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**China's Missing Children:
Political Barriers to Citizenship through the Household Registration System**
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Approximately 13 million Chinese lack *hukou*: formal household registration. This prevents them from claiming full citizenship rights, including social welfare, formal identity documents, and employment in the state sector. The government blames family planning policies for the unregistered population, but this explanation ignores the role of internal migration. Because citizenship rights are locally determined and the *hukou* system is locally managed, migrants face significant barriers to registering their children. This article systematically analyzes the political determinants of the unregistered population nationwide. Based on a logit analysis of a sample of 2.5 million children from the 2000 census, I find that children born in violation of the One-Child Policy do have lower rates of registration—but this effect is dwarfed by the greater impact of being born to a migrant mother. Continuing government focus on the effect of family planning ignores the more fundamental institutional barriers inherent in the *hukou* system.

Introduction

China's household registration system (*hukou* 户口) is the country's fundamental citizenship institution, conferring citizenship rights to the population, more so than birth certificates or passports.¹ While obtaining a *hukou* is a "fundamental right" (*jiben quanli* 基本权利) for all Chinese citizens,² recent estimates suggest that at least 13 million people, approximately 1 per cent of the total population, live without *hukou*.³ Those without formal registration are non-citizens within their own country:⁴ without *hukou*, individuals lack legal rights to government services, including social welfare such as education and health insurance as well as access to fundamental legal identity as full citizens.

The vast majority of the unregistered, approximately 70 per cent, are under the age of ten.⁵ These "missing children" are statistically missing from government registrars and are "as if" missing to the state, given that they lack rights to government services. Official reports contend at least 60 per cent of the unregistered population (*heihu* 黑户) are individuals born in violation of family planning policies.⁶ The restrictions of the One Child Policy formalized legal personhood: those born outside of family planning

¹ Solinger 1999; Vortherms 2015

² *Guowuyuan bangongting guanyu jiejie wu hukou dengji hukou wenti de yijian* 2016

³ This 2016 figure is based on Bureau of Statistics estimates based on census data as well as projected fertility to account for under-reporting of births. The true population without *hukou* is likely to be larger than the projected 13 million.

⁴ Greenhalgh 2003; Johnson 2016

⁵ Based on data from the 1% sample of the 2000 census.

⁶ *Guowuyuan bangongting guanyu jiejie wu hukou dengji hukou wenti de yijian* 2016; Johnson 2016

regulations are not legal persons, allowing local government officials to deny access to legal citizenship. Local government officials, whose promotion is dependent in part on maintaining low fertility rates, have political incentives to erect barriers to registering children born out-of-plan. Keeping them off the books reduces formally acknowledged population growth. Families, too, have an incentive to keep children unregistered to avoid steep fines.

Overlooked by the state, however, is the management of the *hukou* system itself: the localization of citizenship rights presents significant barriers to registration for migrant families. Citizenship rights, including the right to pass one's citizenship to one's children, are determined by local belonging in China. Individuals can only claim rights to government services in their place of registration, with little to no protection from national regulations. This includes the right to register one's children. A mother outside of her city of registration cannot register her children immediately in the *hukou* system because she does not have local rights to do so, creating barriers to accessing citizenship. With more than 270 million migrant workers living and working outside of their city of registration today, the localized nature of citizenship not only has consequences for accessing welfare, but also intergenerational transfers of access to rights. Because expanding a city's population is an expansion of social welfare obligations, neither the sending nor receiving governments have an incentive to register these children. This unintended consequence of economic development dramatically impacts access to citizenship rights for generations and implies a direct negative consequence of state actions rather than individual decisions and policy perversions.

This article is the first to systematically analyze the political determinants of the unregistered population nation-wide. Using logit models on a sample of over 2.5 million children from the 2000 census, I evaluate the relative impacts of the official explanation of the unregistered population—family planning policies—and a key concurrent explanation of migration and political management of the *hukou* system itself. For the children reported in the sample, I find that, while being born in violation of family planning policies does decrease the probability of registration, especially for daughters, the importance of being born to a migrant mother is undeniable: children of migrants are four times more likely to be unregistered than registered. Given that central-level announcements of policy reforms targeted at registering the unregistered focus on family planning determinants, these reforms are unlikely to address the fundamental institutional arrangements of the *hukou* policy itself that perpetuate barriers to citizenship.

The following section introduces the localization of citizenship rights through the *hukou* system in China. Next, I present the official government explanation of the unregistered population through family planning policies. In contrast, I demonstrate how migration creates political barriers to registration. I then evaluate the relative effect of these determinants on registration in children reported in the 2000 census using logit models on full and sub-samples. I conclude with an assessment of how reforms to both family planning and household registration systems are likely to impact registration probabilities in the future.

The Household Registration System and Local Citizenship

Citizenship in China is based on *jus sanguinis* practices, where children born to Chinese parents are eligible for Chinese citizenship and are entitled to rights and services

provided by the Chinese government with no birth location-based (*jus soli*) rights. This entitlement is diluted in practice, however, by a variety of identity documents and the subnational provision of citizenship rights. The *hukou* is the most important document for citizenship rights in China's complex identity document system, more so than the birth certificate (*chusheng zhengming* 出生证明), national identity card (*shenfen zheng* 身份证), dossier (*dangan* 档案), internal passport (*tongxing zheng* 通行证), and international passport (*huzhao* 护照). This is because the *hukou* is the prerequisite document necessary to obtain any other form of identity, other than the birth certificate, and the possession of the *hukou* entitles citizens to government services, more than any other document.⁷ Additionally, local government officials view holders of local *hukou* as their citizenry, with an obligation to provide services to this population and not outsiders.⁸

China's modern *hukou* system began in 1958 as a necessary institution for the command economy, in which people were registered locally as either urban or rural, based on their work unit.⁹ Because of local state involvement in urban work units during the Mao era, urban citizens had full access to government-provided social welfare and services—grain rations, education, pensions, etc.—to urban workers in factories, while rural residents were kept out of the formal government systems.¹⁰ Rural *hukou*, on the other hand, was and remains necessary for land redistribution and access to dividends from local village enterprises.¹¹ This variation in rights entitlement created vastly different citizenships within China based on *hukou* status, with urban citizens gaining significantly more and better services from the government.¹² Before economic reform, migration outside of one's registration location was strictly controlled, but after Reform and Opening, migration restrictions were removed.¹³ While this created greater economic opportunities for rural residents, it also created a new class of “non-locals” (*waidi ren* 外地人), who, while holding urban or rural *hukou* from another city, were denied local citizenship status through the transfer of their *hukou*. Access to all entitlements for a vast range of government services was restricted to one's original registration location. While permanent transfers akin to naturalization were allowed,¹⁴ these opportunities were severely limited, especially throughout the 1980s and 1990s.¹⁵ The implications of the

⁷ The birth certificate, which is required for obtaining a *hukou*, does not provide access to government services other than obtaining a *hukou*. National ID card allows individuals to travel and purchase train tickets, but the ID card is dependent on *hukou* registration, with access to creating and renewing the ID card in the place of *hukou* registration.

⁸ Interview, central level bureaucrat 2015.

