Individual vs. Social Motives in Identity Choice:

Theory and Evidence from China*

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Abstract

This paper provides a framework to study how individual and social motives shape identity choice and applies it to the ethnic choice of children in ethnically mixed marriages. The model highlights the interaction of material benefits, identity costs, and social reputations. It is consistent with two motivating facts for ethnic choices in China, and also delivers a set of auxiliary predictions. The empirical tests on Chinese microdata find support for these predictions. In particular, social motives significantly crowd in changes in material motives in some localities, and crowd out the same changes in other localities. These effects are quantitatively important and statistically robust. We also discuss various alternative forces such as bargaining, which do shed light on the pattern of ethnic choices but cannot explain our main finding on the interplay between individual material incentives and social motives.

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1 Introduction

In this paper, we provide a theoretical framework to analyze how material benefits, intrinsic costs, and social norms interact in shaping the choice of ethnic identity. Specifically, we study how parents in ethnically mixed marriages choose the ethnicity of their children. Confronting the model predictions with microdata from Chinese censuses, we find robust empirical support that social motives strongly modify the effects of individual motives on choice. These results are certainly quite specific to ethnicity choices in China, but they also speak to a more general set of issues in the social sciences.

In theoretical and empirical work, economists typically consider how *individual*, most often material, motives shape individual decisions. By contrast, sociologists and social psychologists mainly consider how *social* motives shape individual decisions. To caricature and quip: economists still think about how individual decisions drive social outcomes, while sociologists still think about how social outcomes drive individual decisions. So what, the reader may ask – these approaches may both be valuable and reflect an effective division of labor in the social sciences. Perhaps so, but important issues also risk falling in the cracks between different disciplines.[1]

Interacting individual and social motives One such issue is the interaction between individual and social motives. It is easy to think about individual economic, political or social choices in which both individual and social motives are important: e.g., identity choices, tax compliance, political participation, and fertility decisions. Suppose the government intervenes to encourage a certain choice, by modifying some individual motive that it can influence. Do the social motives help or hinder that intervention? Put differently, are the stronger individual motives crowded in or crowded out by social motives?

We do not know too much about this general question, at least not empirically. One reason is that most analyses of individual and social motives assume the answer *a priori*. Suppose that taking a certain action for material gain is not perceived as a prosocial choice. One can then assume that the stigma of doing so decreases if more individuals break the norm. This may be reasonable, but directly postulates that individual decisions are complements such that social motives always crowd in individual motives. By assumption, it misses the possibility that not pursuing the material benefits also becomes more honorable when fewer individuals are making the prosocial choice. If the latter mechanism dominates, social motives may crowd out material benefits.[2]

[1] Of course, there is a growing literature in economics on individual choices and social interactions. See e.g., Brock and Durlauf (2001) and Blume et al (2011) for discussions of the general issues of the economics and econometrics of social spillovers in that literature. There is also a related (and older) literature in sociology, called economic sociology. See Smelser and Swedberg (2005) for an exhaustive survey. To the best of our knowledge, none of these literatures have addressed the general issue we focus on here, namely the how individual and social motives interact to shape individual choices.

[2] Field or lab experiments have documented crowding-out like effects in different contexts. One example is Gneezy and Rustichini's (2000) study of fines for late pickup in Israeli daycare centers, another is Fehr and List's (2004) study of how fines may crowd out voluntary contributions. See Gneezy, Meier and Rey-Biel (2011) for an

To better understand the different possibilities, we extend a more general framework first formalized in Benabou and Tirole (2011), which allows for both complementarity and substitutability in individual decisions. In particular, this framework recognizes that there may not only be a social stigma associated with breaking a prevailing social norm, but also a social esteem associated with following it. The interaction between stigma and esteem, given the behavior of others in a peer group, decides whether individual decisions are substitutes or complements. This way, the theory gives us either crowding out or crowding in under identifiable circumstances.

Ethnic choices in China Armed with this theory, our empirical question is how social attitudes and government policy interventions jointly shape ethnic choices in China. This is an interesting testing ground when it comes to government policies and family choices in the realm of ethnicity. A multiethnic society with 55 officially recognized ethnicities beyond the dominant Han (about 91.5% of the population), China is still relatively homogenous despite some ethnic tensions with occasional riots in Tibet and Xinjiang. Meanwhile, the distribution of over 100 million minority people of different ethnicities are quite dispersed across the country's regions: the combined share of all minorities ranges from 0.3% in Jiangxi province to 94% in Tibet. Also, national and provincial governments have made policy interventions that give favors to minorities in terms of family planning and education. Moreover, mixed ethnic couples are free to choose whichever of their two ethnicities for their children at birth and we can observe these choices at the individual level in China's micro data.

Two facts For shorthand notation, we refer to a mixed couple with a Han man and a minority woman as a Han-Minority family (or couple) and that with a minority man and a Han woman as a Minority-Han family (couple) throughout the paper. Two facts on the ethnicity of children stand out from both aggregate and individual-level data.[3] One fact is:

F1 *The propensity to choose minority identity for children is much higher in Minority-Han families than that in Han-Minority families. Yet, the propensity to choose an ethnicity different than the father's is much higher in Han-Minority families.*

Figure 1, panel (a) plots this probability over time, by five-year birth cohorts for the two types of mixed marriages, in the aggregate data. On average, the probability of having minority children in Minority-Han and Han-Minority families are 94% and 47%, respectively. Naturally, these aggregate patterns can be confounded by regional characteristics and time trends. However, as shown in Appendix Table A1, this pattern and the magnitude of difference also hold at the individual level, when we control for prefecture fixed effects, birth year fixed effects and provincial-specific trends (province fixed effects times birth year).[4] The second fact is:

overview.

[3] We use the 1982, 1990, 2000 censuses and the 2005 mini-census. Our analysis focuses on the children born between 1970 and 2005. See Section 4 for more detail on data structure and availability.

[4] Column (1) in Table A1 compares the probability of minority for a child in Minority-Han families and that for a child in Han-Minority families. Similar to the aggregate pattern, the difference is around 47 percentage

F2 *The share of minority children in mixed marriages is increasing in Han-Minority families after 1980.*

This pattern is clearly shown by panel (a) of Figure 1. At the aggregate level, average minority identity among the children in Han-Minority families is 41% in cohorts born before 1980 but 49% in cohorts born after 1980. Panel (b) further shows that this pattern holds at the individual level (after controlling for prefecture fixed effects and provincial-specific trends).[5] Differently, we observe little change in Minority-Han families. There seems to a slight decrease in the average share of minority children at the aggregate level but the change is not significant at the individual level once we control for time trends (see the dashed line in panel (b)).

Analysis and main findings Against this background, our paper studies ethnic choices in China in theory and data. Theoretically, we set up a model for the choice of ethnicity for children that is consistent with F1-F2. Building on Benabou and Tirole (2011), we study the interplay between individual and social motives. Mixed couples thus make decisions on their children's ethnicity based on three interacting motives: material benefits (tied to policies favoring minorities), individual intrinsic costs (tied to choosing a different ethnicity than the expectation of society), and social reputations (tied to choices by other mixed couples in the same peer group). Having shown that the model implies facts F1-F2, we derive a set of new predictions that can be empirically tested with Chinese microdata.

Consistent with our model, there is little variation in the ethnicity of children in Minority-Han families. Therefore, our empirical focus is on the ethnicity of children in Han-Minority families. The most important new prediction is that the effect of higher material benefits should be larger in regions and peer groups where the initial share of minority children is smaller, because individual motives driven by material benefits are crowded in rather than crowded out by social motives.

In our baseline estimation, we employ different measures of ethnic policies across China's provinces over time to measure material benefits and use the ethnic choices in earlier cohorts (born in 1970-74) in the same prefecture (a lower administrative level under provinces) to define the initial share. We document that ethnic policies are indeed associated with an increase of minority children in Han-Minority families. To examine the predicted interaction between individual and social motives, we ask if the effect of ethnic policies is larger in prefectures with a smaller share of minority children in Han-minority families. Using a differences-in-differences method, we confirm the predicted difference, and its statistical and quantitative significance. The result is robust to statistical checks for pre-trends, to alternative definitions of peer groups, and to ruling out possible biases from migration. To the best of our knowledge, no earlier

points. Columns (2) and (3) present the results after including prefecture fixed effects and birth year fixed effects. Column (4) further allows for provincial-specific trends. The estimates are very similar to those in column (1).

[5] Appendix Table A2 presents estimation results at the individual level. Columns (1)-(3) show the results for Han-Minority families and columns (4)-(6) for Minority-Han families. The results in columns (3) and (6) are visualized by the solid line and the dashed line in panel (b) of Figure 1.

empirical work – on this topic or others – arrives at such results regarding the interaction between individual and social motives.

Auxiliary findings We also derive two additional theoretical predictions, which we take as sanity checks on the model that delivers our main prediction. One concerns a heterogeneous effect of material benefits across different minorities, and the other concerns the interaction effects between materials benefits and intrinsic identity costs. Exploring information on differential ethnic policies, gender of children, as well as religion, we find that these predictions too are supported by the data.

Alternative explanations It is important to consider alternative explanations for the empirical patterns in the data. We discuss theoretical and empirical alternatives – different preference specifications, changing bargaining power of women, different specifications of social reputations (or peer groups), endogenous mixed marriages, a kind of censoring, and changes in the number of children – in some detail. While we find that some of these alternatives may contribute to the changing ethnicity of children of mixed couples, as summarized in F1 and F2, none of them change our main empirical results on the interaction between individual and social motives.

Relations to existing research Our study provides a new perspective to existing studies of identity choice. Sociologists and political scientists have contributed to understanding ethnic identity earlier than economists.[6] The different determinants of identity investigated by existing studies can be roughly categorized into the role of social and intrinsic motives in supporting persistent choices (Akerlof and Kranton 2000, Bisin and Verdier 2000, Bisin, Topa and Verdier 2001, Fernandez and Fogli 2006), or the effect of material incentives in providing individual motives for identity change (Botticini and Eckstein 2007, Cassan 2013, Nix and Qian 2015).[7] As far as we know, however, there is no empirical research based on individual-level data on the interplay between individual and social motives when identity is a choice.

Our findings add to the few existing studies of ethnicity in China by sociologists. Guo and Li (2008) document a pattern similar to F1. Relying on the 1-percent sample of the 2000 census and treating both types of mixed marriages equally, they find an average probability of having a minority child more than one half, and argue that this raises the minority population share over time. To the best of our knowledge, no existing research has systematically analyzed ethnic decisions in China from a rational-choice perspective. Our paper tries to fill the gap. The main variables we explore to test our theory and alternatives to it – such as the rollout of one-child policy and sex ratios – have been widely used in other contexts (Ebenstein 2010, Wei and Zhang 2011, Edlund et al. 2013).

[6] We will not give a thorough review of this literature. See Bates (1974) and Vail (1989) for pioneering research on the role of ethnic identity and tribalism in Africa.

[7] Between these two lines, a few studies investigate the historical determinants of ethnicity (see Michalopoulos (2012) for an exmample). Such studies also argue for persistance of ethnicity even though the determinants are generally related to material incentives.

Existing studies have argued that ethnic diversity plays an important role in economic development (e.g., Alesina and La Ferrara 2005). As just mentioned, political scientists have studied how identification with ethnic groups became an important way to channel claims to resources in the new postcolonial nations in Africa. While our focus is on ethnic choices rather than the economic and political consequences of ethnic choices, our findings may shed lights on the political economy of China's ethnicities. As realized by scholars, preferential policies for ethnic minorities are intended to reinforce the legitimacy of the regime among minorities (Sautman 1998).[8] By asking how individuals respond to the preferential policies, we provide a micro perspective on this broad political economy issue.

Methodologically, our paper also contributes to the literature on the crowding-in or crowding-out effect of social motives in contexts beyond identity choices.[9] In our study, we do not decide on this issue *a priori* and allow for both possibilities. The method we suggest to estimate the interaction of individual and social motives can also be applied to other individual choices in the economic, political or social arena.[10]

Outline of the paper The next section describes the relevant institutional background to our study. Section 3 formulates our model and spells out its predictions. Section 4 discusses which data can be used to test them. Section 5 confronts the main prediction on the interaction between individual and social motives with data. Section 6 tests two additional predictions of the model. Section 7 discusses alternative explanations for the patterns in the data and whether these explanations drive our main result. Finally, Section 8 provides a brief conclusion. To save space, some additional modeling and estimation results are relegated to a Web Appendix.

2 Background

China has 56 ethnic groups, the dominant Han plus 55 minorities. As of 2000, the combined population of minority groups stood at about 106 million, 8.5% of the total mainland population. The 55 minority groups vary widely in size. With a population of more than 15 million (in 2000), the Zhuang is the largest one and the Lhoha, with only 2,965, the smallest. Minority groups also vary greatly in culture, spoken language and religious practice – 53 minority groups speak languages of their own, 23 have their own written language, 10 groups are predominantly Muslim, and eight follow Tibetan Buddhism. Some minority groups, like the Uighurs, look physically very different from Han Chinese while other groups look broadly similar to the Han.

[8] Sautman (1998) discusses why China's ethnic policies represent a case that does not confirm to the hypothesis of Thomas Sowell and other scholars that affirmative action everywhere creates inter-ethnic tensions.

