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Hukou as Benefits: Demand for *hukou* and wages in China

Abstract

As China encourages urbanization, a necessary process is the urbanization of its people, granting local-urban *hukou,* or local citizenship, to migrant populations. But reforms encouraging urbanization are dependent on migrant populations wanting to become formal, registered urban residents. What is demand for *hukou*? Based on a unique probabilistically-sampled contingent valuation survey of over 900 migrants in Beijing and Changsha, we use migrants' willingness-to-pay for *hukou* as a measure of demand for urbanization. We find that migrants in Beijing are willing to give up between 9 and 14 percent of their income over five years to gain local-urban *hukou*. Migrants in Changsha are much less willing to pay for *hukou* with a WTP indistinguishable from zero and rural migrants have a negative WTP. This study contributes to the broader literature on the impact of China's *hukou* system by providing a unique test of migrant workers' willingness-to-pay for local citizenship.

Keywords

China, urbanization, household registration, migration, contingent valuation

Introduction

Urbanization is a primary driver of economic development in China. Research on Chinese urbanization often focuses on industrial policy and the drive to urbanize land, especially as land provides important financial resources for local development (Su and Tao, 2017; Cai et al., 2021; Huang and Du, 2017). Following the urbanization of land and capital, however, is the urbanization of people. Domestic migrants in China are considered outsiders when they move to cities. Moving and working in an urban setting neither makes you urban in the eyes of the state nor entitles you to urban citizenship rights including local welfare and political rights. Migrants are bureaucratically excluded from local government services because they do not have local-urban household registration status, or *hukou* (Chan, 2009; Cheng and Selden, 1994; Solinger, 1999; Woodman, 2016; Vortherms, 2015).

A hereditary identity document, the *hukou* labels individuals as urban or rural and assigns them one locality. Welfare programs were traditionally divided by urban and rural types and citizens were only entitled to permanent access to these benefits in the municipality of registration. When workers migrate and do not change their *hukou*, they become second-class citizens in their own country. The continued division of the population by *hukou* registration segregates China's labor market, disrupts migration, and denies domestic migrants access to government services.

The central government long pressured local governments to open *hukou* transfer policies, allowing more migrants to obtain local-urban *hukou*. But even if programs are opened, migrants themselves must apply to change their *hukou*. Transferring one's status provides access to government services and programs, but not all migrants wish to become local because it also requires relinquishing any previously held *hukou* and affiliated rights. How much are migrants

willing to give up to gain local-urban status? What types of migrants are more willing to become local-urban? If migrant workers are unwilling to change their *hukou*, policies meant to increase labor market fluidity in cities will have little impact. If individuals have agency over the decision to change their *hukou* status, the success of China's urbanization policies will depend on migrant demand for access to *hukou*.

Our analysis uses a multi-method approach, drawing on semi-structured interviews with policy makers, human resource managers, and migrants themselves conducted between 2012 and 2017.[1] Interviews inform an original, probabilistically-sampled survey of 909 migrants and rural workers in Beijing and Changsha to measure willingness-to-pay (WTP) for local-urban *hukou* through a common process we call "*hukou* as benefits." We estimate both the impact of *hukou* on wages for migrants willing to pay for a *hukou* transfer and the overall WTP for *hukou* among migrants. We find that migrants are willing to forego 9 to 14 percent of their wages for five years to get local *hukou*. Aggregate WTP is approximately 13 percent in Beijing but neither positive nor negative in Changsha. Fully controlled models show that the value of migrants' existing rights have different impacts in our two sample cities. This suggests that the influence of family resources on local naturalization depends on the local context.

This analysis contributes to the broader literature on *hukou* by highlighting variation in demand for local-urban citizenship in China. Many bureaucrats and policymakers assume high demand for local-urban citizenship when writing urbanization policies, without taking into consideration the fact that permanent migration via *hukou* transfer is, in the end, dependent on the migrant themselves.

Implications of this research are particularly important as the Chinese central government advances *hukou* reform. Recent reforms pressure local governments to formalize *hukou* transfer

policies and increase migrant naturalization. Six years after a major central reform in 2014, estimates suggest reforms have had little impact on integrating the "floating population" by encouraging *hukou* transfers (Chan, 2021). In 2019, an estimated 290 million migrant workers still lacked access to urban citizenship in China, a country that holds almost one fifth of the world's urban population. The success or failure of these reforms depends on migrant workers' desire to change their *hukou* status.

Hukou System

A key pillar of the command economy fully cemented in 1958,[2] the *hukou* is an identity document that distinguishes individuals as urban or rural based on their family's work unit in the 1950s and assigns them to one geographic location (Cheng and Selden, 1994). As a hereditary, caste-like institution, status is passed down parent to child regardless of the family's current employment or physical location. During the Mao era, people were not allowed to move or work outside of their area of registration. Reforms in the 1980s and 1990s broke down these mobility barriers, but the complex institutions governing local provision of welfare and a wide range of citizenship rights remain tied to *hukou* registration (Solinger, 1999; Vortherms, 2015; Woodman, 2016). Permanent entitlement to government services, such as public education, health insurance plans, and property rights, still depend on where you are registered (Chan, 2009; Cheng and Selden, 1994). Migrants now live and work in every city in China but face significant barriers to accessing government services in their place of residence.

Reform to the *hukou* system since the late 1990s focused on easing transfers by institutionalizing processes for changing one's *hukou,* or the process of urbanizing people in the *hukou* system. In the 1990s, "blue-print" *hukou* were granted to individuals who invested locally,

although this status did not bestow as many rights as local-urban status (Chan, 2015). Local governments also began a rural-to-urban transfer system to integrate rural populations to urban status when beneficial for urbanization processes (Chan, 2009).

After 2001, local governments controlled who is allowed to transfer their *hukou* registration in processes akin to international immigrant naturalization (Vortherms, 2015). Migrants must qualify for local naturalization; go through an application process involving four levels of government which can include upwards of 100 documents; secure one of the limited quota for transfers; and cancel their previous status.[3] More like a citizenship document than a driver's license, it is difficult to change your registration and most of China's migrant workers never get the opportunity.

The 2000s and early 2010s saw greater institutionalization of transfer programs related to firms and labor recruitment. Many larger cities and those in Guangdong implemented point-based system whereby individuals with higher education, training, or investment experience could apply for local status, much like Canada's Skilled Worker Visa (Zhang, 2012). Reform in 2014 further pushed lower barriers to transfers in small and medium cities, greater institutionalization in large cities, and stricter policies in extra-large cities. National-level reforms, including those in 2001, 2011, and 2014, however, explicitly delegate authority over policy details to municipal and county governments, which lead to superficial reforms and significant variation in the impact of reforms on liberalizing the system (Chan, 2014; Chan and Buckingham, 2008; Wallace, 2014). In practice, national reforms led to a proliferation of pathways to transfer *hukou*. These represent an international layering effect on institutional reform than a full displacement of institutions.[4]

Reforms in 2014 also encouraged localities to expand social services outside of the *hukou* system. There has been some progress integrating urban and rural medical programs, but many of

these programs remain segregated by *hukou* and even successful cases of integration are highly varied below the national level (Huang, 2020; Yang, 2020). Similarly, the 2014 reform encouraged cities to implement a residency card on top of the existing *hukou*. Easier to obtain than *hukou*, they entitle holders to social welfare. These cards existed well before the 2014 reform in many cities, including in Guangzhou and Shanghai, and research routinely finds they do not fully replace the fundamental divisions in the *hukou* system (Guo, 2010; Wang, 2014). As one paper argues, residency cards are "old wine in new bottles" with full, permanent access to welfare policies still dependent on *hukou* status (Li et al., 2010).

