilation and self-selection effects respectively. Therefore, we expect that: (1) behaviorally, both carriers are more likely to invest in risky financial assets than the rural stayers; (2) economically, increased risk-loving preference provides a powerful explanation of such behaviors. It is worthy to mention that, comparing the likelihood of investment in risky assets between the urban native and rural is quite trivial due to obvious gaps in wealth, information and financial service accessibility. But the migrants and the rural stayers are playing on a pretty flat ground in this risky asset investment game. It is not straightforward that migrants invest more than their rural peers.

Table 8 tests the above behavioral hypothesis. Using a Probit specification, we relate risky asset ownership to risk aversion measurement with other controls. We find a sizable and significantly negative coefficient on the risk aversion measurement in the benchmark model (1). This presents strong evidence on the presumption that household risky financial asset investment is a decision under uncertainty depending crucially on the risk preference of the main family member. The more risk averse the member is, the less likelihood the household owns risky assets. Models (2) and (3) relate the ownership of risky assets to the dummies of passive *hukou* migrants and new comers of the floating migrants respectively, and both models are estimated relative to the rural stayers. The large and very significant positive coefficients on both dummies indicate that, relative to the rural stayers, the two types of migrants, carriers of assimilation and self-selection effects respectively, are significantly more likely to invest in risky assets, with other factors controlled. This presents compelling evidence for our behavioral hypothesis.

Table 8: Migrant's Behavior of Investment in Risky Financial Assets

Variables	(1)	(2)	(3)
arra	–1.066***		
	[–3.37]		
hamig		1.020***	
		[6.42]	
newnhm			0.887***
			[3.75]
cong	0.350***	0.620***	0.637***
	[6.76]	[5.55]	[4.86]
trust	0.022	0.049	0.099
	[0.64]	[0.56]	[0.98]
insu	0.590***	0.258	0.174
	[8.11]	[1.19]	[0.61]
cons	–2.063***	–4.395***	–4.500***
	[–8.01]	[–12.19]	[–10.39]
N	4,678	3,423	3,144

Notes: This table reports the results testing the behavioral hypothesis of the migrants' investment in risky financial assets. The dependent variable is a dummy of the household ownership of risky financial assets. Itequals 1 if the household owns any stock, stock fund, futures or share warrantees. The explanatory variables include risk aversion (*arra*) and other 3 newly added variables explained as follows. We sum the answers to all the questions about individual's cognitive capacity from A49 to A52 in CGSS 2013 to generate the variable *cong*. The variable *trust* measure how the respondent trusts in others. And *insu* measures ownership of commercial insurance. The t statistics are in brackets; *, **, and *** denote significance at the 0.1, 0.05, and 0.01 level, respectively.

Next, Table 9 presents evidence supporting our economic hypothesis on the mediation and moderation effect of risk preference changes upon the risky investment behavior. Following the standard three-step approach (e.g., Baron and Kenny 1986) to test the mediation and moderation effect, we estimate additional two sets of equations besides our central results on the self-selection and assimilation effects on risk aversion by urbanization, as presented in Tables 4 and 5 respectively. By our central results, we know urbanization is a channel reshaping the migrant's risk preference. Consequentially, we need a discernable shrinkage of the magnitude of the coefficients on the risk aversion from the baseline specification relating risky asset ownership to risk aversion, to the contrasting specification relating risky asset ownership to risk aversion as well as dummies of passive and new migrants, and furthermore, the interactions of the dummies and risk aversion, with other factors controlled. Given such shrinkage, it presents persuading evidence that, urbanization reshapes risk preference, and due to this reshaped risk preference, the migrants alter investment behavior in risky assets.

Model (1) in Table 9 replicates the result in Table 8 forming a benchmark to the latter ones. The size of the coefficient on the risk aversion is as large as 1.066, using the full sample. Models (2) and (5) are the first set of additional estimations of baseline results for the passive migrants and new comers relative to the rural stayers, respectively. The coefficients on risk aversion are –0.615 and –0.539, respectively. Both are significant at least at 5% level. The magnitude reduces substantially relative to the benchmark 1.066, largely due to the sample shrinkage. Models (3) and (6) are the second set of additional estimations which add dummies of passive *hukou* migrants and new comers of floating migrants, respectively. After these additions of explanatory variables, we find further substantial shrinkage of the coefficients on risk aversion, namely, from –0.615

to –0.445, and from –0.539 to –0.434, respectively. Moreover, the coefficients are less significant statistically, to be at 10% level now. These results suggest that a portion of explanatory power of risk aversion is subrogated by *hamig* and *newnhm*, which embodies assimilation and self-selection effects exerted by urbanization respectively. This presents supporting evidence for the claim that urbanization reshapes migrant's risk preference to be more risk-loving and hence the migrants are more likely to invest in risky assets. In short, urbanization increases risky financial asset investment.