[9] See Bowles and Polania-Reyes (2012) for a thorough survey of fifty experimental studies that document that economic incentives and social preferences are substitutes or complements in different experiments.

[10] For instance, Besley, Jensen and Persson (2015) apply an extension of the Benabou-Tirole model to derive predictions for an empirical study of the evasion from local property taxes in the UK. Joensen and Skyt Nielsen (2015) use such a model to analyze the choice of Math and Science majors among girls and boys in Denmark.

2.1 Benefits and Costs of a Minority Child

Anecdotal evidence Little research exists on ethnic choices for children in China. However, one finds numerous discussions online among parents, reflecting the benefits and costs of choosing ethnicity for their children.

One example of a suggestive discussion [in our own translation from Chinese] appears at the website babytree.com (see Appendix Figure A1 for the original discussions):

> *Anonymous* asked: "If the father is a Han and the mother is a minority, could the child be a minority?"
>
> *Linyibaobeixuan* answered: "Generally should follow the father's. But following the mother's has the benefits of ethnic favors."
>
> *Yuer2011* answered: "The child usually follows the father's ethnicity. It is also fine if you insist on following the mother's."
>
> *Sankouzhijiatu* answered: "The child should follow the father's ethnicity. Only the children of a live-in husband will follow the mother's."
>
> *Xixi1011* answered: "You can follow the mother's. A minority has the option of having a second child."

This dialog suggests that material benefits due to ethnic policies, especially the option of having a second child once a minority child grows up, are considered motives for choosing minority identity. The costs of having a minority child are primarily social and intrinsic: the prosocial norm is that children follow the fathers' ethnicity and it is costly for a Han father to have a minority child. For instance, a Han man with a minority child is considered of lower status – as the wife usually goes to live in the husband's family, only lower-status men will consider becoming live-in husbands.

Another illustrative discussion [also in our own translation from Chinese] is found at the website jzb.com (the meaning of jzb in Chinese is parents' helper):[11]

> *Zhongermen* said: "I went to register the birth of my child a while ago. I am a Han man and my wife is a minority. I told the police that I want my child to be a Han. The police kindly suggested that I should choose minority for the child. She said that one score lower implies an extra playground of competitors in the high-school entrance exam and that I should be responsible for my child's future. But I insisted on choosing Han in the end. I hope that my child's future will reply on his own ability, not ethnic favors."
>
> *fh2315* remarked: "Choosing minority is not a big deal if the minority does not practice religion."
>
> *hello_friend* remarked: "You will regret at the time of the high-school exam! You'd better be more realistic!"

[11] http://jzb.com/bbs/thread-335421-1-1.html?action=printable

claetitia remarked: "Well, if you despise the ethnic favor for extra scores, minorities can at least have more children!"

donna2276 remarked: "First, I admire you. Many people would feel ashamed of their choices. Second, I would like to point out your mistake. Many children fail the exam due to one score less. Do you want your kid to fail?"

Once again, these arguments reflect the tradeoff between material individual benefits and intrinsic or social costs when choosing ethnic identity for children. Particularly, the Han man choosing Han for his child in this example believes that his behavior is honorable. Next, we describe the ethnic policies embodied in these discussions.

Ethnic policies No legal barriers exist for mixed marriages between any two ethnic groups. At the birth of their child, a mixed married couple has to choose one of their own ethnicities for their children. Along with the name and the birth date, one's ethnic identity appears in almost every context, including the birth certificate and all the forms which have to be filled out at school. As a result, the chosen ethnicity can be thought of as public information to peers.[12] Choosing minority identity brings both benefits and costs for the child, and hence indirectly for the parents.[13]

The benefit side comes from various ethnic policies. Since the beginning of the People's Republic of China (1949-), the government has employed different policies to the benefit of ethnic minorities to promote positive Han-minority relationship. Such policies exist in three areas:

(i) *Family planning.* When family-planning policies started in the 1960s, minorities were more favorably treated than the Han majority. Over time, there has also been some regional variation in the treatment of different minorities. As detailed in Section 4, family-planning policies became much more stringent in the years around 1980 with the implementation of the one-child policy, rendering the advantages of minorities more salient. Relaxed family planning is the most sought-after benefit by China's minorities (Sautman 1998).

(ii) *Entrance to higher education.* Since the restoration of entrance exams in 1977, minorities have enjoyed additional points in the exams that decide upon the entry to different levels of education, especially high school and college. These benefits also vary by province.

(iii) *Employment.* The national ethnic policy states that minorities should have favorable treatment in employment. However, explicit quotas for minority employment are rare. As mi-

[12] As already suggested by the data, ethnic choice is more than labelling. If this choice were purely a label, parents would all have chosen minority for the preferential policies. Among the very few studies on the socialization of children in mixed marriage, Li (2008) interviews a small number of children in Xinjiang and documents a correlation between ethnic choice and the socialization of children.

[13] According to government regulation, couples with the same ethnicity cannot choose any other ethnicity for their children. Regarding switches later in life, children from mixed marriages can apply to change their ethnicities given at birth before the age of 20. However, the applications have to be made by the parents for those younger than 18. Since these applications are costly and approval is uncertain, the impact of policy interventions on switches later in life should be much less important than the ethnicity choices by parents at the birth of their children.

norities can be discriminated in employment, it is unclear that this policy would make people tend to choose minority identity for children. For instance, Hasmath and Ho (2015) find that minorities perceive that they are at a disadvantage in the job search process, even though estimated Han-minority wage differentials demonstrate little evidence for ethnic minority disadvantages.

The cost side of having minority children has two aspects. First, there may be some discrimination against a minority in the labor market, even for people with similar educational background. However, this cost may be less critical since being a minority increases the chance of receiving higher education due to the ethnic policies. At the birth of a child, these benefits are likely to dominate the potential discrimination costs in the labor market. This is consistent with the anecdotal discussions, where discrimination in the labor market is never mentioned when the parents are making ethnicity choices for newborns. It is also consistent with the fact that almost all Minority-Han couples choose minority for their children – one would expect to see more Han children if discrimination plays a dominant role. In any case, our model below has a basic level of net material benefits, which can be positive or negative; what matters for our predictions is the increase in these net benefits in connection with the family-planning (and education) policies.

As highlighted by the anecdotal discussions, a main disadvantage of having a minority child is an identity cost, especially for Han fathers. In a patriarchal society such as China, children are expected to follow the ethnicity and family name of the father.[14] Additionally, the identity cost are likely to be affected by prevailing social norm, and the choices of a relevant peer group. Therefore, a Han man will face a trade-off between material benefits (on behalf of the child) and social status. The problem for a minority man is rather different, as having a minority child is the main expectation of society.

Based on these considerations, our model incorporates three different motives: individual material benefits, intrinsic benefits or costs, and social reputations. We will also build in the asymmetry for Han and minority men. Before presenting the model, we describe the patterns of mixed marriages and number of children across marriages that can affect how we set up our model.

2.2 Mixed Marriages and Number of Children

Marriage patterns To be sure, entering into a mixed marriage is a subject of choice. Among married couples appearing in all four censuses, 17% of minority men marry Han women, while 18% of minority women marry Han men. This gender difference is much less striking than the corresponding difference in US black-white marriages, where 6% of black men marry white women while 2.9% of black women marry white men around 2000 (Fryer, 2007).

Appendix Table A3 shows patterns of four types of marriages, as well as education and age differences between husband and wife. Compared with couples of the same ethnicity, education

[14] The link between family name and ethnicity is not very close for most of China's ethnic minorities. Therefore, it is difficult to build an empirical strategy upon family names as a source of variation.

differences among mixed couples are slightly lower, suggesting a bit more assortative matching in the education dimension. The age difference between husband and wife does not differ substantively across marriage types.

The probability of mixed marriage has changed over time and also varies across regions. For instance, the probability to marry a Han man for minority women born in the 1940s (and hence married in the 1960s) was 15%, whereas it went up to 21% for minority women born in the 1970s (and hence married in the 1990s). This hike is likely correlated with ethnic policies favoring minority children – no specific policy favors mixed marriages as such during the period we study, but the benefits for children affect the "continuation value" for mixed marriages. Huang and Zhou (2015) argue that the one-child policy has raised the probability of mixed marriages in China. An increase in mixed couples induced by ethnic policies cannot explain the increase of minority children in Han-Minority families, however, unless the new couples are more likely to choose minority for their children.

Our approach focuses on the choice of ethnicity for the children, given an earlier choice to enter into a mixed marriage. This is reasonable because – at least in China – marriage choices are generally made before having a child. The tradeoffs between material benefits and social costs in the web discussions cited above concern couples who already had their child. In our empirical analysis of alternative explanations, we will still check that our results are robust to the cohort-specific frequency of mixed marriages in Section 7.4. In that section, we also present results for a subsample of couples married *before* the ethnic policies were introduced, among which the choice of marriage partner is unlikely to depend on these policies.

Number of children As suggested by the anecdotal evidence, minorities are perceived to enjoy relaxed family planning regulations. It is worthwhile to clarify that exceptions to the one-child policy have primarily been restricted to Minority-Minority couples. In fact, the number of children for mixed couples is not different from that of Han-Han couple. This is stressed by Guo and Li (2008) and also true in our data. Appendix Figure A2 plots the number of children by marriages types and 5-year mother birth cohorts, revealing that only Minority-Minority couples exhibit a different pattern than the other three groups. Because a minority has a high probability of marrying another minority and thereby becomes eligible to have multiple children, ethnic favors related to Minority-Minority couples are bound to matter in the ethnicity decision of parents. To say it differently, giving minority ethnicity to one's child has an option value in view of China's ethnic policies. Regardless of this pattern, our analysis goes through even if people perceive that all minorities enjoy relaxed family planning regulations.

3 The Model

We extend the framework in Benabou and Tirole (2011) to model the ethnicity choice for children as a tradeoff involving individual (material and intrinsic), as well as social (norms-related) payoffs. The distinctive feature is that prevailing norms imply not only a social stain when broken but also a social esteem when followed. The interplay between stain and esteem allows individual behaviors to be either complements or substitutes, depending on the behavior of others.

As the main role of the model is to derive empirical predictions, we include only prospective determinants of ethnicity choices that can be measured – or proxied – with some degree of confidence (see Section 4). The model is certainly highly stylized. However, it is not only consistent with facts F1 and F2, but it also yields three additional and testable predictions. In particular, the model clearly predicts how material benefits and social motives interact, the main issue of interest to us.

3.1 Setup

Consider a region – a prefecture, to be concrete – with a continuum of households (couples) in a given cohort. There are two ethnicities $J \in \{H, M\}$,where H denotes Han and M Minority. Children yield the same basic benefit v for every household. Each household has a single binary decision to make: to choose minority status for their children, $m = 1$, or not, $m = 0$. In line with China's social situation, we assume that (i) the choice primarily reflects the husband's preferences,[15] and (ii) the prosocial choice is to pass on the man's ethnicity to the child. We focus on the decisions by mixed couples (H, M) or (M, H), where the first entry is the ethnicity of the man. (Non-mixed couples are obliged to pick their joint ethnicity for their child.)

Han-Minority mixed couples Suppose first that the man is Han and the woman is minority. All such couples belong to the same *peer group*. They have a preference function

$$u^{H,M} = v + (b - e(H) - \varepsilon)m + \mu E(\varepsilon \mid m) \ , \tag{1}$$

where b is the net *material individual* benefit of having a minority child. This could differ across regions or time, due to different policies favoring minority children (recall Section 2). Further $e(H) + \varepsilon$, is the *intrinsic individual* cost of a minority rather than a Han child. Its first component is the average stigma perceived by households when their child has different ethnicity than the Han man's – this is common and deterministic to all peer-group members, but could differ across groups. The second component ε captures the variation in intrinsic cost, the main source of heterogeneity in the model. We assume that ε is distributed across couples with mean $E(\varepsilon) = 0$, c.d.f. $G(\varepsilon)$, and continuous, differentiable, and single-peaked p.d.f. $g(\varepsilon)$. By these individual motives alone, households with high ε values would have a Han child, while those with a low value would have a minority child.

The final term in (1) captures the social motive: the household's *social reputation* (or self image) – how the peer group views the mixed couple (or the couple views itself) – given its ethnicity decision. Taken literally, the model thus assumes that the choices of m are perfectly

[15] See Section 7.2 for a model of bargaining and related implications.

observable by everybody in the peer group. In reality, observability is indeed realistic since the ethnic choice follows the child through life, as discussed in Section 2.[16]

As high-value ε households make the prosocial choice, we assume that the household's social reputation is given by its "expected type" $E(\varepsilon \mid m)$, the conditional mean of ε of those couples in the peer group, who make the same choice as the couple. Parameter μ, is the relative weight on this social motive. See Section 7.1 for alternative preference structures without social reputations and Section 7.3 for alternative formulations of the social reputations.

It is useful to define the difference

$$\Delta = E(\varepsilon \mid m = 0) - E(\varepsilon \mid m = 1) \ . \tag{2}$$

The value of Δ is the couple's *gain* in social reputation within its peer group when it conforms to the norm to give the child the same ethnicity as the Han man rather than minority ethnicity. In the language of Benabou and Tirole (2011), the first term is the social "honor" when the child is given Han identity, while the second term is the social "stigma" when the child is given minority identity.