Demand for *hukou*

Uptake of national reform—the actual integration of migrants in the *hukou* system—depends on demand for *hukou* at the individual level. Just how valuable is local citizenship through the *hukou* system?

Choosing to naturalize locally, to change one's *hukou*, is akin to a naturalization decision, especially for those who have already migrated. One can move, live, and work, but remain an outsider—a ruralite or a non-local. Why naturalize? If reforms to mitigate differences in *hukou* status were successful, are there still people who have high demand for *hukou*?

Why migrants naturalize in one country after immigration provides a theoretical framework to understand demand for *hukou*. International naturalization is a cost-benefit decision (Bevelander and DeVoretz, 2008). Structural economic, household, and individual factors all contribute to the cost-benefit calculation of migrants moving and settling in new locations (Massey et al., 1993). Based on the international literature, costs are primarily driven by bureaucratic barriers to naturalization (Dronkers and Vink, 2012; Peters et al., 2015) and the challenge of assimilation.

When assimilation into society is difficult for migrants, naturalization is less likely (Diehl and Blohm, 2003; Yang, 1994). Benefits of naturalization primarily come from greater access to rights and economic opportunities (Bevelander and DeVoretz, 2008; Jasso and Rosenzweig, 1986; Kahanec and Tosun, 2009; Nam and Kim, 2012). And migrants may choose to naturalize to avoid discrimination and pass a privileged identity to their children (Logan et al., 2012; Yang, 1994; Street, 2014).

Naturalization in the *hukou* system

We expect demand for *hukou* to follow a similar cost-benefit calculation as international naturalization. In the domestic context, the costs of *hukou* transfer are expected to be lower because assimilation should be easier because of a shared national identity. But there is still variation in demand in the domestic context. Benefits of transferring one's *hukou* include greater access to local-urban welfare rights, economic opportunity, and social status. Costs of transferring one's *hukou* include relinquishing existing rights—including land-use rights—and increasing the difficulty of returning home.

The greatest benefit of transferring one's *hukou* is access to local citizenship rights. Accessing citizenship rights, including social and political rights, increases the benefits to naturalization (Jasso and Rosenzweig, 1990). Naturalization rates among elderly immigrants in the U.S., for example, increased when welfare reform made it more difficult to access public assistance for non-citizens (Nam and Kim, 2012). Local-urban provides access to a variety of local services such as local schools, certain pensions, minimum wages, healthcare, as well as administrative services such as getting the national ID cards and passports. Formal employment can provide some access to social security systems, but as little of a quarter of migrant workers secure a permanent

job contract (CHIPS 2013). Even transferable benefits like pensions have limits for migrant workers, including incomplete transferability (Zhang and Li, 2018).

Economically, naturalization can improve labor market outcomes (Diehl and Blohm, 2003; DeVoretz and Pivnenko, 2005). In the Chinese context specifically, migrants experience greater turnover and mobility across industries (Ou and Kondo, 2013). Both non-local and rural migrants face wage and hiring discrimination (Cheng et al., 2013; Gagnon et al., 2014; Hlásny, 2017; Knight and Song, 1999; Lee, 2012; Lu and Wang, 2013; Song, 2016; Zhang, 2011). Gaining local-urban *hukou*, even at a cost, can open job opportunities that favor locals. As one migrant said, "eat a little bitterness today to ensure tomorrow's opportunities."[5]

In addition to access to government services and economic opportunities, local *hukou* status provides symbolic value that can impact social status. Migrants from rural areas and lesser-developed cities are often considered "uncivilized" in large, coastal cities. Local-urban *hukou* from a desirable place can be a prerequisite for marriage. *Hukou* from Xinjiang, a province stigmatized for being dangerous because of its minority Muslim population, face job and social discrimination.[6] Employers often outright refuse non-locals for fear they will need to leave town for long stretches for medical treatment.[7] This problem also amplifies gender differences, as women are expected by employers to return home more, meaning non-local woman candidates are often not considered for jobs.[8]

Demand for *hukou*, however, is not always a given. Reforms that provide services outside of *hukou* transfers reduce some of the benefits of transferring. Migrants who have already moved may not wish to integrate because local naturalization requires relinquishing existing rights. Because social and political rights are tied to *hukou* status, changing one's status means giving up any existing rights at home. This includes health insurance, housing assistance, and individual

claims to family land-use rights, which, in most municipalities, is still limited to local-rural *hukou* holders. This is often seen as a significant loss given that land acts as social security for rural populations (Cai, 2016).[9] Giving up one's rural status may mean giving up access to this land and this livelihood guarantee. Similarly, before family planning reform allowed more birth quota across the country, many ruralites wished to keep their rural status because they were eligible to have two children.[10] If a migrant prefers the rights provided by their current status, local naturalization is less appealing.

Urban *hukou* status may not alleviate social and market exclusion currently facing by rural migrants, reducing incentives to naturalize locally. Discrimination against rural migrants is already deeply rooted and urban status change is unlikely to change their position in society if they have other identifiable markers, such as speaking a dialect. Therefore, while discrimination creates incentives for status transfers, it also lowers demand.

Naturalizing in the new location also makes it difficult to return home. There is no standard for "right of return" to one's original *hukou*. Around the time of the 2014 reform, there were almost no formal processes for recovering an old *hukou* once given up.[11] While naturalized migrants can always physically return home, they lack legitimate claims to government services and rights. Village committees are incentivized to keep their populations small to increase redistribution of land and dividends from local enterprises. This prevents backflow into the rural areas once urbanization policies are implemented, but also reduces incentives for migrants to formally naturalize because transfer has more permanent consequences than migrating without transferring.

Method and Data

To assess variation in demand for *hukou* and its potential impact on wages, we implemented a probability sample survey with experimental questions in Beijing and Changsha, Hunan, in 2015 and 2016. The survey was co-sponsored by Peking University's China Center for Health Economic Research and hosted locally by Hunan University in Changsha. Beijing and Changsha were chosen purposefully to provide contrast. Beijing is an extreme case of migration and value of local citizenship. Beijing *hukou* is often depicted as the most valuable in the country. Estimates from Beijing should provide an upper bound of *hukou* value. Changsha, on the other hand, is a regional hub of migration. Changsha draws a significant number of migrants—1.4 million migrants identified in the 2010 census—primarily, but not solely, from its surrounding province of Hunan.