⁹ Built on the imperial population registrar, necessary for the *baojia* system of civil control, the modern *hukou* identified individuals as local citizens within one administrative zone. Most current registration statuses are the remnant of the 1958 regulations. Chan 2010; Chan and Buckingham 2008; Cheng and Selden 1994

¹⁰ Cheng and Selden 1994

¹¹ Greenhalgh 2003

¹² Cheng and Selden 1994; Solinger 1999

¹³ Chan 2009; Chan and Buckingham 2008; Cheng and Selden 1994; Solinger 1999

¹⁴ Such as firm sponsoring a new employee or one spouse joining the other's location.

¹⁵ Chan and Selden 2014 Chan and Buckingham 2008

hukou system for labor markets, intergenerational socioeconomic mobility, and segregated citizenship rights are many and have been studied at great length.¹⁶

Table 1 Categories of Unregistered Populations

Type	Category
Family Planning	1. Born outside of family planning policies (out-of-plan births)
Bureaucratic	2. People without a birth certificate, such as those born at home;
	3. Children whose parents did not complete adoption procedures;
	4. Individuals who had <i>hukou</i> canceled after being declared missing or dead;
	5. Adults whose original <i>hukou</i> was canceled due to marriage,
	6. Individuals who did not formally complete a transfer to a new location
Legal	7. Children born to foreign parent/born out of wedlock;
Other	8. Other

Source: Zheng 2016

Gaining almost no scholarly attention, however, are the unregistered. Formerly known as “black *hukou*,”¹⁷ those without registration are “marginal members of society who lack full citizenship rights, including access to schooling, jobs, housing, and a host of other state-supplied benefits.”¹⁸ A person without a *hukou* is “legally and socially a nonperson” with no formal claim to rights from any local-level government.¹⁹ Children without *hukou* do not get access to government provided immunizations and free education while adults cannot register to marry or participate in local land redistribution. Additionally, children may suffer non-material costs, such as feelings of being unwanted or less than their peers because of their unofficial status, adding a psychological cost.²⁰

The fact that 1 per cent of the population did not have citizenship status in the 1990s and 2000s was a politically sensitive topic, making it difficult to research.²¹ The January 2016 announcement of a working group dedicated to resolve issues related to registering the unregistered²² suggests greater recognition of the problems facing these non-citizens and a greater openness to the topic.

Political Barriers to Registration

¹⁶ Most scholars focus on the ever-present floating population of rural migrant workers, second class citizens in their own country. See, eg. Chan and Selden 2014; Chan and Zhang 1999; Fan, Hall and Wall 2009; Qin, Wang and Zhuang 2014; Solinger 1999; Tan 2014; Wang 2005

¹⁷ Official language in the 1980s used the phrase “black population” (*hei renkou*) or “black *hukou*” (*heihu*) to refer to people without official registration status. The phrase was phased out of central level documents, however, during the 1990s. Currently, these populations are called *wu hukou zhe* or those without *hukou*.

¹⁸ Greenhalgh 2003, 199

¹⁹ Greenhalgh 2003; Johnson 2016

²⁰ Johnson 2016; 92-93

²¹ Greenhalgh 2003

²² *Guowuyuan bangongting guanyu jiejie wu hukou ren yuan dengji hukou wenti de yijian* 2016

According to government accounting, there are eight categories of people without *hukou* (Table 1). These explanations fall into three general categories: barriers based on family planning, bureaucratic reasons related to paperwork barriers, and legal barriers based on the definition of citizenship in China.

The central government contends that the biggest barrier to registration is the complex family planning policies of the One-Child Policy with the majority of the unregistered population falling into the first category. China's compulsory family planning policies began in 1980 and varied in policy arrangements, implementation, and severity of enforcement, both across time and space.²³ Children born outside of the policy are formally "non-persons" because they were born outside of the plan. This creates a group of people without legal existence.

Below the provincial level, officials' job effectiveness was measured, at least in part, through their ability to maintain fertility rates around prescribed targets.²⁴ For local officials, meeting fertility targets weighed the same as key economic targets on officials' Target Responsibility System evaluation, the system by which local leaders are evaluated annually for potential promotion.²⁵ The tightening of family planning enforcement created significant incentives to hide out-of-plan births through under-reporting or denying formal registration status, not only for families facing financial sanctions, but also officials whose performance evaluation was at least in part defined by reaching fertility goals.²⁶ Because of this framework of legal personhood based on legitimate and illegitimate births in the eyes of the government, local governments, through their ability to control citizenship rights through the *hukou* system, denied out-of-plan births access to citizenship, both by requiring family planning certificates for *hukou* registration and by outright denying *hukou* registration for out-of-plan children.²⁷ In the 1991 China Health and Nutrition Survey, 71.9 per cent of rural communities and 66 per cent of urban communities reported required delays in registration of out-of-plan births.²⁸

The different types of *hukou*—urban versus rural—affect the strictness of both policy arrangement and enforcement. Generally, family planning policies were easier to enforce in urban settings. Urbanites risked losing their job when breaking policy restrictions and services blocked for out-of-plan children were easier to control in urban settings.²⁹ Because of the relative ease of enforcement with more concrete incentives, urban women had better compliance on paper with family planning policies than rural

²³ The impact of variation in policy enforcement on registration rates is beyond the scope of this paper. For a more detailed discussion of policy variation and registration rates, see Vortherms Forthcoming. For detailed discussion of policy specifics, see Bongaarts and Greenhalgh 1985; Cai 2010; Greenhalgh 1990; Gu, et al. 2007; Saith 1981; Short and Zhai 1998

²⁴ Merli 1998; Merli and Raftery 2000

²⁵ According to Zuo (2015), an example city's mayor in 1991 could get 10 points towards their TRS evaluation if the fertility rate of 2.27% was reached, the same number of points the same mayor could get if local budget revenue reached 504 billion yuan. No other single target weight as much in the evaluation.

²⁶ Merli and Raftery 2000

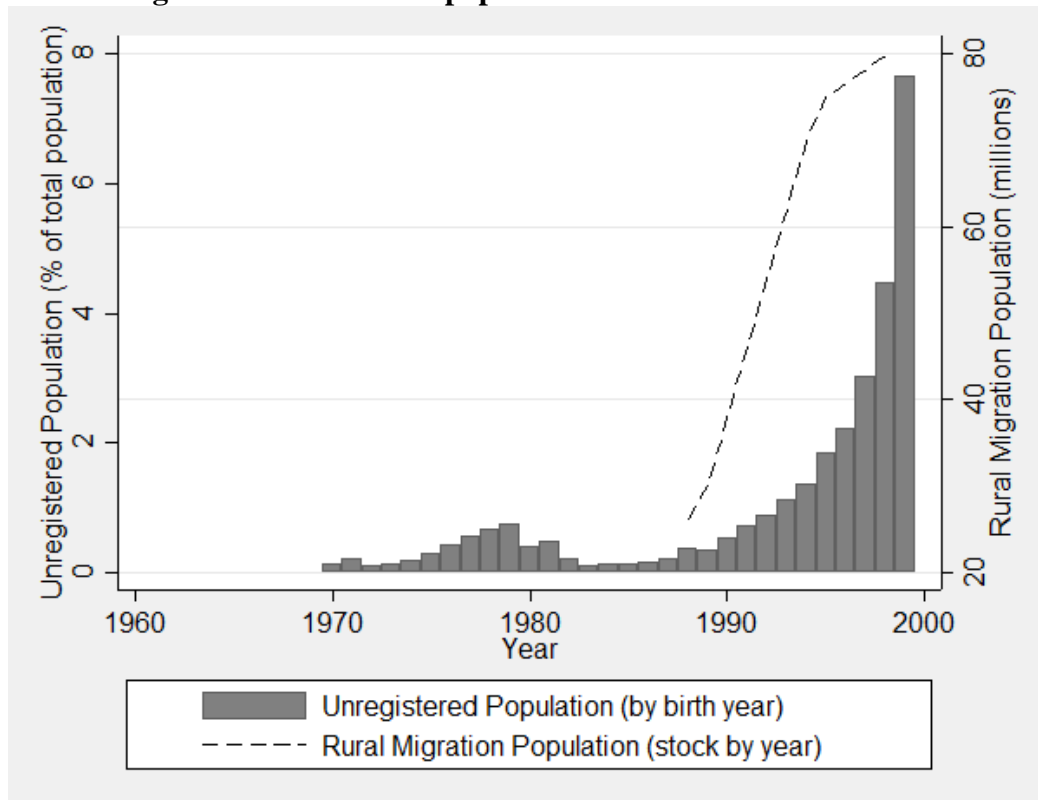
²⁷ For example, in Nanjing, if a child has two registered older siblings, parents must provide formal Population Planning Bureau approval in order to obtain a *hukou*. Nanjing Public Security Bureau; Ebenstein 2010