An equilibrium cutoff rule With this notation, it follows from (1) and (2) that the mixed couple is indifferent about the child's identity when

$$b - e(H) - \varepsilon_H^* = \mu\Delta(\varepsilon_H^*) \ . \tag{3}$$

Since social reputations depend on how other couples in the peer group behave, this equality implicitly defines an equilibrium cutoff value ε_H^*. For the marginal couple, the net individual benefit of having a minority child (the LHS) is equal to the gain in social reputation of having a Han child (the RHS). Couples with an ε below ε_H^* have minority children and those with an ε above ε_H^* have Han children, and the share of minority children in the peer group is given by $G(\varepsilon_H^*)$. By (3), ε_H^* is a function of b, e and μ. Given the cutoff rule, the equilibrium gain in social reputation becomes

$$\Delta(\varepsilon_H^*) = E(\varepsilon \mid \varepsilon > \varepsilon_H^*) - E(\varepsilon \mid \varepsilon < \varepsilon_H^*) > 0 \ . \tag{4}$$

By definition of truncated means (of a mean-zero variable), the first term is always positive and the second term is always negative. Hence, $\Delta(\varepsilon_H^*)$ is always positive. By the results in Jewitt (2004), the single peak of g implies that Δ has a unique interior minimum.[17]

Comparative statics From the cutoff condition (3), we derive how the share of minority children changes with material benefits of such children b. By the implicit function theorem, we

[16] The model can easily be modified to allow for stochastic observation – in that case, one part of parameter μ reflects the probability that m is observed.

[17] Note that, for the whole peer group, social reputation is like a zero-sum game: under a veil of ignorance about ε, the *ex ante* expected value of $\mu E(\varepsilon \mid m)$ is zero (as the unconditional mean of ε is zero).

have

$$\frac{\partial G(\varepsilon_H^*(b,e,\mu))}{\partial b} = g(\varepsilon_H^*(b,e,\mu))\frac{1}{1+\mu\frac{d\Delta(\varepsilon_H^*(b,e,\mu))}{d\varepsilon^*}} > 0\ . \tag{5}$$

Higher material benefits raise the share of minority children: the density is positive and so is the "social multiplier" – if we follow Benabou and Tirole (2011) and assume that $1+\mu\frac{d\Delta(\varepsilon_M^*(b,e,\mu))}{d\varepsilon^*} > 0$ (which guarantees that μ is not large enough to create multiple equilibria). The social multiplier reflects the interaction between individual and social motives in the model and the properties of the comparative statics depend on the sign and size of $\frac{d\Delta(\varepsilon_H^*)}{d\varepsilon}$, i.e., how the gain in social reputation from a Han child changes with the behavior of others.

As ε_H^* rises with b more couples have minority children. Then, both the honor and the stigma terms in (4) goes up in value. When more children become minority (i.e., fewer become Han), it makes a Han man's choice of a Han child more honorable. Meanwhile, it makes the Han man's choice of a minority child less stigmatizing. What matters for the sign of $\frac{d\Delta(\varepsilon_H^*)}{d\varepsilon}$ is whether the honor of a Han child goes up by more or less than the stigma of a minority child goes down (when we say that the stigma "goes down" here and below, we mean that a negative number becomes less negative, i.e., closer to zero).

The race between honor and stigma Panel (a) of Figure 2 illustrates two different possibilities. Suppose first that $\varepsilon_H^* = -\epsilon < 0$ in the left tail of the ε distribution, so the share of minority children is small. In this case, the effect on the honor is relatively small, as this is the truncated mean of ε in the whole distribution to the right of $-\epsilon$. But the effect on the stigma – the truncated mean of ε in the (green) tail to the left of $-\epsilon$ – is relatively large. As the stigma of a minority child goes down faster than the honor of a Han child goes up, the gain in social reputation from having a Han child goes down. That is $\frac{d\Delta(\varepsilon_H^*)}{d\varepsilon^*} < 0$, so more people yet have minority children. In this case, the decisions of different couples are strategic complements and the social multiplier is larger than 1.

The alternative equilibrium in Figure 2 has $\varepsilon_H^* = \epsilon > 0$ in the right tail of the distribution, where many couples have minority children. In this case, the honor of a Han child – the truncated mean in the (red) tail to the right of ϵ – goes up faster than the stigma of a minority child goes down, so the gain in social reputation from having a Han child rises, which dampens the rise in the share of minority children. That is, $\frac{d\Delta(\varepsilon_H^*)}{d\varepsilon^*} > 0$, decisions of different couples are strategic substitutes, and the social multiplier is smaller than 1.

Panel (b) of Figure 2 illustrates this race between honor and stigma in a numerical example with a symmetric distribution. The top graph shows that both the honor of the right thing goes up and the stigma of the wrong thing goes down (its negative value comes closer to zero) with a higher ε^* and that the (positive) honor always exceeds the (negative) stigma. Moreover, the increase in honor is faster when many Han-minority families choose minority children, whereas the decrease in stigma is faster when few Han-Minority families choose minority children. This difference generates the pattern in the bottom graph, where $\Delta(\varepsilon_H^*)$ decreases in ε^* when few children among Han-Minority families choose minority but increases in ε^* when many such children choose minority.

Under a relatively mild assumption on the ε-distribution, the second derivative of $\Delta(\varepsilon^*_H)$ is everywhere positive $\frac{d^2\Delta(\varepsilon^*_H)}{d\varepsilon^{*2}} > 0$. Once we make that assumption, the multiplier monotonically decreases as the initial equilibrium ε^*_H (and the share of minority children) travels from low values to high values.

Minority-Han mixed couples In a M, H mixed couple, the preference function analogous to (1) can be written:

$$u^{M.H} = v + mb - (1-m)(e(M) + \varepsilon) + \mu E(\varepsilon \mid m) \ , \tag{6}$$

where $e(M)$ and ε now represent the average and idiosyncratic intrinsic cost of having a Han child, different from the minority man's own ethnicity – and where the prosocial choice is now to pass on minority identity to the child. We specifically assume that the distribution function G for ε and the weight on social reputation μ are the same in the two types of families in the same locality.[18]

The M, H couple will have a minority child when $b + \mu E(\varepsilon \mid m = 1) > -(e(M) + \varepsilon) + \mu E(\varepsilon \mid m = 0)$. Defining the gain in social reputation in an analogous way as before – i.e., Δ is the difference between the honor of having a minority child, $\mu E(\varepsilon \mid m = 1)$ and the stigma of having a Han child, $\mu E(\varepsilon \mid m = 0)$ – we can write the indifference condition for having a minority child as

$$-b - e(M) - \varepsilon^*_M = \mu\Delta(\varepsilon^*_M) \ . \tag{7}$$

Thus, minority-Han households with ε larger (smaller) than ε^*_M will have minority (Han) children. Because Δ is always positive, it follows that $\varepsilon^*_M < 0$. The share of minority children within this peer group is thus $1 - G(\varepsilon^*_M)$.

In the same manner as for H, M couples, we can derive the comparative statics for a change in b to get:

$$\frac{\partial(1 - G(\varepsilon^*_M(b, e, \mu)))}{\partial b} = g(\varepsilon^*_M(b, e, \mu))\frac{1}{1 + \mu\frac{d\Delta(\varepsilon^*_M(b,e,\mu))}{d\varepsilon^*}} > 0 \ . \tag{8}$$

3.2 Consistency with the Motivating Facts

In this subsection, we show that the model is consistent with facts F1 and F2 presented in the introduction.

Choices across mixed marriages (ε^*_M versus ε^*_H) – Fact F1 Given these preliminaries, we show that the model implies facts F1 and F2 noted in the introduction. In terms of the model,

[18] This is a strong assumption, although one can think of arguments why μ, say, could be either higher or lower among minorities than majorities – the former may be more eager to fit in or more eager to preserve their identities. We do not pursue this issue further, however. The main argument is measurement: since proxies for μ and the distributions of ε would be very hard to find in available data, theoretical predictions would be empirically empty.

the second part of F1 requires that (in the majority of prefectures) $G(\varepsilon_M^*) < G(\varepsilon_H^*)$. This follows from (3) and (7) plus the fact that $1+\mu\frac{d\Delta}{d\varepsilon^*} > 0$. The first part of F1 requires $G(\varepsilon_H^*) < 1-G(\varepsilon_M^*)$. Suppose first that the distribution of ε is symmetric. By symmetry, $G(-\varepsilon_M^*) = 1 - G(\varepsilon_M^*)$. It follows from (7) and (3) that $\varepsilon_H^* < -\varepsilon_M^*$. Since G is increasing, a symmetric distribution indeed implies F1. If the distribution of ε has positive skew, with more mass in its right tail, we have $G(\varepsilon_H^*) < G(-\varepsilon_M^*) < 1 - G(\varepsilon_M^*)$. A sufficient condition for the model to be consistent with fact F1 is thus that the distribution of ε does not have strong enough negative skew.

The intuition is straightforward: on average, minority men experience not only material benefits, but also intrinsic benefits and higher social reputation of a minority child. Compared to Han men, more of them thus choose minority identity for their children. Because H, M mixed couples trade off material benefits against intrinsic and social reputation costs, they are more likely to cross the paternal ethnic boundary.

The effect of material benefits (b) – Fact F2 Expressions (5) and (8) above show how the two types of couples react to an increase in material benefits, b? These expressions reveal that higher b raises the probability of a minority child in both types of families, everything else equal. Moreover, the model predicts a more pronounced trend over time to have minority kids in Han-Minority families, consistent with F2. This is because both the density and the social multiplier is smaller for the Minority-Han couples.

First, $g(\varepsilon_M^*(b,e,\mu))$ is smaller than $g(\varepsilon_H^*(b,e,\mu))$, because Minority-Han couples having Han children is more of a tail event than Han-Minority couples having minority children. Second, the social-reputation derivatives fulfill $\frac{d\Delta(\varepsilon_M^*(b,e,\mu))}{d\varepsilon^*} > \frac{d\Delta(\varepsilon_H^*(b,e,\mu))}{d\varepsilon^*}$ – *ceteris paribus*, because fewer Han-Minority couples than Minority-Han couples have minority children. As a result, the social multiplier $\frac{1}{1+\mu\frac{d\Delta(\varepsilon_M^*(b,e,\mu))}{d\varepsilon^*}}$ is also smaller than $\frac{1}{1+\mu\frac{d\Delta(\varepsilon_H^*(b,e,\mu))}{d\varepsilon^*}}$.[19]

Having established consistency between our model and facts F1 and F2, we turn our interest to new predictions from the model. These are the ones we will test empirically.

3.3 Main Prediction: Individual Material Motives (b) and Social Motives ($\frac{d\Delta}{d\varepsilon^*}$)

Our most important prediction concerns the interaction between individual (material) motives and social motives. We focus on the effects on Han-Minority families. From (5), material benefits are crowded in by social reputation – the social multiplier $\frac{1}{1+\mu\frac{d\Delta(\varepsilon_H^*(b,e,\mu))}{d\varepsilon^*}}$ is larger than 1 – when few people have minority kids and their ethnicity choices are strategic complements (i.e., when $\frac{d\Delta(\varepsilon_H^*(b,e,\mu))}{d\varepsilon^*} < 0$). Instead, benefits are crowded out – leading to a social multiplier smaller than

[19] In other words, comparing the marginal Han man to the marginal minority man, having a minority child is thus a strategic complement rather than a strategic substitute – or, if it is a strategic complement (substitute) for both, complementarity (substitutability) is larger (smaller). Compared to Minority-Han mixed couples, concerns for social reputation are thus more likely to crowd in rather than crowd out material incentives in Han-Minority mixed couples – or more likely to crowd them in more (crowd them out less).

1 – when many people have minority kids ($\frac{d\Delta(\varepsilon^*_H(b,e,\mu))}{d\varepsilon^*} > 0$). This difference between crowding in at low shares of minority kids and crowding out at high shares is the essence of our model.

But the effect in (5) of a change in benefits also includes the density $g(\varepsilon^*_H)$ at the cutpoint. When considering this channel, we impose the same condition as when ensuring consistency with fact F1 – i.e., the distribution of ε is has (weakly) positive skew.[20] Specifically, we assume that the median ε_{50} (and the mean) of the distribution lies (weakly) to the right of the mode. Suppose we compare two localities with cutpoints at percentiles equidistant from – and not too far from – the median, i.e., ε^*_{50+n} and ε^*_{50-n}. Because of the positive skew, we have $g(\varepsilon^*_{50-n}) \geq g(\varepsilon^*_{50+n})$. The larger effects of material benefits due to the higher social multiplier at ε^*_{50-n} compared to ε^*_{50+n} is thus reinforced by a higher density. We can now repeat this comparison for every other twin percentile cutpoints above and below the median. Therefore, if the cutpoints in the localities we observe in the data are continuously distributed along the support of ε, we may conclude that the average effect of material benefits in regions with cutpoints ε^*_H below the median must be higher than the average effect in regions with cutpoints above the median.