Sampling Strategy: Defining and Sampling Migrants

The target population for the survey includes all those excluded from full urban benefits in their place of residence. Each city's population can be divided in to four groups based on their *hukou* location and status of local/non-local and urban/rural. Only local-urban residents enjoy the full set of welfare benefits provided by the city in the location in which they live. The other three categories are excluded from full local citizenship in some way, either because they are not local or not urban. Because of this, local urban residents are excluded from the target population, but residents in the other three categories are included. The target population can be understood as bureaucratic migrants in the destination location. This includes non-local migrants—those who move across municipal boundaries— and local rural migrants—the vast majority of whom are registered in the municipality of Beijing or Changsha, but whose *hukou* is registered in a different county than where they live and have rural status and urbanized rural populations.[12]

To avoid sampling error related to identifying migrants via household lists (Landry and Shen, 2005), our survey's sampling strategy employed multi-stage spatial probability sampling. The sampling method resulted in 484 respondents from Changsha and 459 respondents from Beijing. A total of 909 respondents answered all necessary questions for the analysis. In the Beijing sample, migrants came from 27 different provinces. Changsha migrants were also from a wide range of provinces but local Hunan migrants were the majority. The sample is highly educated compared with expectation of migrants: 38 percent of the migrants in the sample have a college degree. A 2015 government survey of migrant workers estimates the number with a college degree around 8 percent.[13] There are two reasons for this discrepancy, first, government reports sometimes do not include urban migrants. Second, the random sample drawn is geographically urban, with relatively few villages being selected into the sample and factory dorms being excluded from the sample due to access limitations. Because migrants often cluster geographically, this sampling strategy increased the possibility of a skewed sample.[14] A table of summary statistics is available in the appendix.

WTP design

China's *hukou* is a non-market good. There are no observable markets where individuals can purchase a *hukou* other than the black market (Wang, 2010), where a local *hukou* can cost anywhere between 30,000 RMB to 300,000 RMB (US$4,800-US$48,000) depending on the level of city.[15] Without a market, we cannot use revealed preferences to estimate demand. Previous attempts to value *hukou* use the value of government services granted by *hukou* status (Liu, 2005; Zhang and Li, 2016). While such calculations help estimate government burden of potential *hukou* changes, this strategy misses both important symbolic and non-quantifiable value innate to local-

urban *hukou*—access to the local privileged class—and it does not account for the trade-offs of what individuals lose when giving up their previous status. Because of this, we instead use a hypothetical valuation strategy.

This study employs a dichotomous choice method contingent valuation technique used widely in public policy and environmental studies.[16] In contingent valuation studies, survey respondents are asked how much they are willing to pay for a given good, service, or policy. In a dichotomous choice model, survey respondents are presented with one price randomly assigned by researchers from a predetermined range of bid prices. Respondents either accept the stated price or reject it to keep the status quo, mimicking a market purchase decision. Acceptance at different prices then creates an estimated demand curve. Dichotomous choice contingent valuation, or referendum method, is the closest to market decisions and introduces the least amount of design bias (Arrow et al., 1993). A more detailed discussion of this is available in the supplementary material.

Hukou as Benefits

Based on our analysis of *hukou* transfer policies across the country, one of the most consistent and accessible processes for *hukou* transfers found around the country is through firm-based transfers. We use this common context of firm-sponsored *hukou* transfers in our valuation question. Each year the local government provides firms with a quota of how many employees they can sponsor to gain local-urban *hukou*. The number of quotas a firm receives depends on its ownership status, size, industry, and relations with the local government.[17] These broad policies are called "recruitment of high-skilled labor." Firms use these allotments to either recruit or promote employees, especially those with specialized skills or experience.[18] Even after reforms in

2001, 2011, and 2014 encouraged *hukou* reform, most municipalities still encourage *hukou* transfers through firm-based sponsorship, including in Beijing where a human resources officer of a state-owned enterprise reported using *hukou* in promotion packages after the roll out of point-based systems.[19]

Because local-urban status is difficult to obtain for many people, a firm that can offer local-urban status can use this process as a form of benefits package. As a perk of employment, the employee is sponsored by their firm in their application for local-urban status. Because this transfer sponsorship is assumed valuable to potential employees, the firm with access to *hukou* transfers can act strategically and offer a lower salary with a *hukou* transfer. If the employee values *hukou* transfer enough, they would be willing to accept lower wages for an opportunity to get a local-urban *hukou*. There are many anecdotal accounts of this *hukou* as benefits process, but few attempts to measure to what degree *hukou* as benefits reduces wages.

The elicitation question presented respondents with a prompt that explains how some firms can help employees gain local-urban status. While most individuals know that this work-based transfer system occurs, the prompt giving the basic information is used to ensure that all respondents are at least familiar with the general process. Respondents were then asked to imagine that they are looking for a job and had received two job offers in the same industry at approximately the same type and size of firm. Both firms offer 5-year contracts. To prevent income effects, Company A, which could not provide a *hukou* transfer, always offered the current income. Company B offered a salary lower than that offered by Company A by a random percent. Each questionnaire was randomized to a bid price [2.5, 10, 25, 50, 75, 90 percent] which represents the gap between the monthly salaries of company A and B. Respondents were then asked which company's offer they would accept.

The standard model for WTP is

$$WTP = \sum_{k=0}^{N} w \Pr\left(accept|c\right)$$

which estimates the cumulative distribution of the probability of accepting the lower wage c across individuals weighted by the bid price variation w. We define this value as the effect of *hukou* on wages.

The standard WTP model assumes positive demand and pools all respondents who decline the price at zero. When valuing a private good, however, demand could be negative. In the context of *hukou*, changing one's status necessitates relinquishing one's existing status. It is possible that the government would have to pay some individuals to give up their existing status. To account for this, aggregate WTP is calculated as weighted sum of probit coefficients times the sample means over the wage gap coefficient. Thus, we will present the findings in two ways: impact on wages, which allows for a non-monotonic demand curve and overall WTP which does not assume positive demand.

Below we present pooled sample, sub-sample, and full models for WTP for *hukou*. In all models, household-level sampling weights are included to account for design effects of the sample. As a robustness check, we calculated the models with individual- and area-level sampling weights. The results remain robust to these specifications.

Results and discussion

Impact on wages

Figure 1 depicts the overall acceptance rates for the Beijing, and Changsha samples, respectively, representing our estimates of *hukou* impact on wages. The relatively low levels of

acceptance at the lower income-gap levels suggest that some populations would never want *hukou*. There is some evidence that *hukou* is a non-normal good. For example, acceptance for urban migrants in Beijing is not linear. This suggests that demand is inelastic to price: there are some populations that would be willing to give up their entire income to get local-urban *hukou* and there are some who would never change their *hukou*. This is not altogether surprising: when calculating the WTP for a private good, negative WTP is possible, meaning for some populations, the government could have to *pay* respondents to change their status.

Calculating the impact of the *hukou* on wages as the area under the demand curve, pooled sample estimates access to *hukou* reduces wages by 12 percent in aggregate, 13 percent in Beijing, and 10 percent in Changsha (Table 1). These values represent the average monthly income survey respondents were willing to give up to work for a company that could help them change their *hukou*. As expected, the higher impact in Beijing reflects the higher value of Beijing *hukou* compared with Changsha *hukou*.

Please insert Figure 1

Please insert Table 1

When dividing the sample between urban and rural *hukou* holders, however, we see differences in demand. In Beijing, rural migrants are relatively more willing to give up salary for *hukou* than urban migrants. In Changsha, the opposite is true: urban-to-urban migrants are willing to take a larger pay cut for access to *hukou*. This result may be surprising at first glance, but there are a few explanations. First, in this sample specifically, the average monthly income of urban migrants in Changsha is the same as rural migrants in the Beijing sample. This means in absolute

value calculated as foregone wages in RMB, urban migrants in Beijing have the highest WTP, followed by urban migrants in Changsha, then rural migrants in Beijing and Changsha, respectively. This suggests that economic variables, like current household socio-economic status, are more important than identity variables, such as urban or rural. Second, bid acceptance rates suggest *hukou* is a non-normal good for urban migrants in Beijing. This suggests this population may not be directly comparable to other subpopulations. Logically this is plausible because wealthier migrants are less dependent on *hukou*-based access to government services. Money can substitute for *hukou* transfer. This then means the transfer decision is less dependent on economics, leading to lower sensitivity to price.