²⁸ Short and Zhai 1998. It is estimated that approximately 60% of unplanned children gain registration status after parents pay "social burden" fees. Greenhalgh 2003; Johnson 2016

²⁹ Ebenstein 2010; Feng, Cai and Gu 2012; Li 1995

residents.³⁰ This greater enforcement also increases incentives to hide children. Urban areas, due to their greater control and generally higher quality welfare systems, may also have greater barriers to registering children outside of the planned family, including adopted children.³¹ Urban families, with stricter enforcement, should have larger unregistered populations. Because of traditionally held preferences for sons, illegality of births should disproportionately affect daughters, with girls facing a gender penalty and therefore being registered at lower rates.

Figure 1 Percent of the population without *hukou* over time



Source: 2000 Census, Rural Migration defined as “Rural Migrant Labor” as measured by the Ministry of Agriculture³²

Localized management of citizenship through the hukou

One significant group of unregistered persons missing from the eight categories identified by the government as *hukou*-less, however, is children of migrants. During economic reform, more and more people, especially young women, migrated for economic opportunities leaving more and more people outside of their place of registration and creating greater barriers for children to get initially registered. Before the 1980s, almost no migration occurred in China. After the 1980s, “informal” migration, defined as migration without changing *hukou* status, increased as economic opportunities in cities and in coastal provinces increased and the government relaxed migration controls. While migration rates are not explicitly known, estimated rates skyrocketed in the 1990s (Figure 1). Estimates suggest the interprovincial migration rate from 1980 to 1984 was 0.0027, from 1985 to 1988 0.0043, and in the 2000 census, 5.49 per cent of the

³⁰ Li and Cooney 1993

³¹ Johnson 2016; 186

³² Chan 2009

population was living outside of their province of registration.³³ Labor migration for women increased during the 1990s and the average age of migrants decreased.³⁴ As women became more mobile, their children faced greater barriers to registration. With greater physical mobility came greater difficulty in effectively managing the *hukou* system as individuals' physical location and registration location decoupled.

Like national citizenship, rights to *hukou* are based on *jus sanguinis* rather than *jus soli* principles, where a child's *hukou* status is dependent on mother's *hukou* status and location.³⁵ *Hukou* registration, unlike other forms of identification such as the dossier and national ID card, is given at birth.³⁶ Parents are supposed to register their children within one month of birth,³⁷ although the cultural practice of waiting 100 days before celebrating a new birth may delay this initial registration. In many cities, registration of children older than three months requires additional paperwork and a separate registration process. Registration requires a birth certificate, family planning certificate (*zhunsheng zheng* 准生证), parents' *hukou* booklet and ID cards, parents' marriage certificates, and, in some industries, parents' work unit approval (*luohu danwei tongyi jieshou zhengming* 落户单位同意接受证明).³⁸

Migration makes this reporting and recording of children difficult.³⁹ Because status is inherited, women must return to their place of registration to formally register their children.⁴⁰ Before the 1980s, registering children born or living outside of their mothers' registration location was not a significant concern for local governments, because migration was severely controlled. After economic reform, however, migration took off as a necessary tool for development. While the *hukou* system relaxed enough to allow people to move, it did not reform with the economic system, meaning rights and entitlements did not move with people as they sought out economic opportunity, creating greater barriers to access to citizenship.

Local governments, however, lack the incentive to integrate populations. Allowing formal migration through *hukou* naturalization or granting *jus soli* citizenship for newborns would require the local government to expand their social welfare burden. With smaller formal populations, local governments generally have better performance

³³ Liang and White 1996, 2000 Census

³⁴ 2008 *Nongmingong lance diaocha baogao*

³⁵ Before 1999, the national regulations tied children's *hukou* status to mothers alone. After 1999, national regulations allowed children's status to follow mothers' or father's (Outstanding Issues of Current *Hukou* Management Work 1999)

³⁶ Dossier begin when a student enters school while the *shenfen zheng* is available when individuals turn sixteen, although there are exceptions (*Zhonghua renmin gongheguo jumin shenfen zheng tiaoli* (1985)).

³⁷ Merli 1998

³⁸ Regulations do vary by location. For example some locations do not require a marriage certificate because obtaining the family planning certificate requires a marriage certificate. Based on government websites, interviews with *hukou* police officers in large northern city and large southern city 2015.

³⁹ Zhang and Zhao 2006

⁴⁰ In some cases, city governments allow relatives to proxy for new parents to register children, but this practice remains relatively isolated. (Interview with *hukou* police officer in large southern city 2015) Before 1998, children were eligible for *hukou* status in the same location as their mother's. After 1998, a national policy opened up registration in either mother's or father's place of registration, although local adoption of this registration practice varied. (Outstanding Issues of Current *Hukou* Management Work 1999)

indicators.⁴¹ For example, the smaller the registered population, the larger GDP per capita appears.

While governments may wish to attract more labor for competitiveness, it is better to do so through high skilled labor recruitment rather than a general openness to populations moving in. Cities that have attracted the most migrants benefit from “outsourcing” education and pension programs. A migrant worker from Sichuan in Guangdong benefits Guangdong’s economy and puts a drain on Sichuan’s social programs, as the Sichuan government paid for the migrant’s education and will bear the cost of old-age care. Conversely, that same migrant’s home location in Sichuan lacks significant incentives to actively integrate migrant children to protect their welfare systems, as the economic benefits of the child’s parents are being exported to Guangdong.

There are additional reasons, beyond family planning and migration, as to why individuals do not have *hukou*. When individuals gain foreign residency, including residency in Hong Kong, Macau, or Taiwan, their original *hukou* registration can be canceled.⁴² Children born to mothers below the legal marriage age and children born too soon after older siblings are also considered out-of-plan children and can be denied registration.⁴³ Additionally, children born out of wedlock are not eligible for *hukou* upon birth, as, in most cities, *hukou* registration requires both parents’ household registration documents and marriage certificates. Breaking the One-Child Policy could also result in the mother losing her urban *hukou*.⁴⁴ Some localities also maintained rules against giving adopted children formal registration status,⁴⁵ highlighting the continued barriers to physical movement within the country and the localization of not only citizenship but also legal personhood.