Of course, we do not observe the cutpoints ε^*_H in different localities directly, only the shares of households who get minority children $G(\varepsilon^*_H)$. However, the cutpoints and shares are one-to-one. Based on the argument above, we can therefore state:

P1 *If all peer groups face the same increase in benefits, we should see a larger effect among Han-Minority families in peer groups with a share of minority children below a cutoff share (close to the median), compared to those above that cutoff share.*

In the data, we will evaluate prediction P1 by difference in differences, comparing prefectures and cohorts above and below cutoff shares of minority children in the neighborhood of the median.

Prediction P1 relies on a comparison of the effects above and below a cutoff share. In Appendix Section A1, we show how to derive and successfully test a prediction for different parts – different quartiles – of the distribution. The discussion there also shows why we *cannot* state P1 as a linear interaction between the initial share and the change in benefits. Essentially, when the initial share of minority kids is in the left part of the distribution, an upward shift in ε^* has an ambiguous local effect due to countervailing effects of a higher density and a lower social multiplier.

3.4 Additional Predictions

Heterogeneity in material effects (b) In this subsection, we derive two additional predictions, which do have some independent interest but also serve as sanity checks of our model. One of these is straightforward:

P2 *Han-Minority couples where the ethnicity of the wife obtains a smaller increase in material*

[20] As in the discussion of consistency with F1, this assumption can be weakened to say that the distribution of ε does not have too much negative skew.

benefits are less likely to respond by choosing minority for their children than minority groups that enjoy a larger increase.

Material benefits (b) and intrinsic costs (e) The other is more involved. We have analyzed how higher benefits of minority children shape the probability that mixed couples choose minority identity. Do the (average) intrinsic costs $e(H)$ of minority children alter the effect of material benefits b for Han-Minority couples? In the model, this is the interaction effect of b and e on $G(\varepsilon_H^*(b, e, \mu))$. Given (5), this can be written:

$$\frac{\partial G(\varepsilon_H^*(b, e, \mu))}{\partial b \partial e} = \left(\frac{dg}{d\varepsilon_H^*} - \frac{\mu \frac{d^2 \Delta}{d\varepsilon^{*2}}}{1 + \mu \frac{d\Delta(\varepsilon_H^*)}{d\varepsilon^*}} \right) \frac{1}{1 + \mu \frac{d\Delta(\varepsilon_H^*)}{d\varepsilon^*}} \cdot \frac{\partial \varepsilon_H^*}{\partial e(H)} \ .$$

The first multiplicative term on the right-hand side includes two effects which both depend on the cutoff value ε_H^*. The first effect is the change in the density $\frac{dg(\varepsilon_H^*(b,e,\mu))}{d\varepsilon^*}$, which is positive before the single peak of g and negative thereafter. The second effect is negative as the second derivative of the gain in social reputation $\frac{d^2\Delta}{d\varepsilon^{*2}}$ is positive; thus the social multiplier goes down as the cutoff increases. As for the second multiplicative term $\frac{\partial \varepsilon_H^*}{\partial e}$, we know that it is negative. That is, with higher intrinsic costs, fewer couples have minority kids. Putting these results together, we have:

P3 *When intrinsic costs are high, material benefits have a smaller effect on the probability of minority children in Han-Minority families, if the share of minority children in the peer group is small.*

4 Data and Measurement

This section discusses how to measure the variables and parameters in the model. We also provide more background information for each variable. Outcome variables and some control variables are measured at the individual level, whereas the individual and social incentives are measured at the prefecture, residency, education-group, or ethnicity level.

Linking of data We draw on two sources of data. The first is three of China's censuses: the 1-percent samples of the 1982, 1990 and 2000 censuses. Our second source is the 20-percent sample of the 2005 population survey, also known as the mini-census (also covering about 1 percent of the population). As in the model, we are interested in the husband-wife-children structure of households. The husband or wife data draws on the information about the gender of the head of household. In some cases, parents or parents-in-law of the household head or the spouse cohabit with them. We drop this relatively small part of the sample, as the censuses do not distinguish parents from parents-in-law in the 1982 and 1990 censuses. We can directly identify children in the 2000 census and the 2005 mini-census. The 1982 and 1990 censuses do not distinguish between children and children-in-law. To identify children in the earlier data sets, we limit ourselves to unmarried children who still live with their parents. The results we report below are robust to using the 2000 census and the 2005 mini-census only.

After linking different datasets, our sample of children in mixed marriages comprises of around 125,000 children from Han-Minority families and around 110,000 children from Minority-Han families born between 1970 and 2005. We start from 1970 because few (13%) of the children in the linked data were born before 1970 and we need a representative cohort in the initial period to define initial shares of minority children across prefectures.[21]

The administrative units we focus on are defined by four-digit census codes: prefectures or cities. As some areas change names and codes over time, we unify the boundaries based on year 2000 information to end up with 319 prefectures and cities in the linked data. Since over 95% of these are prefectures, we refer to all units as prefectures.

Ethnicity outcomes ($G(\varepsilon^*)$ in the model) Censuses always report gender, birth year and ethnicity for each individual, which provides our measure of ethnicity outcomes. As shown by the summary statistics in Table 1, 47 percent of the children in Han-Minority families are minorities whereas 94 percent of the children in Minority-Han families are minorities. This is fact F1 in the introduction. The high share of minority children in Minority-Han families is not only associated with little covariation over time, but also with little variation over space (see Figure 3b below). This is consistent with our model predictions discussed in Section 3.2. As a result, our analysis focuses on the children in Han-Minority families.

In our analysis to follow, we take the mixed marriages as given and focus on the choice of ethnicity for children. It is possible that some regions are more open to mixed marriages as well as to minority identity for the children. To take this into consideration, we always control for prefecture fixed effects and provincial-specific trends in our econometric specifications. We also discuss endogenous mixed marriages among the alternative explanations for our results in Section 7.4, which provides additional estimates to address the prospective omitted-variable problem.

Material benefits (b in the model) We measure material benefits of minority children in alternative ways. Since ethnic policies appear in a bundle of provincial regulations (recall Section 2), it is not straightforward to quantify their regional variation over time. To check that our results are robust, we try four ways:

1. The rollout of one-child policy. Some policies like family-planning gave favorable treatment to minorities already in the 1960s. But these policies became more generous and salient in the 1980s, when family planning was switched more strictly to a one-child policy. However, Minority-Minority couples were still allowed to have two or more children: by giving them minority status, parents could thus create an option value in their children's future family choices.

[21] Including those born before 1970 does not vary the main results.

To measure the rollout of one-child policy, we employ the timing for 27 provinces used in Edlund et al. (2013).[22] As explained in that paper and earlier work on family-planning policies (e.g., Peng, 1996), the one-child policy is an umbrella term for a raft of policies. Edlund et al. (2013) focus on the following three programs: (i) family-planning science and technology-research institutes, (ii) family-planning education centers, and (iii) family-planning associations. Since all these programs indicate the salience of one-child policy, we consider the first year that any of them was present as the first year of one-child policy in the province. This starting date ranges from 1976 (in Jiangsu) to 1984 (in Guangxi).

This measure has the advantage of being staggered across provinces. It has the disadvantage of not capturing other benefits, such as those in education.[23] However, the measure does provide a distinct variation within the bundle of ethnic policies. As explained in the background, it is also the most important dimension of ethnic policies for China's minorities.

No evidence suggests that the rollout of the family planning institutions is related to ethnic choices of children in mixed marriages. In the data, the *p*-value of the correlation between the year of adopting the instructions and the share of minority children (in Han-Minority families) in the 1970-74 cohort is 0.759.

2. Fines for violating one-child policy. The fines charged by provinces for an extra child (expressed in terms of average annual income) measures not only the existence but also the intensity of one-child policies. This time-varying measure has been used by Ebenstein (2010) and Wei and Zhang (2011) to analyze some consequences of one-child policies. Since the fine information is only available after 1980, we employ it to conduct a robustness check in the subsample of children born after 1980. This measure suffers from a similar disadvantage as the first one.

3. Pre- and Post-1980. To obtain a broader measure, which also captures the benefits of minorities in higher education, we use a dummy for cohorts of parents who give birth to children after 1980.

The drawback of using this measure is that it may be confounded with time trends. In the analysis to follow, we always include provincial-specific trends to take care of potentially variable time trends in policy.

4. Heterogeneous benefits. The final measure concerns the heterogeneity in the beneficiaries of pro-minority policies. Specifically, most of the preferential policies are limited to minorities with a population smaller than 10 million. In particular, the No. 7 Document by the Chinese Communist Party Central Committee in 1984 requires that minority groups with a population size over 10 million are treated in the same way as the Han in family-planning policies.

As there was more than 13 million members of the Zhuang minority already in the 1982 census, this group enjoyed few ethnic favors. Therefore, we will compare the Zhuang minority

[22] Beijing, Shanghai, Tianjin and Chongqing are not included. We thank Lena Edlund for providing this data.

[23] As ethnic policies for different levels of education vary by administrative levels (within provinces and prefectures), it would be a gigantic task to collect systematic data on these policies.

with other minority groups. As Table 1 shows, the probability of having a Zhuang wife among Han men with minority wives is around 17 percent. To check whether a heterogeneous impact is driven by population size, we also control for minority population size by ethnic group in our analysis. Some scholars argue that Zhuang is an ethnic group very much integrated with Han (Kaup, 2000). This feature would imply a prediction opposite to the impact of lower benefits though: if those identity costs go down over time, this would make a Han-Zhuang family more likely to choose minority status for their child.

Peer groups for social motives (related to $\frac{d\Delta}{d\varepsilon^*}$ in the model) Following the discussion about crowding in or crowding out in Section 3 (the sign of $\frac{d\Delta}{d\varepsilon^*}$), we measure social motives by the shares of minority children in mixed marriages. In order not to run into the reflection problem discovered and discussed by Manski (1993), we want to treat the social motives for a particular cohort as predetermined by previous choices in the relevant peer group. Because we cannot observe the relevant peer group directly and our data derive from a sample of the population, we define the peer group relevant for the social motives in a number of different ways in the hope of avoiding biased estimates.[24]

1. The 1970-74 cohort in the same prefecture. We exploit the variation across prefectures in the 1970-74 birth cohort – i.e., in the initial cohort unambiguously before the start of the dramatic changes in ethnic policies. This treats the social motives as predetermined over the period of changing policies (and also allows us to examine the dynamic impacts of social motives over time).

2. The 1970-74 cohort in the same prefecture subdivided by residence, education, or wife's ethnicity. The measure in **1.** only uses ethnicity of the husband, minority status of the wife, birth cohort, and prefecture to define the peer group. But we also consider a number of finer peer groups. **A.** The first refinement is to condition also on urban or rural residence and define the peer group at the prefecture-ethnicity-cohort-residency level. Specifically, we base the distinction between urban and rural on the husband's *Hukou* (legal residence). This measure implies smaller groups, due to the disaggregation itself and the fact that we rely on rural/urban information in the 2000 and 2005 censuses.[25] Hence, the number of observations in each cell becomes smaller. **B.** One may also plausibly argue that peer groups may be formed by people with different levels of education. A second refinement is to condition on education of the father. Specifically, we base the distinction on whether he has an education corresponding to completed high-school or above. This way, we define the peer group at the prefecture-ethnicity-cohort-education level. **C.** Yet another possibility is that the relevant peer group for a Han man and minority woman of a certain ethnicity is limited to other couples where the wife has the same

[24] The prospective econometric problems of estimating the influence of unobserved peer groups in a sample from the population appear related to the biases due to measurement error when estimating peer effects for members of partially sampled networks (Chandrasekhar and Ellis, 2011).

[25] Rural/urban information was asked in the 1990 but not in the 1982 census, which makes it absent from the merged 1982-90 data by IPUMS. It is possible to identify it based on separate information for 1990. We choose not to do so to keep consistency with the IPUMS merged data. This also serves as a check on whether our findings hold with the 2000 and 2005 censuses only.

ethnicity. For the Han-Minority families, we consider this possibility as well by defining the peer group at the prefecture-cohort-(female)ethnicity level.

Pre-policy variation in share of minority children Figure 3 plots the distribution of the shares of minority children across prefectures, in the two types of mixed families for children born in the 1970-74 cohort. It shows a great deal of variation across prefectures for Han-Minority mixed families. In terms of the model, this dispersion reflects the joint distribution of parameters $b, e(H), \mu$ leading to different cutoffs ε^* and the mapping from these cutoffs into shares via distribution G.

However, for Minority-Han mixed families, most prefectures are concentrated at the right end, leaving little variations across prefectures. As stated before, we therefore focus on the effect of social motives for Han-minority families.

In addition, the pattern for the Han-minority families in Figure 3 also suggests that the likelihood for sons to be a minority is lower than that for the daughters. This is consistent with the assumption below that the identity costs for parents are higher for sons.

Figure 4 maps the spatial distribution across China of ethnicity choices (in the 1970-74 cohort) by Han-minority families. It suggests that the social motives vary considerably across prefectures, and that this variation is not strongly geographically clustered. For instance, province fixed effects only explain about a third of the variation across prefectures.

For Han-Minority families, our model predicts a strategic complementarity $\frac{d\Delta}{d\varepsilon^*} < 0$ for low values of the cutoff ε^* (when the share of mixed couples having minority kids is small) and a strategic substitutability $\frac{d\Delta}{d\varepsilon^*} > 0$ for high values of ε^* (when a large share of mixed couples have minority kids). In theory, if the distribution of ε were symmetric, the sign would flip at a critical cutoff of $\varepsilon^*_{50} = 0$, corresponding to a share of minority kids at 0.5. Allowing for a non-symmetric distribution, we will check how the estimates behave as we vary the assumption about the critical share of minority kids in the neighborhood of 0.5, in consistency with the model predictions.