This valuation of *hukou* should be understood as the impact of *hukou* on wages, not the overall value of the *hukou*. Migrants who do not want a change their status would not accept lower wages and the demand curve would be left-censored.

Overall WTP

While assuming a kinked demand curve above provides the impact of *hukou* on wages, aggregate WTP assumes a monotonic demand curve that allows for WTP to be negative. If WTP is negative, the government would have to pay migrants to change their status. Table 2 presents the aggregate WTP estimates. In the combined sample, only urban residents have positive and significant WTP for local-urban *hukou*. Non-local urban respondents were willing to forego almost 14 percent of their monthly income (average 590 RMB, 95 USD per month based on average wages in our sample) for five years. Rural populations have a WTP indistinguishable from zero.

In Beijing, both the aggregate population and each of the sub-populations has a positive and significant WTP. Across the pooled sub-sample, the average WTP was 18 percent. WTP for

urban *hukou* holders and rural *hukou* holders is 16 and 18 percent (763 and 800 RMB per month), respectively. These estimates are not statistically distinct from each other, in large part because of high variance among urban migrants.

Please insert Table 2

In the Changsha sample, no population has a WTP statistically different from zero. This means that aggregate to WTP in Changsha is *neither* positive nor negative. There are three possible explanations for this. First, there could be zero demand for *hukou*. If there were no demand for *hukou*, however, we would not find positive responses to our elicitation question depicted in Figure 1. Second, there could be a kinked demand curve, where anyone who rejected the bid price has an actual WTP of zero. This would be the best explanation if the *hukou* was a public good where the minimum possible WTP is zero. But the third explanation is the most conceivable: because *hukou* is a private good, an identity status held by individuals, WTP could be negative, with the demand curve extending to the left of zero on the x-axis.[20] The results suggest that while some people are willing to forego significant wages, others have a negative WTP, creating a zero result on balance. As we can see in Table 2, a non-zero portion of the population is willing to accept lower wages in exchange for a *hukou*, but this population is not large enough to balance out those with negative demand.

The lower panel of Table 2 presents WTP estimates by sub-population and sample with fully controlled models. Among non-local urban populations, only the Beijing sample has a WTP statistically distinct from zero at 12 percent. Similarly, among rural populations, only those in

Beijing have a positive WTP at 15 percent, which is significantly higher than the non-local urban sub-population.

In Changsha, rural migrants have a much lower WTP than any other sample with a negative WTP. While variance is high, the average WTP is -23 percent. Rural migrants in Changsha are unwilling to pay for Changsha *hukou* and would potentially have to be paid if the city attempted to integrate all migrants into the local *hukou* system.

Overall, migrants in Beijing and rural migrants have the highest WTP for *hukou*. Rural migrants in Changsha have the lowest WTP, with a negative WTP, suggesting rural migrants in Changsha value their current *hukou* more than potentially obtaining Changsha *hukou*. This means that urban migrants in Changsha have higher WTP than rural migrants, although still lower than all migrants in Beijing.

Correlates of demand

The marginal effects for the control variables are presented in Figure 2. Like the WTP estimates, we see different patterns in our two sample cities.

Please insert Figure 2

Family land-use rights have a positive and significant effect in Beijing but a negative and significant effect in Changsha. Those with land have higher WTP in Beijing while those *without* land have higher WTP in Changsha. This divergent result suggests that the value of a migrant's land-use rights at home is contextually dependent. Land-use rights can signal greater household resources that could cushion risks and costs associated with *hukou* transfer, which would be particularly important in more expensive and competitive Beijing. Most importantly, this result

shows the need to take city context seriously. Respondents whose hometown had higher levels of economic development were less likely to accept lower wage in exchange for local-urban *hukou* than those from poorer sending areas, although this is only significant in Beijing.

When the two cities are pooled together, female respondents are more likely to accept lower wages than males are, but this effect is not statistically significant in either of the two sub-samples samples. Age is negatively correlated with WTP and there is a non-linear effect. This means respondents in a middle age range are most likely to want *hukou*. College degree has no effect on WTP in any sample. Respondents in the highest third of the income distribution in Beijing were less willing to forego income for local urban *hukou* than those in the lowest third. This provides more evidence that financial resources may act as a partial substitute for *hukou*.

The findings presented above represent a unique snapshot of measuring both the value of local urban *hukou* and its potential impact on wages. It is important to interpret these results in context of the research design. The sample is not representative of the entire country. Second, WTP is inherently a hypothetical valuation technique. Care was taken to the design the survey instrument to reduce hypothetical bias. We argue this hypothetical valuation provides valuable insight into the variation in WTP across population in the two sample cities. Third, one key population omitted from this study is the population of migrants who were able to successfully transfer their *hukou*. Results should only be generalized to the population currently living in China without access to local-urban *hukou* rather than an aggregate valuation of the *hukou* system. Future research should pair hypothetical foregone wages with employment decisions made by migrants who have already converted their status. Similarly, survey results do not speak to would-be migrants who have chosen not to migrate because of existing *hukou* restrictions.

Discussion

As the country pushes towards higher levels of urbanization, the process of urbanizing China's people by integrating the *hukou* system becomes a more pressing concern. Reforms have the potential to mitigate decades-long wage inequalities, but greater urbanization might, in the short run, continue to depress wages as long as programs like *hukou*-as-benefits continue. Overall, access to *hukou* transfers reduces wages by approximately 12 percent in our hypothetical evaluation of the *hukou* system. This is a sizable impact both in the short run and if current wages affect future wage levels.

Most importantly, results presented here highlight significant variation in demand for *hukou*. We see positive demand for *hukou* in the Beijing sample and balanced aggregate demand in the Changsha sample, leading to an overall WTP indistinguishable from zero in the Changsha sample. This suggests there are a significant number of people who do not want to change their *hukou* in Changsha. Rural migrants in Changsha would have to be paid to change their *hukou* with overall negative WTP, which means urban migrants in Changsha have higher WTP than rural migrants. In Beijing, migrants whose family hold land-use rights, those with urban registration, those with lower income, and middle age ranges are all more likely to want to buy *hukou*, indicating higher demand. In Changsha, we see very different patterns. Migrants without land are more likely to want to buy *hukou* and many individual characteristics are not statistically significant, although migrants in middle age ranges are more willing to buy *hukou*. These results are most robust for more educated migrants with more formal work experience because these populations are most likely to have knowledge of *hukou* transfer policies.

Future research is needed to understand demand for *hukou* from the individual's perspective. It is likely that individual experiences and backgrounds affect demand for *hukou*, but such a detailed analysis is beyond the scope of this article. Similarly, more research is needed on *hukou* switchers, those who were able to successfully change their status and how they vary from those locked out of the system.