Data and Variables

In order to analyze the relative impact of the two political determinants of registration, I employ logit models on a cross section sample of over 2.5 million children born before 2000 to estimate the impact of being born out-of-plan and being born to a migrant mother on probability of registration. Data used in this analysis are from a one per cent random sample of households collected during the 2000 census, which included basic demographic and registration data for all members of the household.⁴⁶ The sample includes 2.5 million children living with their mothers, where mothers identify no additional children living outside of the home.⁴⁷

As discussed above, underreporting of births is a significant issue.⁴⁸ Estimates suggest as many as 19 per cent of children between the ages of zero to five went

⁴¹ Chan and Wang 2008

⁴² Ho 2011

⁴³ Family planning policies often also have spacing requirements on the timing of second children. Approximately 0.04% of the total population do not have *hukou* because they held foreign residency. Merli and Raftery 2000, 2000 Census.

⁴⁴ Li 1995. In the census sample, mothers living with their children born out-of-plan do have a lower registration rate ($p > 0.00$) but the difference becomes insignificant once age and education are controlled for.

⁴⁵ Additionally, barriers to registration may be greater for registering adopted children, such as DNA proof that adopted children were not related to the adoptive parents and high fines. Johnson 2016

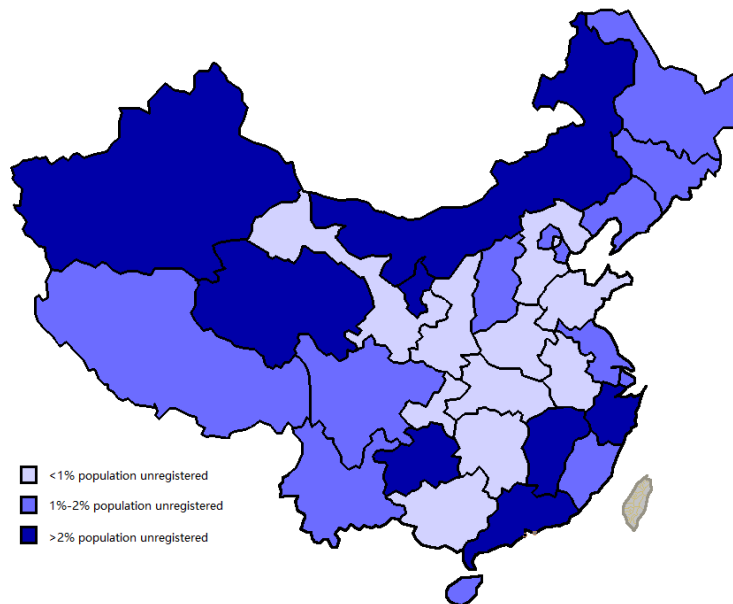
⁴⁶ The 1% sample was made available from the Bureau of Statistics for academic research.

⁴⁷ A detailed description of the sample requirements available in the appendix.

⁴⁸ Feeney and Yuan 1994; Goodkind 2011

unreported in the 2000 census, more than double the 1990 census.⁴⁹ It is presumed that almost all of the unreported children are unplanned and many are girls but little is known about the relationship between migration and unreported children or what per cent of unreported children are also unregistered.⁵⁰ It is not unreasonable to assume the majority of unreported individuals missing from the census are also unregistered. But without accurate data on registration rates of unreported children, estimates of the impact of the OCP on registration are strongly biased downward. Because of this bias, this analysis cannot provide an accurate quantification of family planning's impact on registration.

Figure 2 Regional variation in unregistered population percentage



Based on populations living in the province in 2000.

Overall trends, however, are identified across subpopulations and estimates can be seen as a lower bound estimate.

The key dependent variable is defined as having a *hukou* or not [0,1].⁵¹ Individuals without *hukou* are those who responded “pending” to the hukou registration location question.⁵² In the total census, there are 76,306 individuals who do not have

⁴⁹ Goodkind 2011

⁵⁰ Assumed because of fertility estimates and gender imbalances. Greenhalgh 2003

⁵¹ The census question asks for “*hukou* registration circumstance” and individuals without *hukou* are identified as those that respond “Pending.” Note this is different from individuals whose *hukou* is currently suspended because of work or study abroad with responses of “Currently live and work outside of the country, temporarily no *hukou*.” There are 593 (0.02%) respondents in the sample that fall into this category. They are dropped from the analysis.

⁵² The pending category includes people without *hukou* and individual in the process of changing *hukou* status, such as individuals who are transferring their old *hukou* status to their spouse's status when the census occurred, which would not be evaluated in this analysis. This should be minimal given the short duration of the period between cancelling a former *hukou* and registering the new one. Also given the sample focuses on children living with their parents, these forms of transfer should be less likely in the sample. The majority of respondents with *hukou* “pending,” instead, are individuals without *hukou* status on a more permanent time frame. Interview Municipal Government official in southern China, 2014.

hukou, which is approximately 0.65 per cent of the census sample, with significant variation across both space and time.⁵³

Figure 2 highlights the variation in registration rates across provinces. Hebei, the province surrounding Beijing, has the lowest rate of unregistered children at just 0.39 per cent. Conversely, both southern Guangdong and northwestern Xinjiang have rates over 3 per cent, with 3.22 per cent and 3.56 per cent unregistered respectively. This regional variation may be due to migration patterns: Guangdong and Zhejiang on the eastern coast are common migration destinations for industrialization while the central government encouraged migration of Han populations, the majority ethnic group in China, to the

Table 2 Percent of the population registered in the *hukou* system in the 2000 census

	Urban	Rural
Local	98.89% (CI: 98.86-98.92)	98.99% (CI: 98.97-99.00)
Migrant	94.77% (CI: 94.44-95.09)	91.50% (CI: 91.29-91.71)

All categories are statistically different ($p > 0.00$) based on two sample t-test results

ethnically diverse northwestern province of Xinjiang for decades. Because of this, province controls will be essential controls for the analysis.⁵⁴

The vast majority of individuals without *hukou* were born after 1970. In the final sample of children matched with their mothers, the unregistered population is 1.32 per cent (34,321). The 1980s saw a push for registration, as was necessary for the implementation of family planning policies. While there is a spike in the years leading up to the implementation of the OCP, the number of reported children without *hukou* status in the 1980s is relatively low (Figure 1). The clear trend during the 1990s is an increase in unregistered children. Below 1 per cent among children born in 1990, the number of unregistered children born in 1995 is 1.83 per cent and 7.67 per cent in 1999.⁵⁵

In the 2000 census, children born to local mothers are registered at a rate of 98.90 per cent while children born to migrant mothers are registered at a rate of 92.18 per cent, a statistically lower rate ($p > 0.00$). Descriptively, the impact of migration also appears to vary by *hukou* status: children born to rural migrant mothers have the lowest registration rates while children born to local rural mothers have the highest registration rates (Table 2). To measure the impact of mother's migration status, the key variable of interest is an indicator variable for mother being a migrant (*migrant mother*), where migrant is defined as a mother whose registration location is not located in the household's municipality (*dijishi* 地级市).