Intrinsic costs ($e(H)$ in the model) A first measure of intrinsic (individual) cost $e(H)$ is whether the child is a son or a daughter. Consistent with Confucian values, the intrinsic costs of having a child with different ethnicity than the father are higher for a son than a daughter. Figure 3 suggests that these costs affect actual choices. Consequently, we examine whether the impact of benefits on ethnic choices is smaller for sons.

A second measure of intrinsic costs is whether the spouse belongs to a religious minority group. It is conceivable that minority identity is more costly for a Han man if his child is associated with a practicing religion (recall the discussion in Section 2). To clarify, this measure is available at the ethnic group level, not the individual level. Out of the 55 minority groups, 18 practice Islam or Tibetan Buddhism. We define a wife as religious if she belongs to one of these 18 minority groups.

Men who marry religious women constitute a selected sample, but our question concerns how a religious wife shapes the effect of material benefits on ethnic choice for children, rather than the effect of a religious wife itself. Table 1 shows that the share of Han-Minority mixed families with a religious wife is about 19 percent.

Migration The variation across prefectures and provinces discussed in this section is based on residency at census time. However, this residency may be different than birth place, due to migration. Only the 2000 census includes information whether an individual's birth place coincides with her current residency (the 1982 and 1990 censuses spells out whether one lived in the same county five years ago, and the 2005 mini-census only has information on whether one lived in the same province one year ago). Based on the 2000 census, over 85 percent of individuals were born in the same county as their current residency, while 94 percent were born in the same province. Given that prefecture is the administrative level above county, these facts suggest that migration is unlikely to make a major difference for our main results. Moreover, Frijters, Gregory and Meng (2013) document that rural-urban migration did not take off until 1997.

Nevertheless, we conduct robustness checks by omitting the (most recent) 2005 census from the sample, and by excluding individuals whose birth and residence counties are different. This should minimize the potential impact of migration.

5 Individual vs. Social Motives

The most important new prediction from our model is P1 on the interactions between individual and social motives. To the best of our knowledge, no similar predictions have been studied in the existing literature. This section confronts that prediction with data.

5.1 Testing Prediction P1

Our prediction about the interactions between individual and social motives says that the effect of higher material benefits should be larger in peer groups where the initial share of minority children is smaller, because individual motives driven by material benefits are crowded in rather than crowded out by prevailing social motives. Empirically, Prediction P1 relies on a comparison of the effects above and below a cutoff share.

Main specification To test P1, we ask whether β_b is positive in the difference-in-differences specification:

$$\begin{aligned} MinChild_{i,p,t} \quad = \quad & \beta_b Post_{r,t} \times I(\leq \mathrm{X})_p + Post_{r,t} + birthyear_t \\ & + ethn_g + pref_p + \gamma' \mathbf{X}_{i,p} + prov_r \times birthyear + \varepsilon_{i,p,t} \ , \end{aligned} \tag{9}$$

where the dependent variable $MinChild_{i,p,t}$ is a dummy indicating whether child i (with minority mother of ethnicity group g), in prefecture p (belonging to province r), and birth year t is a minority. In the main specification, we use a dummy $Post_{r,t}$ to measure whether province r has implemented the one-child policy (measured by the establishment of family-planning institutions). We use an indicator for births after 1980, $Post1980_{p,t}$ to check robustness of the baseline results.

Among the independent variables, $I(\leq \text{X})_p$ is an indicator for whether the peer group – according to Definition 1 in Section 4, i.e., Han-Minority families with children in the 1970-74 birth cohort in the same prefecture – has a share of minority children smaller than some critical value X between 0 and 1. Thus, the parameter of interest β_b measures the difference in the effect of material benefits after and before the introduction of the one-child policy (or 1980) in prefectures below and above the assumed cutoff.

To allow for an effect of time-invariant, or slowly changing, prefecture characteristics – such as the attitudes towards mixed marriages – we control for prefecture fixed effects ($pref_p$). To hold constant factors that affect ethnicity choices by different cohorts across China (including the average effects of post-policy or post-1980 benefits), we also include birth-year fixed effects ($birthyear_t$). To control for ethnicity-specific factors that are time-invariant or change slowly over time, we include ethnicity fixed effects ($ethn_g$). For example, some minority groups may have stronger preference that the child maintains the ethnicity of the man. Since we focus on the children of Han-Minority couples, these fixed effects refer to the wife's ethnicity.

$\mathbf{X}_{i,p}$ is a set of characteristics of the husband and wife including their education levels and (5-year) birth cohort fixed effects. We unify the categorical education levels across censuses into four groups: 1 indicates less than completion of primary school, 2 completion of primary school, 3 completion of secondary school (high school), and 4 some collage education or above. As shown in Table 1, on average, the husband has more education than the wife. We also consider rural and urban differences in Table 3.

Finally, we include province-specific trends ($prov_r \times birthyear$) to control for different evolutions across provinces, such as different provincial policies, or different evolutions of discrimination against minorities. All standard errors are clustered at the prefecture level.

Baseline results Table 2 presents the results using 0.5 as the cutoff. Columns (1)-(2) of the table only include prefecture fixed effects. Column (1) shows that the average effect of $Post_{r,t}$ is around 0.08 (i.e., 8 percentage points). Column (2) presents the interaction effect of interest, showing that the estimated effect of material incentives is indeed significantly larger when the share of minority children is smaller than the cutoff value. The estimated interaction effect is quantitatively large, at least on the order of the average effect in column (1). This is consistent with Prediction P1 that benefits have a larger effect in peer groups where few mixed households have minority children, because they are crowded in by a strategic complementarity (giving a social multiplier above 1), rather than crowded out by a strategic substitutability (giving a social multiplier below 1). For example, given the estimates in column (2), the average effect is around

10 percentage points below the 0.5 cutoff and 3 percentage points above the cutoff.[26]

Column (3) adds the wife's ethnicity fixed effects. Column (4) further includes birth year fixed effects – as 82% of the variation in the policy measure is absorbed by these birth year fixed effects, the coefficient on $Post_{r,t}$ is omitted from the results (but still appears in the regression) once birth-year fixed effects are included. Column (5) shows that the pattern in column (2) is little affected by including the characteristics of the couples. Column (6) further shows that the pattern is also robust to including province-specific trends.

Based on the same specification as in column (6), Figure 5 visualizes the corresponding interaction estimates and their 95 percent confidence intervals for all cutoffs between 0.1 and 0.9. Each estimate represents the difference in the effect of $Post_{r,t}$ on individuals in prefectures below a cutoff and those above a cutoff. As shown, the positive evidence is significant for all cutoff values from 0.3 and upwards. As discussed in Appendix Section A1, a lower point estimate at the lowest cutoffs is consistent with the model.

To allow for a broader measure of pro-minority policy shifts (including these in education policies), columns (7)-(10) present the results replacing $Post_{r,t}$ with $Post1980_{p,t}$. The estimates of the interaction effects exhibit a very similar pattern as those in columns (1)-(6).

Dynamic impacts Our baseline specification focuses on the average effect before and after the family-planning policy. A more flexible way of examining the impact is to allow the effect to vary by birth cohorts:

$$\begin{aligned} MinChild_{i,p,t} \;=\; & \sum_{\tau=-3}^{\tau=+3} \beta_{b,\tau} Cohort_{r,\tau} \times I(\leq \mathrm{X})_p + \sum_{\tau=-3}^{\tau=+3} Corhort_{r,\tau} + birthyear_t \\ & + ethn_g + pref_p + \gamma' \mathbf{X}_{i,p} + \varepsilon_{i,p,t} \ . \end{aligned} \tag{10}$$

In this specification, the birth cohort 1-5 years before the family planning policy (i.e., $\tau = -1$) is treated as the reference group and $\tau \in \{-3, -2, 0, 1, 2, 3\}$ refers to 10 or more years before the policy, 6-10 years before the policy, ..., 10 or more years after the policy. The estimates of $\beta_{b,-3}$ and $\beta_{b,-2}$ also reveal whether the prefectures with different norms were already different or not before the policy.

Appendix Table A4 presents the results across different specifications. In Figure 6, we visualize the results from the most general (the one in column (4)) of these specifications. The dotted lines indicate the 95% confidence intervals with standard errors clustered at the prefecture level. As the figure shows, neither $\beta_{b,-3}$ nor $\beta_{b,-2}$ is significantly different from zero, indicating the absence of pre-trends. But the interaction between individual and social motives becomes significant after the policy shift. Moreover, the size of this interaction effect is increasing over time.

[26] Instead of examining an interaction effect, one can also evaluate the effect of $Post_{r,t}$ in separate samples with prefectures below and above the cutoff (the difference between the specifications is from which samples the fixed effects are estimated). The results are very similar.

In Appendix Section A2, we show that these results are consistent with a dynamic extension of the model. Specifically, if the social motives of each cohort are tied to the behavior of the previous cohort, equation (3) still defines a steady state value for ε^*_H. However, the equilibrium adjusts towards the new steady state according to the non-linear difference equation:

$$b - e(H) - \varepsilon^*_{H,t} = \mu\Delta(\varepsilon^*_{H,t-1}). \tag{11}$$

In this model setting, comparing the dynamic adjustment – the impulse response – to the same b shock in groups with different initial shares, the difference between peer groups with low and high shares goes up over time, as it does in the data.

An alternative policy measure A second measure of the one-child policy used in existing literature is the fines for an extra child relative to the average provincial income. This data is only available after 1980. In addition to using the rollout of family-planning institutions, we utilize the information on fines to measure the intensity of the one-child policy. The results are presented in Appendix Table A5. They show that our baseline pattern holds up well within the subsample of children born after 1980.

Migration To deal with the concern that peer groups are mismeasured due to migration, we re-estimate the baseline results, dropping all data after the 2000 census as well as individuals whose birth county and residency county are different in the 2000 census. The results in Appendix Table A6 entail coefficients similar to those in Table 2.

Comparison across quartiles As explained in the discussion of P1, due to the horse race between the density of ε^* and the social multiplier, we cannot state P1 as a linear interaction between the initial share and the change in benefits. However, we can derive and test a prediction for different quartiles of the distribution (see Appendix Section A1 for the proof). For instance, one prediction from this extension is that the effect of b is larger for the second than that for the third quartile, where the densities are similar but the multiplier is larger for the second quartile.

Table A7 presents the results consistent with the prediction across quartiles, which provide further evidence for our framework.

5.2 Alternative Peer Groups

The notion of a peer group plays a key role in our model. The empirical estimates we have shown so far rely on the assumption that an earlier cohort of Han-Minority couples in the same prefecture makes up the relevant peer group for ethnicity decisions. It is important to consider other alternatives, however, since peer groups are not observable. In particular, one may argue that our definition is too wide and that couples are more influenced by other couples who live under similar conditions, have the same education, or have exactly the same ethnicity composition. This subsection considers these three possibilities.

By residency We begin with panel (a) of Table 3, which presents results for, respectively, rural-resident and urban-resident members of the same ethnicity-prefecture-cohort (peer-group definition 2A from Section 4). The average effect in columns (1) and (5) show that the change in material benefits had a larger effect on the ethnicity choices of urban couples (about 10% of the mean) than on those of rural couples (4% of the mean). This makes sense, since the benefits in terms of family planning and college entrance are likely more salient for urban couples.[27]

Although based on a considerably smaller sample, the estimates of the interaction between individual and social motives deliver a similar message as the prefecture-cohort-level results in Table 2. These results also show that our main finding in Table 2 is unlikely to be driven by different perceived values of the ethnic benefits (b in the model).

By education In another attempt to vary the definition of the peer group, we further subdivide each cohort of mixed couples with Han men in the prefecture by the educational background of these men. In particular, we split the sample (according to definition 2B) into those with less than a high-school education, and those with high-school or more.

The results are presented in panel (b) of Table 3. They show that the baseline findings in Table 2 are not driven by one particular educational group. The estimated interaction effect between material benefits and the motives tied to social norms is similar to the baseline findings in Table 2.

By wife's ethnicity In the estimates presented so far, we have assumed that all mixed couples with a Han man and a minority wife, no matter which minority, form the basis of the relevant peer group. But one may argue that the peer group is specific to each specific minority group of the wife (definition 2C). To check whether this produces different results, we consider the case where, in theory, each cohort in a prefecture could make up 55 different peer groups. In practice, the average number is much smaller due to the regional dispersion of minorities. The estimation results, presented in panel (c) of Table 3, are slightly larger than the baseline estimates in Table 2.

Summary In summary, the data are clearly consistent with the prediction on the interaction between individual material motives (b) and social motives ($\frac{d\Delta}{d\varepsilon^*}$). The results reported in this section constitute solid evidence that peer-group dependent social motives help shape the effect of individual material benefits on individual ethnicity choices, with crowding in same places and crowding out in others. The interaction between individual and social motives appears to be not only statistically significant but also quantitatively significant.

[27] Fewer exceptions from the one-child policy are allowed in urban areas, and more children born in urban areas go on to college.