One of the most important implications of the results presented here is variation. Understanding this variation not only within migrant populations but also across migration contexts is essential for understanding the potential impact of continuing reforms to the *hukou* system. The most recent reforms emphasize the need to ensure voluntarism in *hukou* conversions (Article 2, paragraph 2). Creating space for migrants to choose to change their *hukou* or not means the progress of reform towards deconstruct the *hukou* system depends on demand for *hukou*. Results presented here show low demand in Changsha compared with Beijing. Populations with a WTP indistinguishable from zero or with a negative WTP are likely to be resistant to reform, resulting in a continuation of the *hukou* system in dividing the population. Additional recent evidence corroborates the varied findings here. Evidence from the 2020 census and the National Bureau of Statistics' Migrant Monitoring Reports all suggest a growing—not shrinking—migrant population (Chan, 2021; National Bureau of Statistics, 2021). This project provides one explanation for why national reforms have had a smaller impact than optimists hoped for by showing significant variation in demand.

Reforms that integrate social services outside of the *hukou* system both alleviate the consequences of the *hukou* system while also potentially exacerbating it. Early evidence suggests that local governments have improved health insurance integration, but other social insurance programs have done little to integrate migrant workers outside of the *hukou* system.[21] True reform

to the *hukou* system is dependent not only on the welfare integration, but also on removing institutional distinctions all together. As long as local governments manipulate transfer policies and welfare policies, systemic inequality will persist.

Notes

[1] The first author conducted more than 60 semi-structured interviews in three different regions in China over the course of this project (IRB on file with authors). We utilize interview data in this paper primarily as it informed the experimental survey and include specific observations for illustrative purposes.

[2] Built on the imperial population registrar, most current registration statuses are the remnant of the 1958 regulations (Chan and Buckingham, 2008; Cheng and Selden, 1994).

[3] Interview policy work-group member, Guangdong 2014

[4] Interview human resource officer, Beijing, 2017

[5] Interview with a white-collar migrant, Beijing 2014

[6] Interview with migrant worker, Guangdong 2014.

[7] Interviews with factory owner, Beijing 2015; labor recruiter, Guangdong, 2013; small business owner, Guangdong, 2014; migrant labor lawyer, Guangdong, 2012

[8] Interview with small business owner, Guangdong, 2014

[9] Interview with migrant labor lawyer, Guangdong, 2012

[10] Interviews with migrant workers Beijing 2012, 2014.

[11] Liaoning province, for example, states in their 2014 reform that urban-to-rural return migration is not allowed (Liaoning Provincial Government, 2014).

[12] There are a few "urbanized rural migrants" in the sample. Urbanized rural residents are those who did not physically move, but whose village was consumed by urban growth, meaning they themselves live in an urbanized space but their *hukou* did not change (Chen et al., 2015). We follow convention and consider these few respondents rural migrants because they remain outside of the urban welfare system where they live.

[13] 2015 Report of the Migrant Worker Monitoring Survey, http://www.stats.gov.cn/tjsj/zxfb/201604/t20160428_1349713.html

[14] We considered an intercept survey supplement, where survey respondents would be recruited outside of factories, but this was not feasible for political reasons.

[15] See, for example, "*Hukou* fraud exposes home truths about registration system" *People's Daily Online* 2010; "Scandals over fake *hukou* reveal black market" *Shanghai Daily* 2013; He, 2011.

[16] See Bishop and Heberlein (1979) and Diener, O'Brien, and Gafni (1998) for reviews on contingent valuation usage.

[17] Interview with human resource manager, Beijing, 2014.

[18] Interviews with university career office worker and high-skilled migrant worker, 2014

[19] Author's database of local *hukou* transfer policies in 317 of 333 municipalities in 2016. Interviews state-owned enterprise human resource manager, Beijing, 2016,; human resource manager, Beijing 2014.

[20] See supplement for visual demonstration.

[21] For evidence of integration, see enrollment numbers in urban and city-based welfare programs, available from the National Bureau of Statistics, 2021.

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Barriers in Reform-Era China. *The China Quarterly* 235: 669-692.

Table 1: Estimates of *hukou* Impact on Wages

	Full	Beijing	Changsha
Combined	12.09	13.15	10.51
	(41,125)	(50,764)	(32,639)
Urban **(non-local)**	14.04	9.90	14.47
	(54,802)	(51,767)	(48,260)
Rural **(local and non-local)**	11.04	13.31	8.76
	(34,588)	(44,405)	(25,840)

Estimates refer to percent of income respondents are willing to forego in order to work for a company that can help them change their *hukou* to local urban. Estimated RMB value in parentheses based on sub-population income estimates. Calculated as area under the demand curve including sampling weights and weights for certainty. Sample limits prevent us from estimating local rural and non-local rural subpopulations separately.

Table 2: Baseline WTP estimates and 95% confidence intervals

	Baseline WTP		
	Full Sample	Beijing	Changsha
Combined	9.10	17.83***	-6.49
	(-3.82, 22.02)	(16.04, 19.63)	(-24.84, 11.85)
Urban	13.59***	16.20***	4.58
(non-local)	(6.50, 20.67)	(11.52, 20.88)	(-8.58, 17.73)
Rural	6.70	18.43***	-13.90
(local and non-local)	(-10.17, 23.57)	(17.13, 19.72)	(-38.28, 10.48)
	Fully Controlled WTP		
	Full Sample	Beijing	Changsha
Combined	-2.02	14.77***	-17.97
	(-13.18, 9.13)	(13.90-15.63)	(-42.27-6.32)
Urban	-0.74	12.58***	-9.98
(non-local)	(-12.28, 10.81)	(10.46-14.69)	(-10.11, 13.39)
Rural	-2.32	15.59***	-23.08*
(local and non-local)	(-14.96, 10.32)	(14.78-16.39)	(-48.31, 2.14)

Estimates refer to percent of income respondents are willing to forego in order to work for a company that can help them change their *hukou* to local urban. Estimated using probit models including sampling weights and weights for certainty. Sample limits prevent us from estimating local rural and non-local rural subpopulations separately.
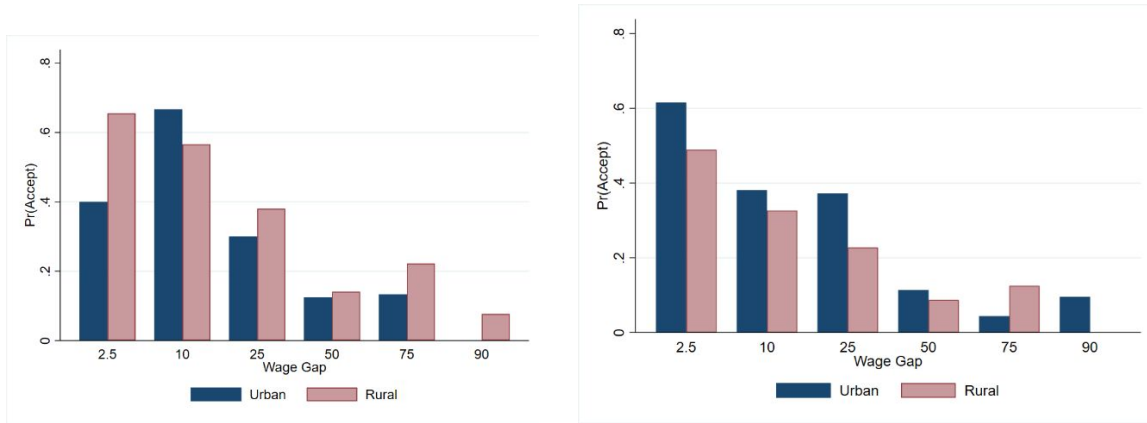
(a) Beijing   (b) Changsha