Table 9: Test the Mediation Effect of the Risk Preference Changes Exerted by Urbanization in Migrant's Investment in Risky Assets

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
arra	–1.066***	–0.615**	–0.445*	–0.244*	–0.539**	–0.434*	–0.380*
	[–3.37]	[–2.10]	[–1.77]	[–1.67]	[–2.00]	[–1.84]	[–1.80]
hamig			0.779***	1.372***			
			[4.11]	[4.46]			
haar				–1.500**			
				[–2.45]			
newnhm						0.772***	1.127**
						[3.00]	[2.45]
newar							–1.029
							[–0.94]
cong	0.350***	0.679***	0.646***	0.649***	0.575***	0.516***	0.513***
	[6.76]	[5.01]	[4.67]	[4.61]	[4.23]	[3.46]	[3.37]
trust	0.022	0.114	0.122	0.108	0.210**	0.198**	0.199**
	[0.64]	[1.27]	[1.24]	[1.08]	[2.29]	[2.03]	[2.05]
insu	0.590***	0.058	0.009	–0.034	0.091	0.084	0.073
	[8.11]	[0.22]	[0.03]	[–0.13]	[0.30]	[0.28]	[0.25]
cons	–2.063***	–3.993***	–4.260***	–4.346***	–4.073***	–4.048***	–4.075***
	[–8.01]	[–9.13]	[–9.53]	[–9.83]	[–8.14]	[–7.79]	[–7.78]
N	4,678	2,514	2,514	2,514	2,379	2,379	2,379

Notes: This table reports the results testing the mediation effect of risk preference changes exerted by urbanization inmigrant's investment in risky assets. The dependent variable is a dummy of the household ownership of risky financial assets. It equals 1 if the household owns any stock, stock fund, futures or share warrantees. The explanatory variables include risk aversion (*arra*) andother 3 newly added variables explained as follows. We sum the answers to all the questions about individual's cognitive capacity from A49 to A52 in CGSS2013 to generate the variable *cong*. The variable *trust* measure how the respondent trusts in others. And *insu* measures ownership of commercial insurance. The *haar* is the interaction term of *hamig* and *arra*; and *newar* is the interaction term of *newnhm* and *arra*. The t statistics are in brackets; *, **, and *** denote significance at the 0.1, 0.05, and 0.01 level, respectively.

Furthermore, Models (4) and (7) adds extra interaction terms of the migrant dummy and risk aversion to Models (3) and (6) in turn. We find a furthermore shrinkage of the coefficients on risk aversion. This time, they reduce to –0.244 and –0.380, respectively. Both are dramatically smaller than the baseline results in Models (2) and (5). This presents further evidence supporting that urbanization affects household risky investment through the channel of reshaping the risk preference by exerting assimilation and self-selection effects.

6. ROBUSTNESS CHECKS

6.1 Robustness to Alternative Grouping of Rural Stayers

The grouping of the rural stayers plays critical role in reaching our main results. To check the robustness of our main results, we use an alternative grouping of rural stayers. Instead of grouping the respondents living in rural at the moment of interview, we use the information in items A18 and A23 in the questionnaire to group rural stayers. Given a Nongye (agricultural) *hukou* (i.e., answer to A18 is 1) and has never left the hometown (i.e., answer to A23 is null), the respondent is classified as a rural stayer. Table 10 reports the results testing the self-selection and assimilation effects under this alternative grouping. We find the coefficients on the dummies of the new comers of floating migrants and the passive *hukou* migrants are all significant at 1% when estimated against the rural-stayer group; and their magnitude are of the same scale as our main results presented in Tables 4 and 5. These results reaffirm that the empirical regularity we find on the two effects of urbanization on individual's risk preference is sound and stable.