The other key political determinant of registration status is the legality of birth. Whether a child is born within family planning regulation is dependent on year of birth, mother's registration location, mother's household registration status, ethnicity, and birth order. Generally, there are three key policy types that fall under the umbrella of the One Child Policy: (1) strict one-child policy, where couples are only allowed one child

⁵³ The Bureau of Statistics and State Council's estimates of approximately 1% of the population without *hukou* is based on census estimates and their internal estimates of unreported births.

⁵⁴ The impact of provincial attributes on registration rates is beyond the scope of this analysis.

⁵⁵ While parents are supposed to register children within one month of birth, there are many institutional factors that may hinder this process. More than 22% of children born in 2000 lacked *hukou* at the time of the census. Children born in 2000 are excluded from this analysis because of the time lag necessary for obtaining a *hukou*.

(SOCP),⁵⁶ (2) one-and-a-half-child policy, where rural *hukou* holders are allowed a second child if their first born child is a daughter (OHCP),⁵⁷ and (3) two- and three-child policies, which allow for upwards of three children per couple (TCP).^{58,59} Under the SOCP, children with any older siblings are formally out-of-plan, as are children with more than two siblings under the TCP. The OHCP, formally recognized as a policy relaxation in 1984, allowed rural mothers whose first born child is a girl to legally have a second child, so second born children with an older brother are considered out-of-plan. Most provinces applied SOCP to urban populations, OHCP to rural populations, and TCP to ethnic minorities.⁶⁰ For this analysis, I identify illegally born children as *out-of-plan* children based on their family composition (number of reported older siblings), year of birth, mother's registration type (urban or rural) and location, and ethnicity (Han or minority).⁶¹

Given traditionally held preferences for sons,⁶² barriers to registration are assumed to disproportionately hurt daughters.⁶³ I explore the interaction between gender and illegal births by interacting the two indicator variables.

Important controls for this analysis include child's age at the time of the census, birth order, mother's demographics, and household income. Children born outside of family planning may be able to register after paying fees or bribes which mean the older the child is, the more chances the mother will have to register the child. Therefore, age of child is included in the analysis to capture the dynamic nature of registration.

Children with many older siblings may be less likely to be registered, in part because of the likelihood that higher order births are often out-of-plan.⁶⁴ Additionally, parents may be willing to pay the social burden fee for the first few children but less willing with higher order births, again decreasing registration rates for children with many siblings, therefore I include a birth-order control variable

⁵⁶ Urban areas were more likely to have strict one child policies with no exceptions: according to the China Health and Nutrition Community Survey in 1991, more than 90% of urban communities surveyed were allowed only one child with minimal exceptions Short and Zhai 1998. In the late 1990s, approximately 35% of the population lived under SOCP.

⁵⁷ The One-and-a-Half child policy began after 1984 and implementation varies by province. Local governments were allowed to relax the strict One-Child Policy to the One-and-a-Half Child policy and approximately 19 provinces chose to do so, although they did at varying times. Bongaarts and Greenhalgh 1985; Ebenstein 2010. Provincial level coding from Gu, Wang, Guo and Zhang 2007. In the late 1990s, approximately 53.6% of the population lived under the OHCP.

⁵⁸ Mostly ethnic minorities and populations living in border provinces qualified for two or three child policies. Approximately 11% of the population qualify for the TCP. Gu, Wang, Guo and Zhang 2007

⁵⁹ There are many more specific policy arrangements, such as the three child policy for certain rural couples who have children who have non-hereditary handicaps and the singleton policy where two only children are allowed to have two children. For a full overview see Gu, Wang, Guo and Zhang 2007

⁶⁰ Beijing, Tianjin, Shanghai, Jiangsu, Sichuan, and Chongqing apply the SOCP on both urban and rural populations and never implemented the OCHP. Hainan, Yunnan, Qinghai, Ningxia, and Xinjiang all allow rural populations to have two children. See Appendix Table A2 for full family planning policy breakdown by province and the years of OHCP implementation. Gu, Wang, Guo and Zhang 2007

⁶¹ Given that children born to unwed mothers and to mothers younger than marriage age (20) are not formally legal births, I include these births as out-of-plan births. As a robustness check, I separate this population out and run the regression with two indicators: one for illegality due to family planning policy and one due to mother age/marriage. The results do not change.

⁶² Banister 2004; Li and Cooney 1993; Loh and Remick 2015; Murphy 2003

⁶³ Banister 2004; Greenhalgh 2003; Li and Cooney 1993; Loh and Remick 2015

⁶⁴ Ebenstein 2010

Additional controls of interest include mother's demographic controls, date of birth and mother's education, as well as socio-economic status.⁶⁵ Income information is not collected in the census short form. To proxy for household income level, I include a categorical variable for house price as measured in the census [0-9]. Renters who do not include a housing price are coded as "0" for the reference category.⁶⁶ It is expected that housing price, as a proxy for income, will be positively correlated with registration rates, as wealthier families should have financial capital enough to pay fees for extra children, reducing incentives to hide children.

Results

Table 3 presents the primary models for analysis. Columns 1 and 2 present full sample analysis while columns 3-4 and 5-6 present rural and urban subsamples, respectively. The key determinant of registration status in the census sample is mother's migration status. Of all the covariates, mother's migration status has the largest impact on registration probability. The odds ratio presented in column 2 of Table 3 suggest that children born to migrant mothers in the total sample are 4.15 times more likely to be unregistered than registered ($1/.241=4.15$). This impact remains roughly constant across both rural and urban sub-populations, suggesting the migration penalty for registration is not simply a tax on rural migrants into the city, as is often assumed, but rather a systematic discrimination against all migrant populations.

The marginal effect of being born to a migrant mother is significant for the entire time frame (Figure 3). Moreover, the magnitude increases significantly for younger children: children born to migrant mothers in 1995 are 2.55 per cent less likely to be registered than those born to local mothers and children born in 1999 are approximately 5.73 per cent less likely to be registered.

It is possible that migration status only has a temporary impact on registration rates: it may be that children born after a mother arrives in a new location face barriers to registration, but, given enough time, they will all get registered when the mother eventually returns home. If this were the case, barriers to registration through the local administration of the *hukou* system would be relatively simple to address. Birth timing, i.e. before or after mother arrived in the location of the 2000 census, does not statistically impact registration rates. I narrowed the sample to children born between 1995 and 1999, a period for which we know when a migrant mother arrived in her current location. I re-run the models with the migrant category divided between children born before and after their mother migrated to the current location. As seen in Figure 4, children of migrants are less likely to be registered than local children regardless of the timing of their birth. The overall trend is for children born before mother migrated to be registered at lower rates than those born after, but the difference between the two groups are not statistically distinguishable from each other. This suggests the barriers faced by migrants are not

⁶⁵ Mother's demographics are included because, until 1999, national regulations allowed children to take their mother's *hukou* status and not their father's. As a robustness check, I re-ran the models with father's demographics. The results remain substantively the same.

⁶⁶ An alternative measurement strategy would be to drop renters from the sample—renters account for less than 9.13% of the sample and the rent price collected provides little information that can be substantively compared with housing costs. The results remain largely the same for this coding of the housing price variable.

purely based on physically being away from home for the birth of a child but are instead intrinsic to the management of the system as a whole.