Figure 1: Acceptance Rate of Wage Differences by Sample

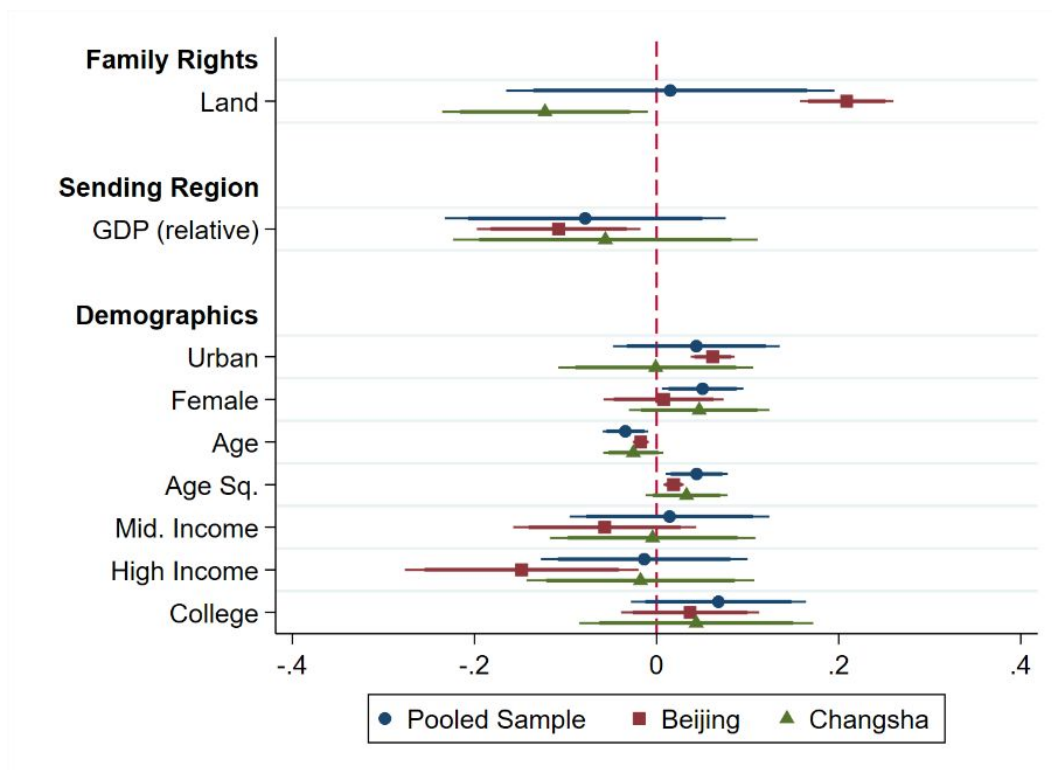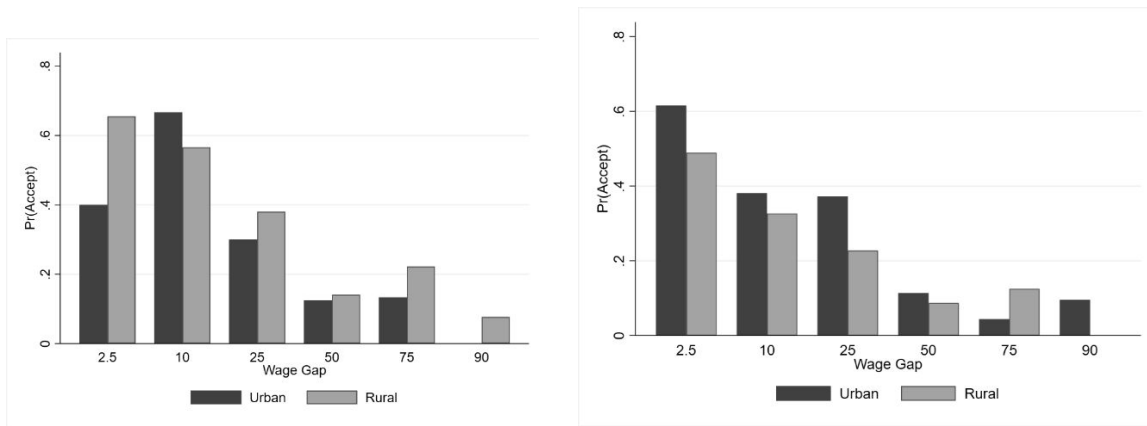Descriptive figures show unweighted acceptance rates.

Figure 2: Marginal Effects of Control Variables, by Sample

Age squared scaled by 100 for scale comparison. All models include household sampling and certainty weights.

(a) Beijing

(b) Changsha

Figure 1: Acceptance Rate of Wage Differences by Sample

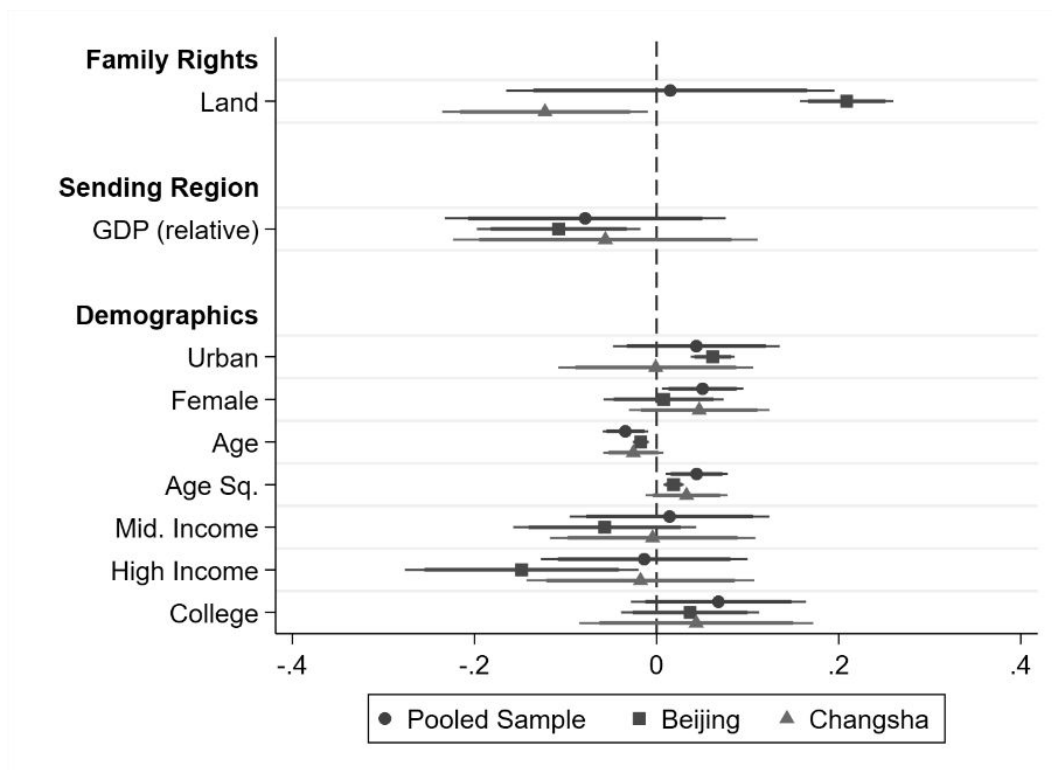Descriptive figures show unweighted acceptance rates.