Table 10: Robustness of the Self-selection and Assimilation Effects to the Alternative Grouping of Rural Stayers

	Panel A: Rural as Baseline		Panel B: Urban Native as Baseline		Panel A: Rural as Baseline		Panel B: Urban Native as Baseline	
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(1)**	**(2)**	**(3)**	**(4)**
newnhm	–0.669***	–0.481**	–0.358***	–0.259**				
	[–4.21]	[–2.47]	[–3.06]	[–2.39]				
hamig					–0.489***	–0.413***	0.004	–0.082
					[–3.81]	[–3.40]	[0.05]	[–0.96]
age	–0.233***	–0.217***	–0.102***	–0.083***	–0.235***	–0.217***	–0.116***	–0.100***
	[–6.37]	[–5.90]	[–4.42]	[–3.71]	[–6.55]	[–6.05]	[–4.81]	[–4.32]
agesq	0.003***	0.003***	0.001***	0.001***	0.003***	0.003***	0.001***	0.001***
	[7.12]	[6.21]	[4.13]	[3.77]	[7.27]	[6.34]	[4.50]	[4.32]
male	–0.342**	–0.640***	0.004	–0.05	–0.334**	–0.619***	–0.047	–0.124**
	[–2.33]	[–4.89]	[0.09]	[–1.17]	[–2.36]	[–4.87]	[–0.90]	[–2.34]
han	0.047	0.559	0.04	0.236	0.013	0.54	0.038	0.293*
	[0.36]	[1.15]	[0.40]	[1.53]	[0.10]	[1.10]	[0.40]	[1.68]
edu	–0.090***	–0.090***	–0.056***	–0.046***	–0.089***	–0.088***	–0.057***	–0.046***
	[–4.95]	[–5.28]	[–6.16]	[–4.37]	[–5.01]	[–5.26]	[–6.01]	[–4.21]
phyhth	–0.423***	–0.391***	–0.134***	–0.095**	–0.417***	–0.387***	–0.133***	–0.097**
	[–5.82]	[–5.00]	[–3.57]	[–2.45]	[–5.95]	[–5.09]	[–3.64]	[–2.46]
party	0.226	0.127	0	–0.014	0.247	0.164	–0.005	–0.018
	[1.00]	[0.62]	[–0.01]	[–0.34]	[1.20]	[0.87]	[–0.11]	[–0.47]
married	–0.425*	–0.391*	–0.198***	–0.158***	–0.410*	–0.383*	–0.181**	–0.150**
	[–1.90]	[–1.88]	[–2.76]	[–3.01]	[–1.92]	[–1.89]	[–2.49]	[–2.56]
height	–7.739***	–3.639***	–1.354***	–0.711*	–7.388***	–3.418***	–1.013**	–0.262
	[–4.82]	[–2.95]	[–2.65]	[–1.74]	[–4.79]	[–2.80]	[–2.14]	[–0.53]
fsize	0.006	–0.033	–0.013	–0.002	0.003	–0.035	–0.014	–0.012
	[0.12]	[–0.68]	[–0.40]	[–0.05]	[0.07]	[–0.77]	[–0.43]	[–0.34]
childnum	0.238***	0.247***	0.388***	0.263*	0.253***	0.256***	0.390***	0.286*
	[3.10]	[2.69]	[2.71]	[1.86]	[3.35]	[2.85]	[2.71]	[1.84]
faedu	–0.016	–0.012	–0.006	–0.006	–0.018	–0.013	–0.009*	–0.009*
	[–1.17]	[–0.93]	[–1.19]	[–1.25]	[–1.34]	[–0.96]	[–1.75]	[–1.73]
maedu	–0.019	–0.028	–0.003	0.002	–0.015	–0.022	–0.002	0.002
	[–1.13]	[–1.54]	[–0.61]	[0.40]	[–0.98]	[–1.29]	[–0.46]	[0.28]
Fixed effects	NO	YES	NO	YES	NO	YES	NO	YES
cons	48.299***	26.078***	10.902***	6.532***	46.537***	24.896***	9.471***	4.598*
	[5.82]	[3.84]	[3.92]	[2.77]	[5.84]	[3.72]	[3.64]	[1.70]
N	2950	2950	1566	1566	3088	3088	1686	1686
R-sq	0.209	0.241	0.268	0.418	0.209	0.241	0.242	0.348

Notes: This table reports estimations of self-selection and assimilation effects under alternative grouping of rural stayers. Here, we classify a respondent with Nongye (agricultural) *hukou* (according to answer to A18) and that has never left hometown (according to answer to A23) as a rural stayer. Robust standard errors are clustered at provincial level and reported in parentheses. *, **, and***denote significance at the 0.1, 0.05, and 0.01 level, respectively.