6 Additional Results

In this section, we confront predictions P2 and P3 with the data. As mentioned before, these auxiliary predictions serve as sanity checks of our model.

6.1 Heterogeneous Material Benefits – Testing P2

Prediction P2 says that the effect of higher benefits should be smaller for mixed households where the man is Han and the wife is Zhuang, rather than some other minority, simply because the Zhuang experienced a smaller increase in minority benefits. To test this, we check whether $\beta_z < 0$ in the specification:

$$\begin{aligned} MinChild_{i,p,t} &= \beta_z Post_{r,t} \times ZhuangWife_i + \gamma_z ZhuangWife_i + \alpha Post_{r,t} \times MinPop_i + \delta MinPop_i \\ &\quad + Post_{r,t} + ethn_g + pref_p + birthyear_t + \gamma' \mathbf{X}_{i,p} + prov_r \times birthyear + \varepsilon_{i,p,t} \ . \end{aligned}$$

In addition to the same controls as in the baseline, we now also control for the share of minority population for each ethnic group and its interaction with the post-policy indicator. This enables us to tell apart the impact of fewer benefits from any direct impact of population size.

The estimates are displayed in Table 4. Column (1) reports the results with prefecture fixed effects and shows that β_z is negative. Column (2) includes the share of minority population for each ethnic group as well as its interaction with $Post_{r,t}$. The negative effect of $Post_{r,t} \times ZhuangWife_i$ becomes even stronger. Columns (3)-(7) show that the finding in column (2) is robust to including different fixed effects and provincial trends.

The magnitude of the interaction effect β_z is close to that of $Post_{r,t}$ in Table 2, implying that the Han-Minority families with a Zhuang wife did not significantly respond to the policies. This finding does not reflect the effect of a larger population size. If anything, the impact of material benefits on ethnicity is higher if the minority wife belongs to a larger ethnic group. Altogether, the estimates are consistent with prediction P2.

6.2 Material Benefits and Intrinsic Costs – Testing P3

Our second additional prediction involves the interaction effect of material benefits and intrinsic costs due to cultural distance on the choice of a minority child. Given that the average share of minority children for Han-Minority households is quite small (around 0.4), our model predicts that this interaction effect is negative. As discussed in Section 4, we proxy the intrinsic costs by dummy variables indicating whether the child is a son and whether the minority wife is religious. Thus, we estimate:

$$\begin{aligned} MinChild_{i,p,t} &= \beta_s Post_{r,t} \times Son_i + \delta Son_i + Post_{r,t} + ethn_g \\ &\quad + pref_p + birthyear_t + \gamma' \mathbf{X}_{i,p} + prov_r \times birthyear + \varepsilon_{i,p,t} \ , \end{aligned}$$

and

$$\begin{aligned} MinChild_{i,p,t} &= \beta_l Post_{r,t} \times ReligiousWife_i + \delta ReligiousWife_i + Post_{r,t} \\ &\quad + ethn_g + pref_p + birthyear_t + \gamma' \mathbf{X}_{i,p} + prov_r \times birthyear + \varepsilon_{i,p,t} \ , \end{aligned}$$

expecting to find negative values of β_s and β_l.

Columns (1)-(5) of Table 5 present the results when we compare sons and daughters in specifications otherwise very similar to those in Table 4, except that we do not need to include population size. The results show that having a son cuts the effect of material benefits, consistent with the predicted negative interaction. The estimate of β_s is -0.017, which amounts to about 20% of the average effect of the ethnic policies.

Conceptually, a sharper specification would be to examine the choices within a family before and after the implementation of ethnic policies. However, only 9% of the families have some children born before the policy and some born after the policy. We do not have enough power to conduct within-family analysis. See Section 7.6 for more discussions on single-child vs. multiple-children families.

Columns (6)-(10) of Table 5 show the results on the effect on Han men with religious minority wives. The specifications are similar to those in columns (1)-(5). Consistent with the model, having a religious wife also cuts the effect of material benefits. The estimate of β_l is -0.03, about 40% of the average effect of ethnic policies.

In sum, we find that the estimates are consistent with prediction P3. The model thus passes also the second of our sanity checks.

7 Alternative Explanations

Our model is consistent with motivating facts F1-F2 in the Chinese micro data under certain assumptions (not too much negative skew in the ε distribution). With the same assumptions, central prediction P1 and auxiliary predictions P2-P3 from the model are also borne out by the data. These results suggest that our model provides a plausible framework to understand the interaction of individual motives – material benefits and intrinsic costs – and social motives for identity choice.

But our findings could be explained by other theoretical and empirical mechanisms. In this section, we discuss six alternative mechanisms. The overall lesson from this discussion is that some of the alternatives may indeed help us think about the data. Even so, they are unlikely to drive our main result about individual-social interactions. Other alternatives may be ruled out *a priori*, on either theoretical or empirical grounds.

7.1 Nonlinear Utility

In our version of the Benabou-Tirole model, the preference function of couples is linear in material benefits b and intrinsic costs $e + \varepsilon$, but nonlinear in the social-reputation term $\mu E(\varepsilon \mid$

m). Suppose we got rid of the social-reputation term, but made preferences nonlinear in the individual benefits and costs. Perhaps this alternative setting could reproduce the prediction that the effect on the share of minority children of a change in benefits is larger when the share is smaller.[28]

An alternative model To investigate this possibility, assume that the utility function of a Han-Minority couple is

$$u^H = v + m[u(b) - c(e + \varepsilon)] \ , \tag{12}$$

where u and c are nonlinear functions. The natural assumptions is that the utility in material benefits u is concave, with decreasing marginal benefits ($u' > 0$ and $u'' < 0$) and the intrinsic cost c is convex, with increasing marginal costs in the type ($c' > 0$ and $c'' > 0$).[29] The indifference condition for having a minority child now becomes

$$u(b) - c(e + \varepsilon^*) = 0 \ ,$$

which defines the cutoff value $\varepsilon^*(b, e)$ as an increasing function of b and a decreasing function of e – at higher average intrinsic costs the share of minority children is lower.

Comparative statics Straightforward comparative statics imply

$$\frac{\partial \varepsilon^*}{\partial b} = \frac{u'(b)}{c'(e + \varepsilon^*)} > 0 \ .$$

Suppose ε^* is lower because e is higher, how does this alter the effect of material benefits? The answer is given by:

$$\frac{\partial^2 \varepsilon^*}{\partial b \partial e} = -\frac{c''(e + \varepsilon^*) u'(b)}{(c'(e + \varepsilon^*))^2} < 0 \ .$$

That is to say, at lower ε^* (higher e) – and a lower share of minority children – the effect of b is lower. This contradicts our empirical results from the tests of P1. However, the prediction of this alternative model is in line with our empirical results on prediction P3 in Table 5.

In summary, the alternative model without a social reputation term can help us understand some aspects of the data, but does not offer an alternative explanation for our central result.

7.2 Bargaining Power

Bargaining is an alternative mechanism to the material benefits of having a minority child that might explain facts F1 and F2 in Figure 1. Specifically, minority women's bargaining power may have gone up over time so that a higher number of Han-Minority couples chose minority status for their children. This mechanism may have become more powerful after 1980, due to

[28] We are grateful to a referee for suggesting this possibility to us.

[29] The results of this section largely hold up also in the case where the preferences are linear in the intrinsic costs in the type.

social and economic factors, like unbalanced and increasing sex ratios – more men per woman – among the Han.

A simple bargaining model Let us sketch a very simple bargaining model, without any social reputations, to see whether it can reproduce the patterns we find in the data. Suppose the Han man has a similar utility function as in (12), namely:

$$u^H = v + m[u(b) - (e + \varepsilon)] \ ,$$

while the minority woman has an analogous utility function:

$$u^M = v + m[u(b) + (e + \varepsilon)] \ ,$$

except that the intrinsic cost for the Han man of a minority child is an intrinsic benefit for the minority woman. In these expressions for u^H and u^M, ε is an idiosyncratic couple-specific shock to the intrinsic cost drawn after the couple is formed.[30]. We assume that these utility functions are linear in the intrinsic cost since this allows aggregation. An efficient bargaining solution maximizes

$$(1 - \alpha(\mathbf{z}))u^H + \alpha(\mathbf{z})u^M = v + m[u(b) - (1 - 2\alpha(\mathbf{z}))(e + \varepsilon)] \ ,$$

where $\alpha(\mathbf{z}) < 0.5$ is the relative bargaining power of the minority woman and $\mathbf{z}$ a vector of variables that affects this power. The indifference condition for a minority child becomes:

$$u(b) - (1 - 2\alpha(\mathbf{z}))(e + \varepsilon^*) = 0 \ .$$

Predictions The comparative statics are easy. We have

$$\frac{\partial \varepsilon^*}{\partial b} = \frac{u'(b)}{(1 - 2\alpha(\mathbf{z}))} > 0 \ .$$

We can now determine the effect of *changing bargaining power* for minority women from:

$$\frac{\partial \varepsilon^*}{\partial \alpha(\mathbf{z})} = \frac{2(e + \varepsilon^*)}{(1 - 2\alpha(\mathbf{z}))} > 0 \ .$$

Intuitively, higher bargaining power of the wife – a rise in $\alpha(\mathbf{z})$ – raises ε^* and the share of minority children. An alternative explanation for F2 – or a complementary explanation to the increase in b – is thus that the bargaining power of minority women in mixed marriages went up over time (and considerably more so than did the bargaining power of Han women in mixed marriages). However, to explain our results of testing P1 in Tables 2 and 3, $\alpha(\mathbf{z})$ would not only have to rise over time, but also have to rise by more in peer groups with a low ε^*.

[30]Having two independent shocks ε^H and ε^M revealed before the marriage would make the analysis more difficult. To say something useful about this case, we would need a marriage matching model.

In the remainder of this subsection, we check this possibility for three plausible proxies for $\mathbf{z}$, the determinants of minority women's bargaining power.

Education differences It is natural to look at the education gap between husband and wife, as a proxy for one component of $\mathbf{z}$. Plausibly, the spouse with higher education (and income) has more bargaining power. We calculate the gap based on the 1-4 levels of education (used as control variables in the baseline estimations). The education difference between husband and wife is around 0.2, meaning that, on average, women marry men with more education. Moreover, column (1) of Table 6 shows that the education gap decreases by 0.1 after the one child policy, consistent with the idea that bargaining power of minority women went up. Thus, higher bargaining power of minority women can help explain fact F2.

But can it also explain the results on our tests of P1? To approach that question, we start by using the education difference as an outcome. If this difference decreases with $Post_{r,t} \times I(\leq \mathrm{X})_p$, the change in woman's bargaining power goes in the same direction as our baseline findings. However, as shown in column (2) of Table 6, $Post_{r,t} \times I(\leq \mathrm{X})_p$, is not significantly correlated with education differences. Thus, the evidence does not support the idea that education differences decrease faster after the one-child policy in peer groups where the share of minority children is initially low.

As a further check, we add the education difference – and its interaction with the share indicator $I(\leq \mathrm{X})_p$ – to specifications similar to those underlying Table 2. The results are presented in column (3) of Table 6. After controlling for education difference and its interaction with $I(\leq \mathrm{X})_p$, the estimated interaction coefficient of $Post_{r,t} \times I(\leq \mathrm{X})_p$ is very similar to that in Table 2, showing that this measure of bargaining power does not drive the interaction between individual and social motives.

Age differences A proxy for another component of $\mathbf{z}$ is the age difference between husband and wife, where a smaller age difference presumably raises the wife's bargaining power. The average age difference between husband and wife is 2.6 years. Moreover, as shown in column (4) of Table 6, the age gap decreases by 0.46 years after the once-child policy, consistent with increasing bargaining power of minority women, meaning that this factor too may have contributed to the trend summarized in F2. We are interested in whether it also explains the results on our tests of P1.

Column (5) of Table 6 estimates how age differences correlate with pre-post policies interacted with the initial share of minority children. We see that $Post_{r,t} \times I(\leq \mathrm{X})_p$ is positively correlated with the age gap. So if women's bargaining power due to age was an important factor behind the choice of identity, we should see minority identity chosen less often where the initial share of children is small – the opposite to prediction P1 in our model.

Similar to the estimates for education differences, column (6) in Table 6 presents the results when we include the age difference between husband and wife and its interaction with the share indicator $I(\leq \mathrm{X})_p$. Again, the magnitude of the estimated individual-social interactions is very close to those in Table 2.

Sex ratios A third candidate to measure bargaining power is the (male to female) sex ratio in the husband's birth cohort of Han men within the same prefecture. It is natural to assume that a higher such ratio increases the bargaining power of the wife. Once again, the result in column (7) of Table 6 is consistent with the previous findings using education and age gaps: sex ratios increase over time.

Column (8) further shows that the increase is weakly larger in prefectures with a lower share of minority children, which goes to the same direction as our prediction on the effect of $Post_{r,t} \times I(\leq \mathrm{X})_p$. However, as shown in column (9), this estimate of $Post_{r,t} \times I(\leq \mathrm{X})_p$ is only marginally affected by controlling for sex ratio and its interaction with $I(\leq \mathrm{X})_p$, while the interaction between sex ratio and $I(\leq \mathrm{X})_p$ is insignificant. Therefore, even though this measure of bargaining power is positively correlated with our policy variable and may help explain F2, it is unlikely to drive our baseline estimate.