Figure 2: Marginal Effects of Control Variables, by Sample

Age squared scaled by 100 for scale comparison. All models include household sampling and certainty weights.

Hukou as Benefits: Hukou Transfers and wages in China

Supplementary Material

Sampling Strategy

City Choice

Only Shanghai receives more migrants of all of China's cities than Beijing. While Beijing is actively reforming its *hukou* policies—such as the implementation of a points-based transfer system for high-skilled labor transfers—the overall system is getting stricter through higher institutionalization since reforms in 2014. According to media reports, Beijing allowed approximately 180,000 *hukou* transfers per year over the last 10 years, approximately two percent of the migrant population.

Changsha ranked 32nd out of 337 cities in 2010 for number of migrants. Changsha has relatively open *hukou* policies, with policies that open the city to low-skilled labor and residence-based transfers while being less open to high-skilled labor than the leading east coast municipalities. Unlike other major capitals, Changsha does not have a points-based transfer for high-skilled labor transfers, and college graduates must have work before they can transfer their *hukou* to Changsha. Low-skilled, residence-based transfers do exist with proof of permanent housing and proof of paying into the social insurance fund for at least one year.

The commonly used sampling methods in household surveys in China rely on household lists provided by local public security bureaus. Even though migrants are not registered in the *hukou* system, they are supposed to register with the public security bureau within three days of

arriving in a new location. Existing studies found that using household registrars misses up to 85 percent of migrants due to out-of-date and incomplete address registers (Landry and Shen, 2005).

Sampling involved three steps: (1) randomly selecting counties based on non-local population, (2) spatial sampling with probability proportional to size within counties, and (3) simple random sampling of buildings, floors, apartments, and respondents. This process provided a randomly drawn sample down to the individual.

First, we randomly selected two counties in each of the survey cities with greater probability of selection given to counties with higher rates of non-local populations. Using the 2010 census data, we selected counties with probability proportional to size based on the non-local population. Second, because reliable data below the county level is not available, we use night light intensity data to proxy population density. Using the Defense Meteorological Satellite Program Operational Linescan System (DMSP-OLS) nighttime light data from NOAA, each county is divided into half-minute grids and each grid square has a light intensity value. Half-minute grids correspond to specific areas of 30 seconds of longitude and latitude. In Beijing, these grid squares were approximately one kilometer square. In Changsha, they were slightly smaller. Within these counties individual half-minute grid squares were chosen randomly with probability proportional to size of light intensity. The lights data are highly correlated with both economic development and population density and are generally accepted as a proxy for population. Within each grid square, buildings, floors, and apartment doors with the assistance of random tables. Individuals within the household were chosen randomly using the Kish technique. Enumerators were graduate students hired locally and trained over three days on both the importance of scientific rigor needed in survey data collection as well as on the paper survey instrument itself.

WTP design justification

Dichotomous choice contingent valuation, where respondents are presented with one price and asked to "accept" or "reject" the value, is the most valid and reliable WTP elicitation technique that is also the most like real-world interactions (Ryan and Watson, 2009; Watson and Ryan, 2007; Arrow et al., 1993). The best alternative, the open-ended WTP elicitation where respondents are asked to volunteer the most they are willing to pay, was tested during questionnaire evaluation and found to be difficult for respondents to answer, especially those with lower education experience and when goods are non-market goods, like *hukou*. Additionally, open-ended questions are less internally valid: it is unlikely that a hiring firm would ask job candidates how much lower salary they would be willing to take if a *hukou* transfer were allowed. Alternatively, some contingent valuation surveys us a payment card approach, where respondents are offered a card with a list of possible prices and asked what the highest price they are willing to pay is. Studies of the use of the payment card have been shown to be biased based on how bid prices are presented, including issues of truncation and ordering of prices (Smith, 2006; Ryan and Watson, 2009; Rowe et al., 1996).

In preparation for the survey, we conducted six cognitive interviews with migrants with a range of education backgrounds. In the cognitive interview stage, we used an open-ended WTP question to evaluate the cognitive burden of using an open ended response and to collect preliminary information to inform a price range for hukou, should we need to shift to a dichotomous choice. The cognitive burden was clearly pronounced, with more than half of our cognitive interviewees struggling to come up with a value they felt accurate. Additionally, this cognitive burden had a pronounced skew related to education: interviewees with higher education were more confident in their valuation and arrived at it much quicker, those with lower education

struggled to create an estimation, often getting frustrated at the premise. To avoid these design effects and additional skew due to question format validity, we implement what is considered best practice in the field with a dichotomous choice model.

While estimates of WTP can be biased because the technique is hypothetical rather than observed behavior (Ehmke et al., 2008), it is used widely in measuring the value of non-market goods and programs (Cummings, 1986; Arrow et al., 1993). Private goods, such as *hukou*, can be valued through a change in existing levels of the private good, and may have less bias than public goods valued with this technique (Carson and Groves, 2007). This presents a classic choice experiment that makes the status quo implied in the contingent valuation design an explicit choice.

Experimental Question

Some companies offer *hukou* transfer as part of the benefits when recruiting new employees. Employees of the company can not only get a basic monthly salary but can also transfer their *hukou* to local urban status. This relocation refers to obtaining local permanent residence rather than a temporary residence. Imagine you are looking for a job and you receive a five-year contract offer from two different local companies for the same type of position. Company A cannot help you change your *hukou* but Company B can help you change *hukou*.

Choice 1: Company A offers you a monthly salary of XXX and cannot help you change your *hukou*.
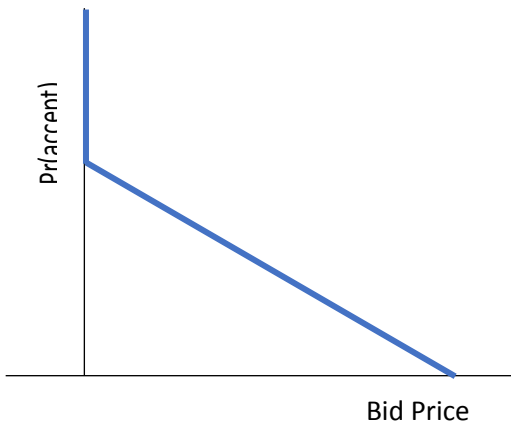
Choice 2: Company B offers you a monthly salary of XXX and can help you change your *hukou*.

Which offer would you accept?