6.2 Robustness Check under a Right-side Truncated Risk Aversion

The distribution of our risk aversion measurement displays a long right-swing tail. As our main results centers around this measurement, we check the robustness of our main results by truncating the right tail at 5 and 2.5 in turn. Table 11 reports the results testing the self-selection and assimilation effects under the two schemes. For brevity, Table 11 only displays the estimations relative to rural-stayer group. Limiting the range of our risk aversion measurement to be no larger than 2.5 or 5 does not undermine our main results. In fact, the estimations of the self-selection and assimilation effects become more evident. Sizes of the coefficients on the newcomers of floating migrants and the passive *hukou* migrants are larger than that in the Tables 4 and 5 without loss of statistical significance. In sum, our main results are stable when the long tail of the central variable of risk aversion is truncated. In other words, our main results are not due to the outliers located in the long right tail but represent the regularity.

Table 11: Robustness Checks of the Self-selection and Assimilation Effects under Truncated Risk Aversion Measurement at 2.5 and 5 in Turn

	Truncated at 2.5				Truncated at 5			
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
newnhm	–0.830***	–0.747***			–0.927***	–0.783***		
	[–4.92]	[–3.47]			[–5.07]	[–3.35]		
hamig			–0.683***	–0.612***			–0.719***	–0.653***
			[–5.28]	[–4.46]			[–5.31]	[–4.52]
age	–0.192***	–0.175***	–0.195***	–0.177***	–0.207***	–0.189***	–0.210***	–0.192***
	[–5.46]	[–5.18]	[–5.65]	[–5.30]	[–5.58]	[–5.04]	[–5.76]	[–5.15]
agesq	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***
	[6.48]	[5.96]	[6.65]	[6.07]	[6.40]	[5.67]	[6.54]	[5.75]
male	–0.430***	–0.669***	–0.424***	–0.667***	–0.451***	–0.720***	–0.447***	–0.716***
	[–2.86]	[–4.75]	[–2.96]	[–4.87]	[–2.77]	[–4.78]	[–2.86]	[–4.89]
han	0.056	0.517	0.035	0.516	0.136	0.651	0.114	0.648
	[0.42]	[1.30]	[0.27]	[1.32]	[1.02]	[1.50]	[0.88]	[1.51]
edu	–0.058***	–0.064***	–0.056***	–0.060***	–0.065***	–0.070***	–0.062***	–0.066***
	[–3.05]	[–3.46]	[–3.01]	[–3.36]	[–3.28]	[–3.74]	[–3.23]	[–3.60]
phyhth	–0.410***	–0.372***	–0.401***	–0.368***	–0.415***	–0.366***	–0.408***	–0.363***
	[–6.71]	[–5.18]	[–6.83]	[–5.26]	[–6.15]	[–4.85]	[–6.31]	[–4.96]
party	0.143	0.085	0.156	0.113	0.115	0.032	0.129	0.065
	[0.70]	[0.46]	[0.84]	[0.65]	[0.57]	[0.17]	[0.70]	[0.36]
married	–0.487**	–0.413*	–0.474**	–0.405*	–0.723***	–0.666**	–0.701***	–0.648**
	[–2.16]	[–1.94]	[–2.20]	[–1.92]	[–2.75]	[–2.60]	[–2.78]	[–2.58]
height	–8.578***	–4.977***	–8.028***	–4.442***	–8.953***	–4.963***	–8.374***	–4.440***
	[–5.56]	[–3.13]	[–5.44]	[–2.84]	[–5.62]	[–3.33]	[–5.51]	[–3.02]
fsize	0.009	–0.019	0.009	–0.023	–0.011	–0.041	–0.01	–0.044
	[0.24]	[–0.50]	[0.23]	[–0.60]	[–0.27]	[–1.05]	[–0.28]	[–1.13]
childnum	0.177**	0.171**	0.188***	0.178**	0.197**	0.200**	0.209***	0.208**
	[2.58]	[2.23]	[2.78]	[2.45]	[2.43]	[2.04]	[2.62]	[2.20]
faedu	–0.028*	–0.022	–0.028**	–0.022	–0.034**	–0.027*	–0.033**	–0.026*
	[–1.90]	[–1.59]	[–2.00]	[–1.56]	[–2.21]	[–1.88]	[–2.28]	[–1.79]
maedu	–0.019	–0.023	–0.014	–0.017	–0.014	–0.018	–0.009	–0.012
	[–0.96]	[–1.09]	[–0.79]	[–0.87]	[–0.70]	[–0.86]	[–0.48]	[–0.60]
Fixed effects	NO	YES	NO	YES	NO	YES	NO	YES
cons	51.831***	32.600***	49.053***	29.744***	54.314***	32.943***	51.382***	30.262***
	[6.40]	[3.88]	[6.33]	[3.60]	[6.52]	[4.15]	[6.46]	[3.88]
N	2332	2332	2466	2466	2370	2370	2504	2504
R-sq	0.224	0.266	0.226	0.266	0.227	0.264	0.228	0.265