Table 3: Logit Models Identifying the Impact of Migration and Family Planning on *Hukou* Registration

VARIABLES	(1) Full Sample: Coefficient	(2) Full Sample: Odds Ratio	(3) Rural: Coefficient	(4) Rural: Odds Ratio	(5) Urban: Coefficient	(6) Urban: Odds Ratio
Migrant Mother	-1.425*** (0.217)	0.241*** (0.0521)	-1.437*** (0.227)	0.238*** (0.0540)	-1.284*** (0.177)	0.277*** (0.0491)
Out-of-Plan	-0.116** (0.0489)	0.891** (0.0436)	-0.0269 (0.0554)	0.973 (0.0539)	-0.490*** (0.144)	0.613*** (0.0882)
Female	-0.196*** (0.0225)	0.822*** (0.0185)	-0.203*** (0.0192)	0.817*** (0.0156)	-0.185*** (0.0584)	0.831*** (0.0485)
Age	0.225*** (0.0125)	1.252*** (0.0157)	0.234*** (0.0130)	1.263*** (0.0165)	0.192*** (0.0145)	1.211*** (0.0176)
Birth Order	-0.193*** (0.0300)	0.824*** (0.0247)	-0.207*** (0.0294)	0.813*** (0.0239)	-0.281*** (0.0732)	0.755*** (0.0553)
Mother Urban HK	0.0512 (0.103)	1.053 (0.108)				
House Price	0.0348* (0.0191)	1.035* (0.0197)	0.0254 (0.0221)	1.026 (0.0227)	0.0493*** (0.0158)	1.051*** (0.0166)
Mother DOB	0.00304 (0.00949)	1.003 (0.00952)	-0.000416 (0.0101)	1.000 (0.0101)	0.0184** (0.00796)	1.019** (0.00811)
Mother Education	0.173*** (0.0228)	1.189*** (0.0271)	0.117*** (0.0306)	1.124*** (0.0344)	0.288*** (0.0241)	1.334*** (0.0322)
Constant	-3.473 (18.68)	0.0310 (0.580)	3.295 (19.82)	26.97 (534.5)	-34.45** (15.44)	0** (0)
Observations	2,548,842	2,548,842	2,071,371	2,071,371	477,471	477,471
Province Controls	Yes	Yes	Yes	Yes	Yes	Yes
Family Planning Controls	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.162	0.162	0.175	0.175	0.126	0.126

Robust standard errors clustered at the province in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Family Planning Policy Controls include indicator variables for the policy (OCP, OHCP, TCP) children were born under.