Column (10) presents the results when including all three measures of bargaining power. As the estimates show, all three measures may help us understand F2, the increase of minority children after the introduction of the one-child policy. But none of them can explain our main findings on the interaction between social and individual motives. That is the bottom line of this subsection.

7.3 Specification of Social Interactions

How particular are our theoretical predictions and empirical results to the assumed form of social interactions. The latter has two dimensions: how the social motive enters the household's preferences, and which social peer group is the relevant one for the household.

Specific form of social reputation As we have stressed, the aspect of the Benabou-Tirole model that produces either crowding in or crowding out is that people take into account not only the stigma of doing the wrong thing but also the honor of doing the right thing, given the prevailing norm and how other people in the peer group behave. Many papers in the literature consider only one of these, e.g., by focusing only on the stigma of breaking the norm and assuming that it becomes smaller the more people do it. But this is equivalent to assuming strategic complementarity, and hence crowding in *a priori*.

How important is the model's assumed functional form for social reputation, namely that people base their decisions on how their identity choice for their children signal their *expected type*, given how everybody else in the peer group behaves? One could think of other ways of modelling social reputation. The most natural alternative may be to replace the expected-type assumption, by assuming that the honor of a Han child and the stigma of a minority child, respectively, are given by the *shares* of norm-followers and norm-breakers in the peer group.

Under that alternative assumption, we would write the gain in social reputation as

$$\Delta(\varepsilon^*) = h(1 - G(\varepsilon^*)) - sG(\varepsilon^*) = h - (h+s)G(\varepsilon^*) \ ,$$

where h and s are some positive constants.

In this case, we would have $\frac{d\Delta}{d\varepsilon^*} = -(h+s)g(\varepsilon^*)$, such that choices would always be strategic complements, with maximal complementarity at the single peak of the p.d.f. for ε. This would deliver quite different predictions than the current model, predictions that would not be supported by the data. In particular, we would not predict a larger effect of b on G, when ε^* is low and the share of minority kids $G(\varepsilon^*)$ is high, unless we made very specific and strong assumptions about the form of the unobservable distribution G.

The attractiveness of our social-reputation model defined over expected types, is that it delivers non-trivial and testable predictions about the interaction between individual and social motives without overly strong functional-form assumptions.

Specific groups of social interaction Our model relies on the notion of a peer group in which the couples seek social reputation. Of course, the relevant peer group is unobservable. Our baseline assumption is that the relevant peer group consists of other Han-Minority couples in the same prefecture whose children were born in the previous cohort. In Section 5, we have already shown that the results on individual-social interactions are robust to alternatives – splitting the baseline definition into finer peer groups, by distinguishing rural and urban couples, and couples with Han men and women from each specific minority.

One could also argue that our baseline definition is too narrow rather than too wide. Why do not all Han (or all Minority) couples belong to the peer group for a mixed couple?[31] Our answer is that these homogenous couples cannot make any choice for their children's identity – our peer-group definition is thus *choice-based* and encompasses only those who make the same kind of choice. Against this, one could argue that the couples who face the same choice are not given exogenously, but given endogenously by the earlier choice of marriage partner. We are sympathetic to that argument, but then the concern is not so much about our peer-group definition as about our treatment of endogenous mixed marriages. The latter is the subject of the next subsection.

7.4 Endogenous Mixed Marriages

One important concern about our empirical work may be that some unobserved factors affect the incidence of mixed marriages as well as the ethnic choices for children, such that our findings in Tables 2 and 3 just reflect a proxy for those omitted variables rather than an interaction between individual and social motives. Note that an increase in mixed couples cannot explain the increase of minority children in Han-Minority families unless these couples are more likely to choose minority for their children. Our analysis provides one answer to why couples married

[31] We are grateful to a referee for suggesting this possibility.

after the ethnic policies are more likely to choose minority. Nevertheless, it is true that in a broader context mixed marriages are endogenous. In fact, we are currently doing additional research on the incidence of mixed marriages. We leave the question about the drivers of mixed marriages for an accompanying paper, but it is still important to examine whether they matter for our main findings. We check this in two ways.

A narrower subsample First, we turn to a subsample where endogenous marriage is less of a problem. In particular, we consider only couples who are married before the introduction of ethnic policies. This restriction, plus the fact that marriage-year information is available only in the 2000 and 2005 censuses, means that we have a much smaller sample. Estimation results for our baseline specifications are presented in columns (1) and (2) of Table 7. Since the subsample excludes all couples married after the policy, most of the children in the sample were born before 1985, implying that we have a short post-policy period. This explains why the average effect of the policies in columns (1) is smaller than that in the whole sample (recall the dynamic pattern in Figure 6). However, the interaction effect with the social motive in column (2) is positive, quite precisely estimated, and larger in magnitude than the average effect, precisely as our baseline estimates in Table 2.

Holding constant mixed marriages Second, we re-estimate our baseline specification in Table 2, while considering the share of mixed marriages and its interaction with the share indicator in the father's cohort in the same prefecture. Column (3) first shows that the change in the mixed marriage share is not significantly correlated with the cutoff defined by the child's ethnicity. As shown in columns (4)-(5), the interaction effect of mixed marriage share and $I(\leq \mathrm{X})_p$ goes in the same direction as that of $Post_{r,t} \times I(\leq \mathrm{X})_p$. However, including the incidence of mixed marriages only very marginally alters the estimates of the central interaction effect in Table 2.

The bottom line from this subsection is thus that endogenous mixed marriages are unlikely to explain our main results on the interactions between individual and social motives.

7.5 Censoring

Another possible concern is that our main result might have a mechanical explanation, due to a kind of upward censoring. Specifically, our finding of a larger policy effect in prefectures where the share of minority children is small could be driven by the simple fact that there is little room to respond when this share is large and approaching one. To check for this possibility, we restrict the estimation sample to prefecture-cohorts with a share of minority children between 0.3 and 0.7. In this interval, there should be enough room for mixed households in every prefecture-cohort to respond without hitting a constraint. As shown in Table 8, the estimates from the restricted sample are similar to the baseline estimates from the full sample in Table 2. In other words, upward censoring does not drive our main findings on individual-social interactions.

7.6 Composition Effect

Finally, the results could conceivably capture another type of mechanical effect. Specifically, some couples may always have Han children and others may always have minority children. Suppose now that after the one-child policy, the identifying variation we use, couples who choose minority identity have a larger number of children than those who choose Han identity. Such a composition effect could mechanically explain our results without any change in behavior (other than regarding the number of children).[32]

Number of children To shed light on this, we first examine if the number of children before and after the policy differ significantly for the households choosing minority and those choosing Han. Then, we check whether our baseline findings hold for couples with one and multiple children.

Since only around 9% of the households in our sample have some children born before the policy and others born after the policy, there can be little variation in ethnicity across children within a family. This allows us to compare the number of children in families always choosing minority with those always choosing Han. Unsurprisingly, columns (1) and (2) in Table 9 show that the average number of children decreased after the one-child policy. Moreover, the number of children in families always choosing minority is slightly lower. However, the evidence does not suggest that the number of children across couples making different ethnic choices change systematically across the introduction of the policy. Therefore, our main findings are unlikely to be driven by a composition effect.

One-child and multiple-children families To take a further step, columns (3)-(6) in Table 9 present separate results for families with a single child and those with multiple children. As the estimates show, however, the results for both types of households are very similar to each other and to the baseline results in Table 2. Against the background of the findings in columns (1)-(2) that the number of children are not systematically related to the pre-policy shares of minority children, these estimates present further evidence against the composition-effect hypothesis driving our central finding.

The results in this subsection demonstrate that the variation in our comparison mainly comes from cross-family over-time differences within a prefecture. But the composition of families itself is unlikely to explain our baseline findings.

8 Conclusion

We provide a framework to analyze the ethnicity of children in interethnic marriages. Drawing on earlier work by Benabou and Tirole (2011), we present a model which is consistent with two motivating facts for China. The model also delivers a set of auxiliary predictions. The empirical

[32] We are grateful to a referee for suggesting this possibility to us.

tests we carry out on Chinese census data generally support these predictions. Most importantly, the results suggest that changes in individual motives triggered by policy interventions are crowded in where the initial share of minority children is low, and crowded out by social motives when this share is high, precisely in the way that theory predicts.

Our empirical results make contributions to a few lines of research. One is a new perspective to the literature on identity choices. Despite many fruitful studies on the determinants of identity, we have not seen any previous study of the interplay among individual material incentives, intrinsic motives and social norms. Our paper may open avenues for future research on identity choices in other contexts.

A second contribution is specific to China, where the economics and politics of ethnicity have been an important issue, yet rarely studied with economic methods. In future work, we will extend our empirical analysis to predictions from a model of directed marriage search, asking which individuals end up in mixed couples in the first place. Then, the ethnic choices for children analyzed in this paper would help determine the continuation value from the marriage stage.

Finally, we hope our paper makes a more general contribution: to understand how individual (material and intrinsic) motives and social motives interact in shaping individual choices. Our methodology for empirically investigating how social concerns modify the effect of individual incentives can plausibly be applied to other economic, political or social choices – e.g., in tax evasion, political participation, or fertility – which may reflect an interplay between individual and social motives.

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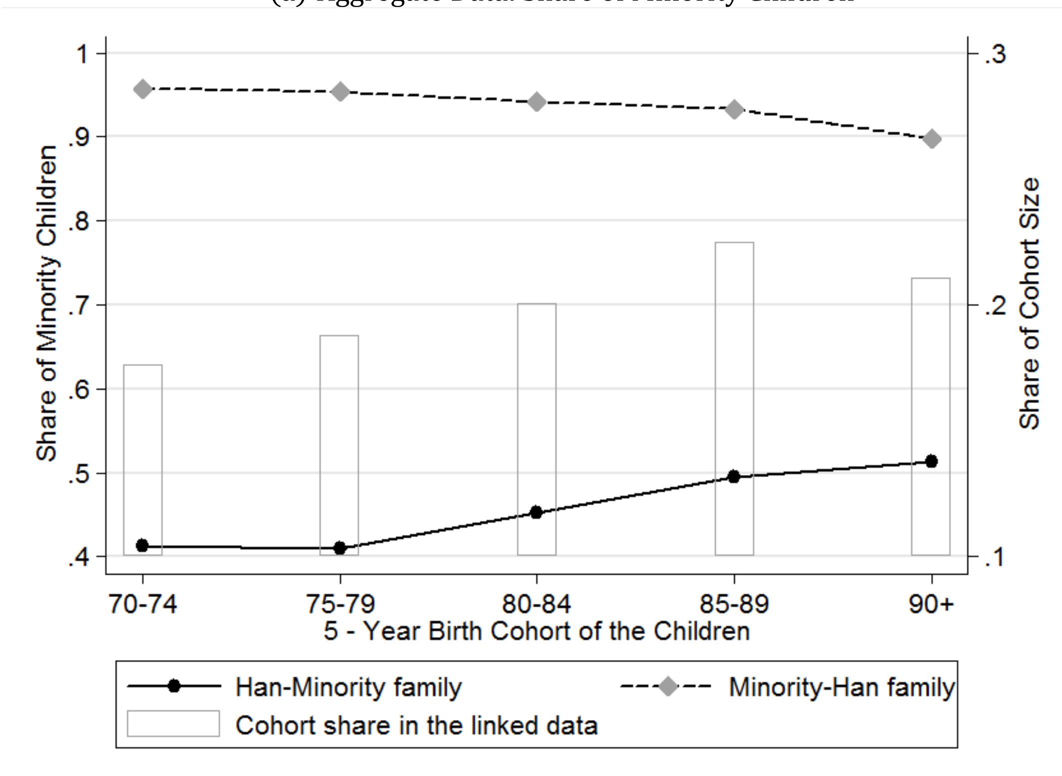
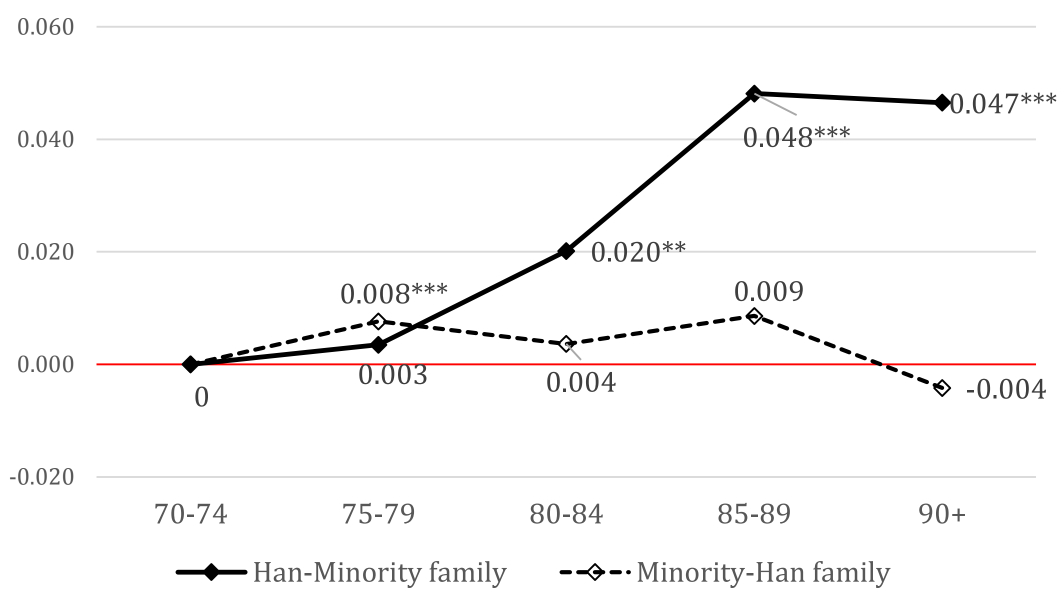
Figure 1 Minority Children by Type of Mixed Marriage and Birth Cohort