Notes: This table reports estimation results of the self-selection and assimilation effects subject to robustness checks under right-side truncated risk aversion measurement at 2.5 and 5 in turn. This table reports only the estimation results relative to the rural-stayer group. Robust standard errors are clustered at provincial level and reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 level, respectively.

6.3 Robustness to Alternative Definitions of Newcomers of Floating Migrants and Passive *Hukou* Migrants

Our main results in Tables 4 and 5 employ a rather strict definition of passive *hukou* migrants and a rather relaxed definition of newcomers of floating migrants. The latter is largely due to sample size consideration. Here we make slight modifications to both of the definitions to check the robustness of our main results.

Table 12: Robustness to Alternative Definitions of Passive *Hukou* Migrants and New Comers of Floating Migrants

	Panel A		Panel B	
Variables	**(1)**	**(2)**	**(3)**	**(4)**
hamig	–0.514***	–0.520***		
	[–3.68]	[–3.51]		
newnhm			–0.835***	–0.662**
			[–3.42]	[–2.39]
age	–0.252***	–0.229***	–0.250***	–0.227***
	[–6.19]	[–5.61]	[–5.82]	[–5.45]
agesq	0.003***	0.003***	0.003***	0.003***
	[6.83]	[5.99]	[6.50]	[5.85]
male	–0.349**	–0.674***	–0.368**	–0.702***
	[–2.16]	[–4.87]	[–2.09]	[–4.84]
han	0.181	0.859*	0.23	0.917*
	[1.34]	[1.68]	[1.63]	[1.72]
edu	–0.077***	–0.080***	–0.080***	–0.085***
	[–3.68]	[–4.35]	[–3.52]	[–4.30]
phyhth	–0.464***	–0.406***	–0.475***	–0.414***
	[–5.81]	[–4.83]	[–5.58]	[–4.65]
party	0.224	0.133	0.259	0.146
	[1.03]	[0.66]	[1.05]	[0.65]
married	–0.525**	–0.488**	–0.588**	–0.543**
	[–2.08]	[–2.02]	[–2.10]	[–2.07]
height	–9.081***	–4.553***	–9.884***	–5.109***
	[–5.03]	[–3.35]	[–5.10]	[–3.55]
fsize	0.016	–0.025	0.012	–0.025
	[0.30]	[–0.50]	[0.22]	[–0.47]
childnum	0.234***	0.240**	0.221**	0.235**
	[2.79]	[2.35]	[2.56]	[2.22]
faedu	–0.033**	–0.021	–0.031*	–0.02
	[–2.18]	[–1.45]	[–1.92]	[–1.29]
maedu	–0.009	–0.015	–0.014	–0.023
	[–0.48]	[–0.74]	[–0.64]	[–0.98]
county fixed effects	NO	YES	NO	YES
cons	55.851***	31.224***	59.983***	33.744***
	[5.96]	[4.18]	[5.97]	[4.30]
N	2,569	2,569	2,350	2,350
R-sq	0.208	0.245	0.204	0.241

Notes: This table reports the robustness checks of the assimilation and self-selection effects using slightly modified definitions of passive *hukou* migrants and new comers of floating migrants. Panel A estimates the assimilation effect including A20=8 in passive *hukou* migrants while Panel B estimates the self-selection effect using newcomers in 2013 only. Robust standard errors are clustered at provincial level and reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 level, respectively.