Figure 3 Marginal Effect of Migration on Hukou Registration by birth year

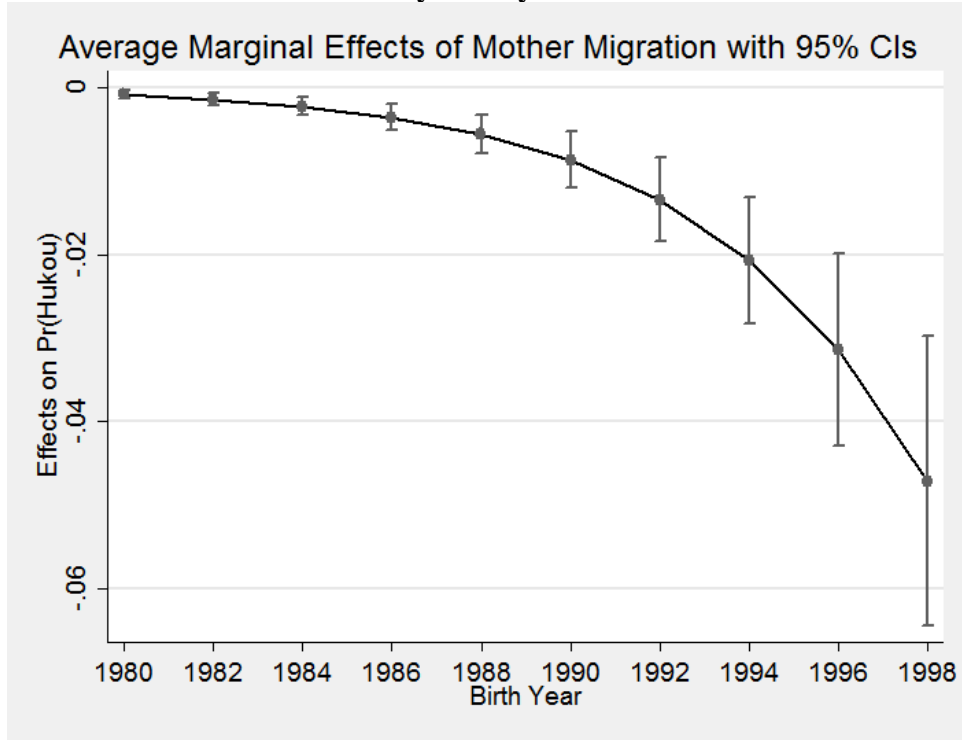


Figure 4 Predictive Probabilities of Being Registered by Local and Migrant

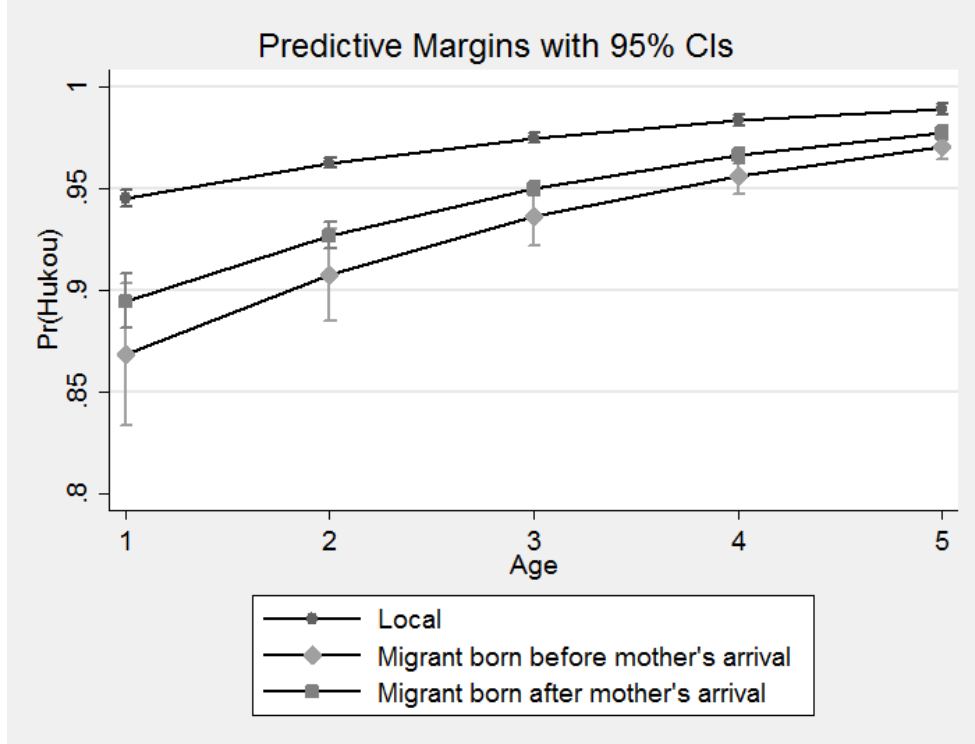
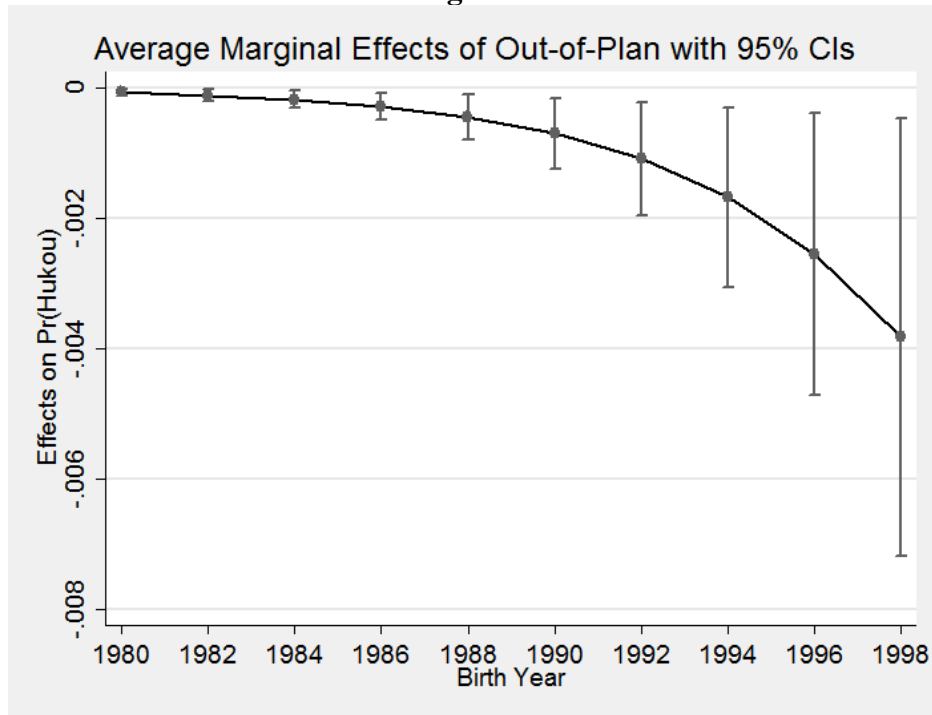


Figure 5



Even with under-reporting bias, the census sample does show a negative impact of being born out-of-plan. In the full sample, unplanned children were 1.12 times more likely to be unregistered than registered (Table 3 Column 2).⁶⁷ The influence of being unplanned on registration, however, is not equal for all populations. In the rural population, defined by rural *hukou* registration, birth legality is not correlated with registration status. In urban populations, however, the marginal effect of being born out-of-plan is 0.36 per cent, meaning the probability of being registered is 0.36 per cent lower for children born out of plan.⁶⁸

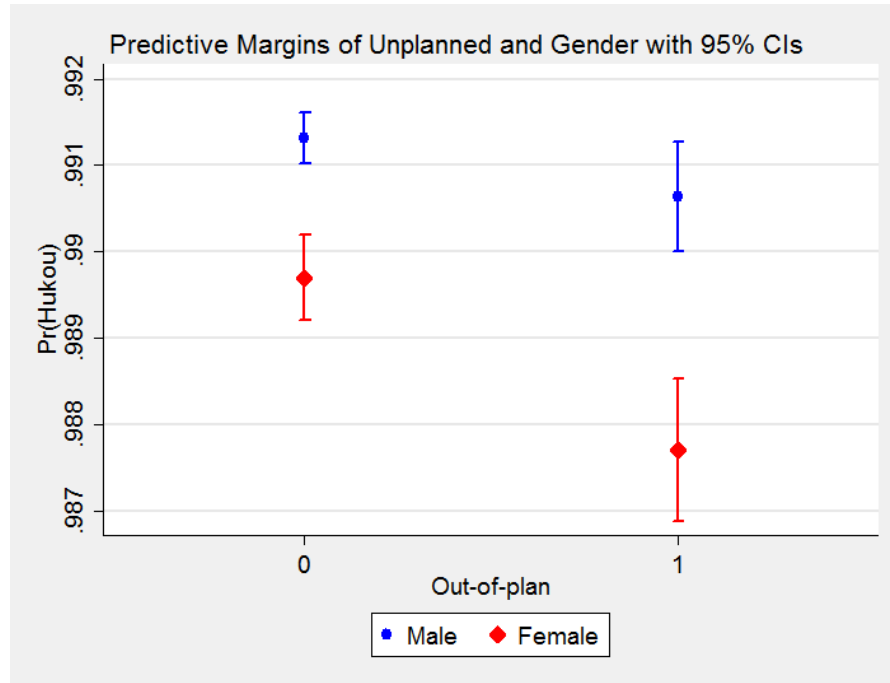
There is a slight variation in the impact of out-of-plan status on registration over birth year for the full sample. Figure 5 displays the marginal impact of out-of-plan over birth year calculated from the full sample model (Table 3 Column 1). While the negative impact increases over time, the variance also increases over time, as depicted by the growing confidence interval in later birth years. This suggests variation in family planning policy enforcement across time and space.

Being born out-of-plan in the rural sub-sample does not lead to lower registration probability (Table 3, column 3), but does lead to lower registration in the urban population. The difference in impact of out-of-plan births by urban/rural registration aligns with our understanding of the implementation of family planning policies: the same forces that led to stricter policy enforcement in urban policies has led to reduced *hukou* registration rates. The larger impact of out-of-plan births on registration in the urban area also has a significant impact on government services: traditionally, urban *hukou* holders get access to significantly better services from the government than rural *hukou* holders, suggesting children born to urban parents are losing out on more benefits by not being registered.

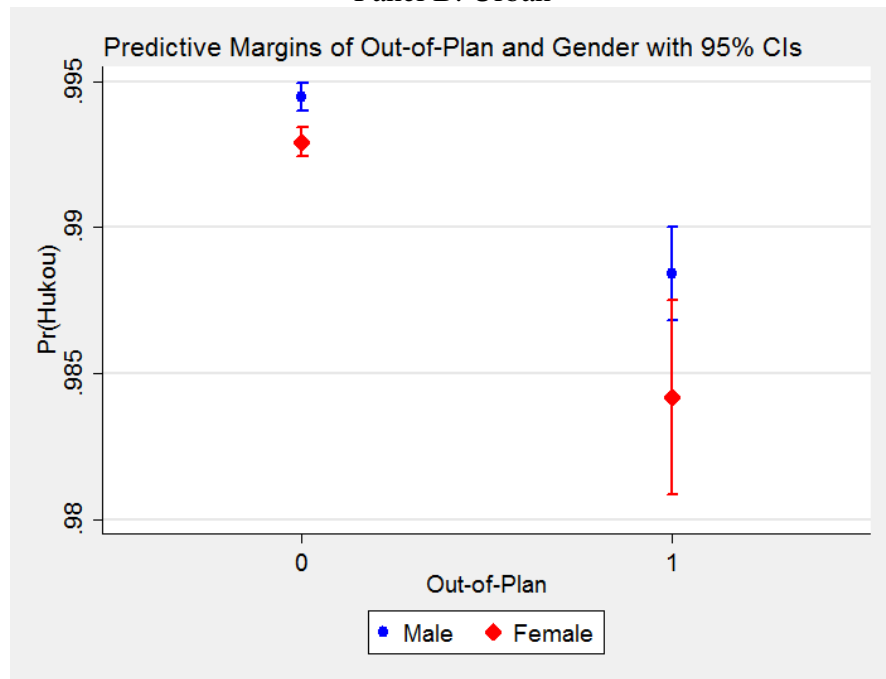
⁶⁷ Calculated based on the odds ratio, which estimates the odds that one outcome (being registered) compared to the alternative (not being registered). Given the odds ratio below 1, the probability of being unregistered is equal to $1/0.891=1.12$.