Understanding Zero WTP in Contingent Valuation

Figure A1. Hypothetical demand curves

(a) Assumed Positive Demand, Public Good

(y-axis: Pr(accept); x-axis: Bid Price)

(b) Positive demand for private good

(y-axis: Pr(accept); x-axis: Bid Price)

(c) Negative demand for private good

(y-axis: Pr(accept))

(d) Non-normal good

(y-axis: Pr(accept); x-axis: Bid Price)

(ii)   (i)

Accept money
for hukou   Pay money
for hukou

←—————

—————→
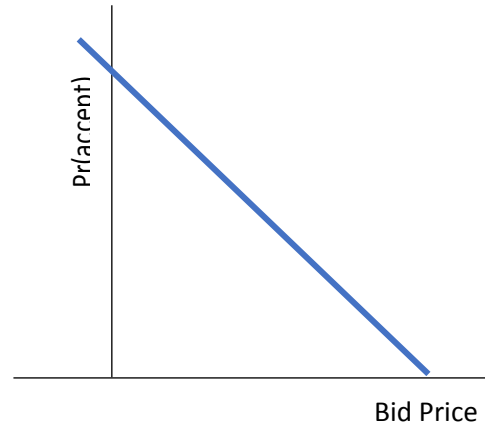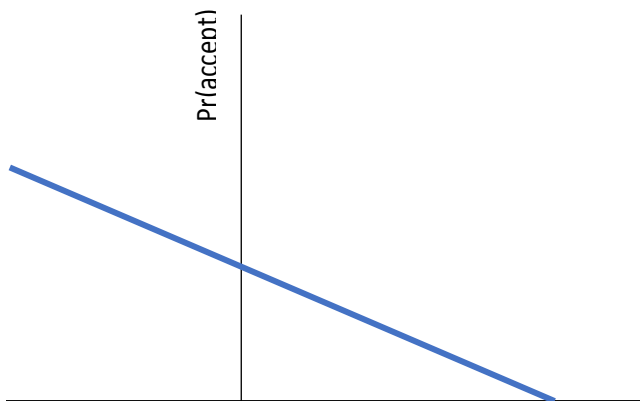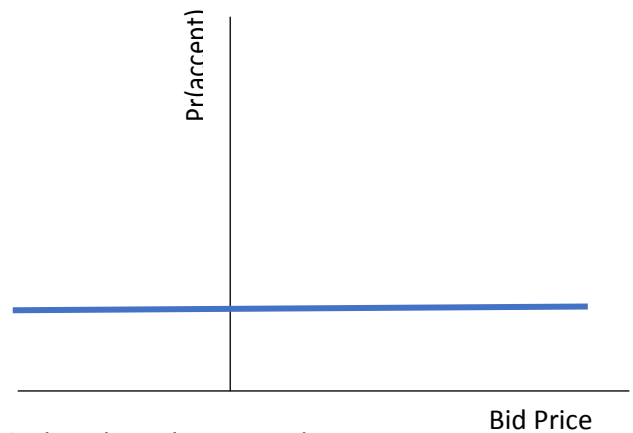
Figure A1 presents four possible demand curves estimated by WTP. Panel (a) presents the standard

WTP model that assumes positive demand and is appropriate for estimating public goods. It is the

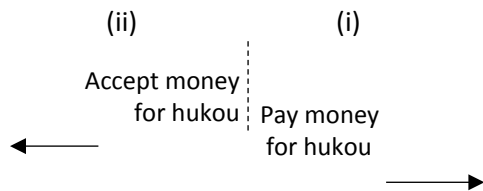model used to estimate the impact of *hukou* on wages, with a kinked demand curve at zero. Panels

(b) and (c) present demand curves with positive and negative demand, respectively, for private

goods. Panel (b) would result in a positive and significant estimation of WTP whereas panel (b)

would result in a negative and significant WTP, because of the slope of the demand curve for

positive bid prices. The area under the curve with positive demand (i) is smaller than the area under

the curve on the negative demand side (ii), resulting in an aggregate negative demand. WTP could

be zero, or not distinct from zero if (i) and (ii) are approximately the same size. Similarly, WTP

could be zero if the hukou is a non-normal good, as presented in panel (d), where demand does not

vary by price. Because there is variation in demand in the Changsha sample depicted in Figure 1,

we argue the most likely driver of zero WTP in the Changsha sample is a demand curve between

panel (b) and panel (c).

Additional Controls

Other than the full models presented in the paper, we also ran models including controls for

marriage and children. The marriage variable was an indicator variable for if the respondent was

married. Two child variables were tested, including an indicator for any children and an indicator for any young children (under the age of 18). We ran these indicators combined (marriage + any child, marriage + young child) and separately. None of these three controls were significant and the main results did not change.

Full Results Tables

Table A1: Descriptive statistics

	Full Sample	Beijing	Changsha
Local rural hukou	0.13	0.16	0.10
Non-local rural hukou	0.58	0.6	0.56
Non-local urban hukou	0.30	0.24	0.35
Female	0.50	0.50	0.49
Age	35.52	36.15	34.94
College degree	0.38	0.31	0.45
Low Income	0.34	0.25	0.43
Middle Income	0.33	0.35	0.31
High Income	0.33	0.41	0.26
Distance to hometown (log, transit hours)	0.37	0.96	-0.18
Relative GDP	0.38	0.42	0.49
Observations	909	437	472

Summary statistics calculated with raw data based on sample used in estimation. Responses with

item non-response removed.

Table A2: Experimental Treatment by Sample

Percent Gap	Total Sample (\%)	Beijing (\%)	Changsha (\%)

2.5%	103	(11.03)	41	(9.07)	62	(12.86)
10%	150	(16.06)	79	(17.48)	71	(14.73)
25%	201	(21.52)	91	(20.13)	110	(22.82)
50%	227	(24.30)	113	(25.00)	114	(23.65)
75%	148	(15.85)	82	(18.14)	66	(12.69)
90%	103	(11.24)	46	(10.18)	59	(12.24)

Table A3: Baseline <u>Probit</u> Models of <u>WTP</u> by Survey Sample

VARIABLES	(1) Full Sample	(2) Beijing Sample	(3) Changsha Sample
gap	-0.0355***	-0.0601***	-0.0239***
	(0.00817)	(0.00617)	(0.00322)
urban	0.244	-0.134	0.442*
	(0.185)	(0.139)	(0.217)
Constant	0.238	1.108***	-0.333
	(0.356)	(0.0866)	(0.270)
Observations	910	438	472

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A4: Fully Controlled <u>Probit</u> Models of <u>WTP</u> by Survey Sample

VARIABLES	(1) Full Sample	(2) Beijing	(3) Changsha
gap	-0.0364***	-0.0727***	-0.0262***
	(0.00731)	(0.0142)	(0.00291)
beijing	0.509*		
	(0.256)		
urban	0.218	0.466***	-0.00497

	(0.238)	(0.160)	(0.265)
Female	0.252**	0.0581	0.242
	(0.118)	(0.247)	(0.184)
age	-0.172**	-0.132***	-0.132
	(0.0656)	(0.0429)	(0.0805)
c.age#c.age	0.00220**	0.00141***	0.00170
	(0.000871)	(0.000486)	(0.00108)
3 quantiles of income = 2	0.0698	-0.441	-0.0220
	(0.271)	(0.413)	(0.274)
3 quantiles of income = 3	-0.0684	-1.131*	-0.0912
	(0.284)	(0.661)	(0.311)
College	0.339	0.278	0.225
	(0.246)	(0.272)	(0.329)
Land	0.0750	1.579***	-0.633**
	(0.456)	(0.459)	(0.280)
GDP (relative)	-0.392	-0.814***	-0.290
	(0.393)	(0.267)	(0.416)
Constant	2.973***	4.332***	2.440*
	(1.016)	(1.138)	(1.243)
Observations	892	424	468

Standard errors in parentheses

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

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