Our main text defines passive *hukou* transfers due to exogenous events of land expropriation and marriage to urbanites. Here, we relax it to include the type 8 of A20 item in the questionnaire, namely, local *hukou* reform that changes all identity into urban *hukou*. Despite that such a *hukou* transfer is due to exogenous institutional reform rather than self-choice, our strict definition of passive *hukou* migrants, in the main text, excludes this type as it is a process usually remaining in hometown without actual migration to urban. The number of the respondents of this special type in our sample is not trivial, as many as 91. Panel A of Table 12 reports the estimation of the assimilation effect under the expanded passive *hukou* migrants. The coefficient on the passive *hukou* migrants is significant at 1% level, as in our main results reported in Table 5. However, the size of the coefficient reduces a bit to 0.520 from 0.606 in Table 5. As such, the evidence on the assimilation effect remains even when the definition of passive *hukou* migrants is relaxed to some extent.

Moreover, our main text uses a definition of new comers of floating migrants who migrated after 2012. That is, their living in urban is shorter than 2 years. We strengthen this definition to be less than 1 year to check the robustness of the results. This stricter definition results in sizable reduction of the sample for the new comers, which is the main reason we opt not to use in our main results. As a floating migrant living in urban less than 1 year is a purer carrier of the self-selection effect than the one living in urban less than 2 years, we expect that the self-selection effect in this purer case is smaller than our main result in Table 4. Panel B of Table 12 presents the estimation results under the alternative definition of new-comers. We find the coefficient on the new-comers is significant at 5% level and reduces to 0.662 from 0.715 in Table 4. This result reaffirms the robustness of the self-selection effect.

7. CONCLUDING REMARKS

In this paper, we frame a decomposition of the self-selection and assimilation effects of urbanization on the individual's risk preference reshaping. This notion of the two effects largely improves on the previous literature centering around the self-selection effect solely. We create a novel quasi-experiment method to test and elicit the two effects exploiting the unique *hukou* system of the PRC when grouping migrants. We find strong evidence supporting the decomposition hypotheses. Our quantifications of the two effects indicate that they are near to each other. On average, the assimilation effect reduces the risk aversion measurement by 0.606, while the self-selection effect reduces that by 0.715. Overall, urbanization significantly improves the risk appetite of the migrants. This improvement in risk bearing results in more likelihood for the migrants to engage into economic activities under uncertainty, such as risky financial asset investment, relative to their rural peers. It is economically relevant in explaining household asset allocation and stock market participation in the context of urbanization. Urbanization with changing risk landscape and socioeconomic structures shapes individual risk perception and preference, and stimulates the household diversified demand of financial assets. Financial market could be more proactive to satisfy such needs. For instance, individuals facing health risks would have higher demand for health insurance; longevity risk requires both sufficient retirement funds and long-term care. All the changes led by urbanization call for in-depth innovations in financial, health and public service sectors.

Moreover, our results supply in-depth evidence on the several prominent theories of assimilation from the context of largest emerging economy of the PRC. We find little evidence on the vertical socialization of risk attitudes within families in the PRC, while backs up that risk preference is more an economic phenomenon than a cultural one. This sheds some new light on policy implications in terms of communication, social learning and entrepreneurship cultivation. Firstly, the economic assimilation indicates the importance of communication and social network which impacts on urban residents' (including migrants)perception and utilization of information on labor and financial market. Our evidence suggests that urban area forms an agglomeration of economy benefiting the competence of the labor migrants. Cities and areas with better communication facilities and learning environment are conducive to the investment in human capital and hence improve the quality of labor supply. To this end, local government needs to institute vocational education and training programs.

Second, local cities are encouraged to provide more inviting environments to provoke the risk-seeking entrepreneurship of the migrants, which constitutes the seeds of economic prosperity and long-run growth. Specifically, formal financial institutions that facilitate direct and indirect financing, patent protection system and free talent flow would contribute to nurture entrepreneurship and benefit both family business and small and medium-sized enterprises.

A few avenues to expand our work in the future are conceivable. As mentioned, entrepreneurship is closely related to risk-bearing capacity. Our two-effect theory of urbanization is thus likely to be used to understand how urbanization affects the distribution of entrepreneur talents. Moreover, our quasi-experiment design is ready to be used to analyze assimilation effect of other traits, such as individualism vs. collectiveness, urban life-style, children's nurturing, perception of fairness, trustworthiness, etc.

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