⁶⁸ Marginal effect calculated from column 5 of Table 1

Figure 6: Predictive Probabilities of Registration by Out-of-Plan and Gender
 Panel A: Rural



Panel B: Urban



Being born out-of-plan does negatively impact *hukou* registration for girls in rural areas. Researchers often discuss the issue of missing girls and there is an assumed gender penalty for girls for both reporting and registering.⁶⁹ To explore this, I re-run the models with an interaction between gender and the out-of-plan indicator (table not shown). Figure 6, presenting the

⁶⁹ Goodkind 2011; Greenhalgh 2003

predicted probability of registration, shows that, in rural populations (Panel A) there is a gender penalty of registration both overall and in conjunction with the impact of birth legality. Daughters born out-of-plan are registered at a lower rate than daughters born in-plan (-0.20% lower). Out-of-plan sons are also registered at a lower rate, but the difference is not statistically significant. In urban populations, however, the gender penalty is not nearly as significant for children born out-of-plan (Panel B). While daughters are registered at lower rates than sons, there is only minimal difference between the two genders in the out-of-plan population.

Limitations

The One-Child Policy incentivizes both officials and individuals to underreport births, especially those in violation of the One-Child Policy, which means estimates for out-of-plan children are underestimates of the true impact of family planning policies.⁷⁰ One common mode of underreporting children is parents sending unregistered first born children to live with relatives, such as grandparents, thus avoiding fees for the second child. These instances are not observed in the sample used here. Likewise, children both unregistered and not enumerated in the census are not captured in this analysis. Given that little is known about these uncounted people, conclusions are limited to the unregistered population enumerated in the census. The study identifies systematic patterns that are likely to be greater in reality.

While children of migrants are much less likely to be registered, there are more children born out-of-plan than children born to migrants. Even though in 2000 at the time of the census there were approximately 100 million migrants, of which approximately 39 per cent were women,⁷¹ the discrimination placed on women and their children when not in their place of registration led many women to reduce fertility while migrating and opt instead to return home before starting a family.⁷² Family planning policies are likely to have a larger overall impact given the size of the out-of-plan population, but children of migrants also face significant discrimination in the most basic forms of gaining legal presence in the eyes of the state.

Additionally, it is possible that individuals' *hukou* status changed between having children and the 2000 census. If a woman gave birth in one province then changed *hukou* location or status, she may have faced different family planning regulations than measured here. During the 1980s and early 1990s, however, the *hukou* system was highly regulated and opportunities to change one's status were few,⁷³ suggesting measurement error of sorting families by *hukou*-based policy should be minimal.

Discussion and Conclusions

As recognized by numerous scholars, China's citizenship regime involves a complicated web of political institutions that create varying classes of citizenship. Individuals without local urban *hukou* are second-class citizens while those without any registration status are non-citizens in their own country.

The official government explanation of the unregistered population is politically driven local officials who deny children born outside of family planning policies the right to registration, as low fertility rates reflect well on local officials. This analysis demonstrates that all children born out-of-plan in urban areas suffer "illegality" discrimination, while only daughters born in

⁷⁰ Merli 1998

⁷¹ Based on government tabulations of individuals registered for temporary living permits. Quanguo Zanzhu 2001

⁷² Jacka and Gaetano 2004; Zhang 1998

⁷³ Chan and Buckingham 2008; Li, Yi and Zhang 2011

rural areas suffer if born out-of-plan. While the impact of out-of-plan birth on registration probability provided here is no doubt an underestimate of the total impact of family planning policies due to birth miss-reporting, clear trends are identified.

Overlooked yet critical to understanding the determinants of registration is the management of the hukou system itself. Because rights are almost fully localized in China, movement outside of one's place of registration blocks access to rights, including the ability to pass citizenship identity on to one's children. Local officials both in migrant sending and receiving areas lack the incentive to register children of migrants, as larger populations equate to a larger social welfare burden and both areas benefit from outsourcing education and health services for children. While cities may wish to encourage the right kind of migration of targeted labor groups, this incentive would not begin until after human capital investment through education and early life healthcare. Cities benefit from shirking responsibility for providing education and healthcare for younger children and later reaping the labor benefits in adulthood. This study demonstrates that, children born to migrant mothers, regardless of whether they were born before or after mother's latest move, are approximately four times more likely to be unregistered than registered. Even if mothers are able to register their children later through the paying of bribes or social fees, being unregistered at a young age means forgoing government provided health care services, such as vaccines, and early childhood education opportunities, creating further socio-economic costs.

This discrimination against mobile populations is not isolated to rural populations, nor is it gender specific. The substantial, consistent, and broadly identified impact of migration on reducing registration probability indicates a systematic problem within the hukou system itself, that will persist until significant reforms dismantle the foundational concept upon which the hukou system is built: the localization of citizenship.

The state focus on family planning as the culprit for the unregistered is unsurprising. The fundamental blame falls to individuals: both individuals choosing to have extra children and local level officials who implement deleterious restrictions on registration. The disregard of migration as a determinant of the unregistered phenomenon is a repudiation of the consequences of the state's own actions. Economic policies encourage and facilitate migration but do not bureaucratically resolve unintended consequences of the state's own policies.

The implications from this research point to three areas for further research. First, as the unregistered population gains greater attention in systematic research, future research should explore the rates of registration in relation to populations not reported in the census. Without a better understanding of the relationship between reporting and registering it is difficult to specifically quantify the relative impacts of the political determinants of registration. Second, which barriers are easier to overcome for registration later in childhood deserves greater attention to determine concrete policies to reduce the detrimental impact of local management of the household registration system. Finally, future research should explore the impact of not being registered on socio-economic outcomes for these populations, particularly the cost of missing early-life health services such as vaccination programs and early childhood education on later life outcomes.

Appendix

Children are identified by their relationship with the head of household. Any relationship outside of "child of head of household" is excluded because other relationships lack accurate family data necessary for analysis including sibling information and mother fertility history. Mother's number of children is collected for women between the ages of 15 and 50.

Because sibling information is necessary to identify legality of birth, I exclude households where the mother's⁷⁴ reported number of children does not match the number of children in the household. I am able to match 82.96 per cent of children born after 1963 with mothers in the sample. Children whose mothers are identified as born before 1950 and children born before 1963 are excluded from the analysis because mother fertility data is not reliable.

⁷⁴ Mother is identified as either the female head of household or female spouse of head of household.

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