(a) Aggregate Data: Share of Minority Children

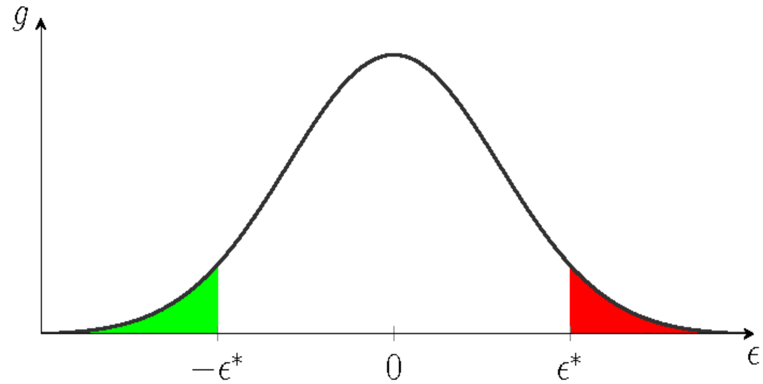


(b) Individual Data: Probability of Being a Minority Child

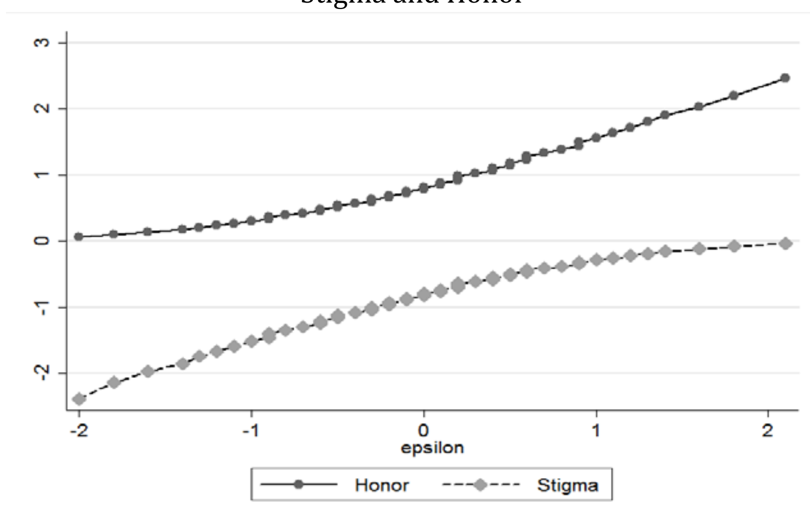


Notes: This figure shows two facts using aggregate and individual data:
F1: the children are more likely to be a minority in Minority-Han families;
F2: there is an increasing trend of minority children Han-Minority after 1980.

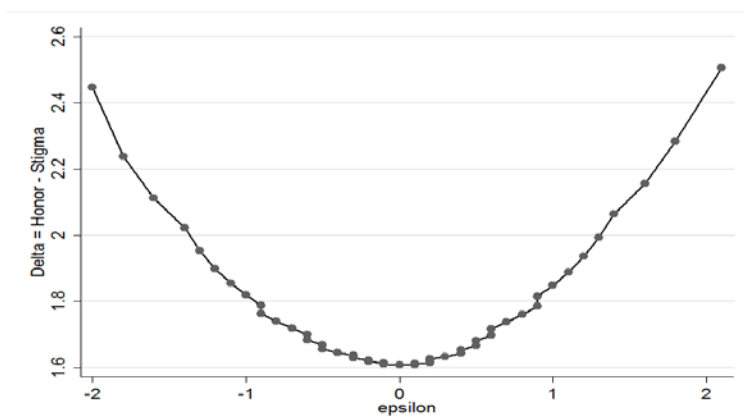
Figure 2 The Race between Honor and Stigma
(a) An illustration



(b) A numerical example
Stigma and Honor



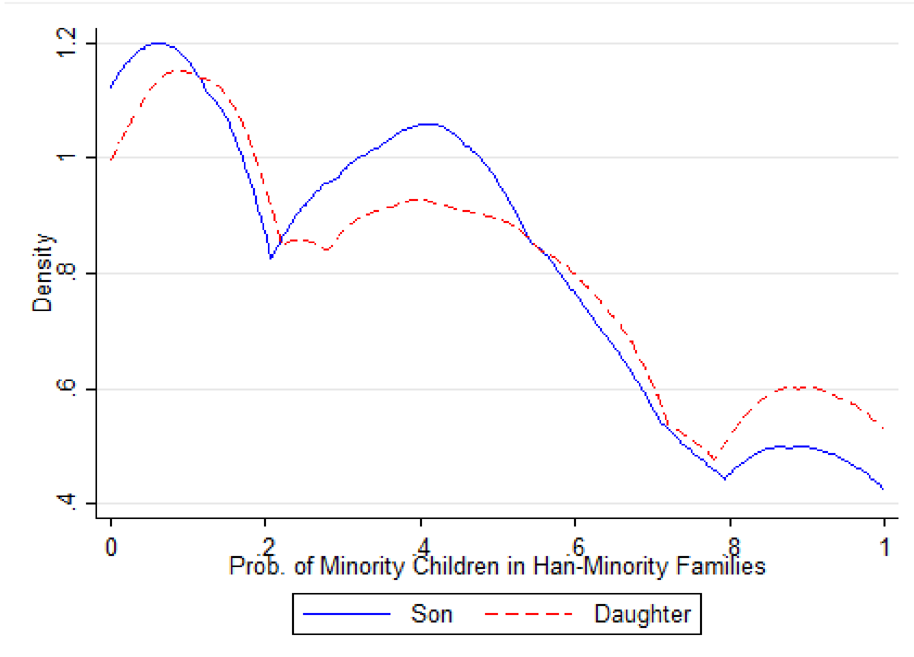
Δ (= Honor-Stigma)



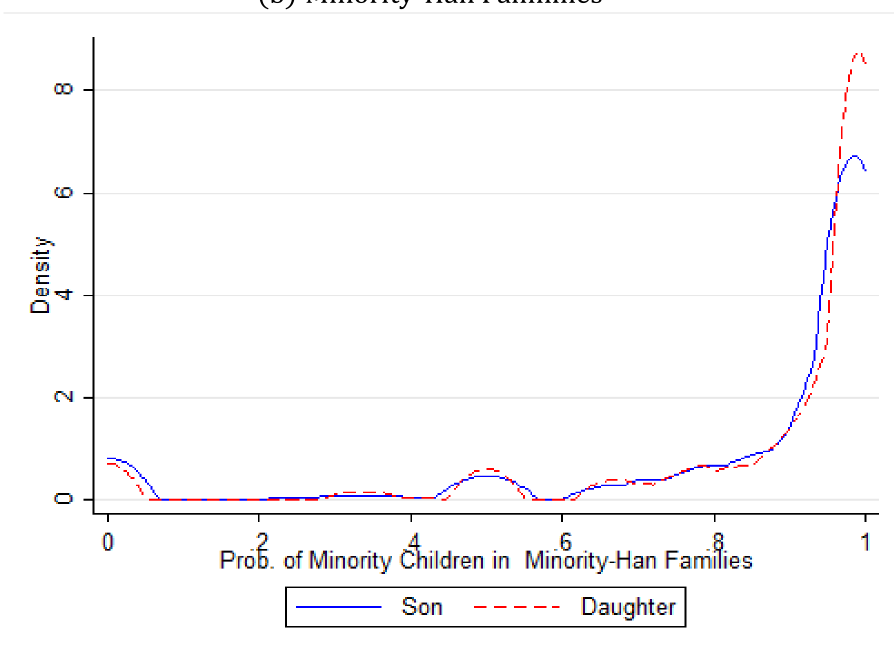
Notes: This figure illustrates how the gain in social reputation (Honor-Stigma) has a minimum and changes with the equilibrium share of minority children chosen among Han-Minority couples.

Figure 3 Distribution of Minority Shares across Prefectures (born in 1970-74)

(a) Han-Minority Families

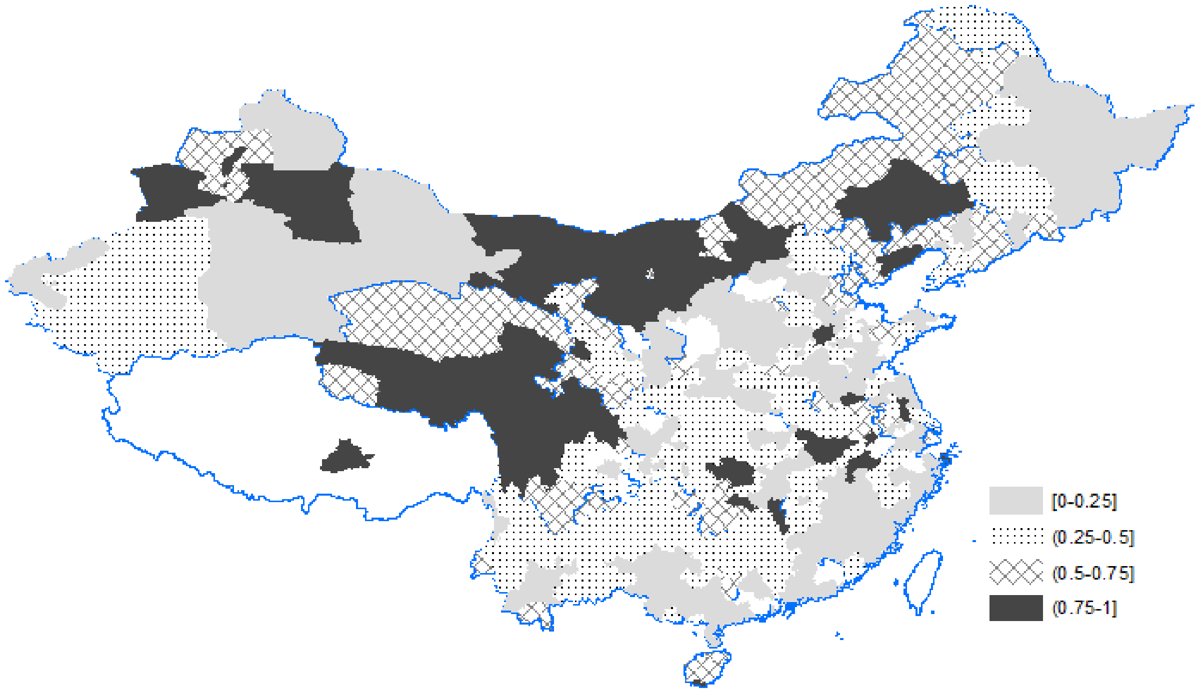


(b) Minority-Han Famililies



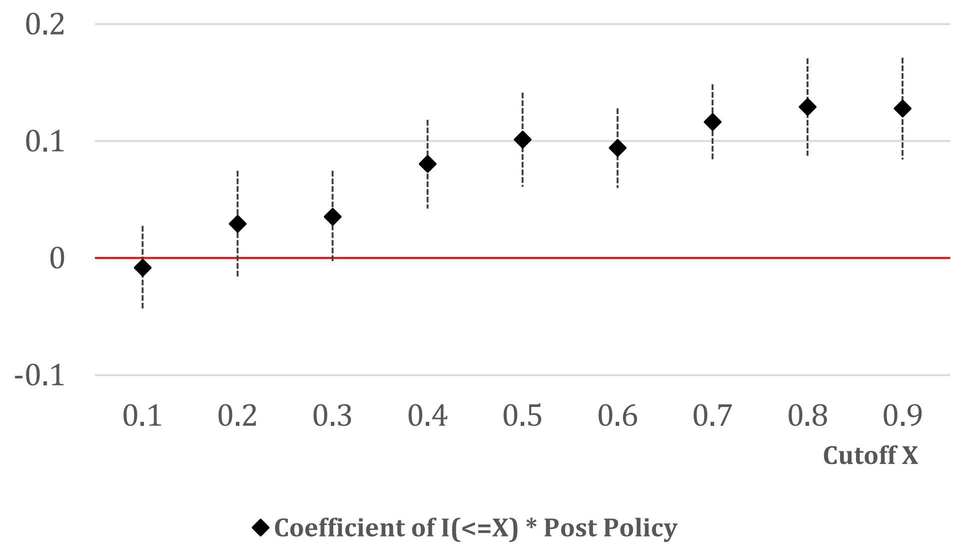
Notes: Panel (a) shows that this share varies a great deal across regions for Han-Minority families and sons are less likely to have a minority identity. Panel (b) shows that the Minority-Han couples in most prefectures have almost exclusively minority children.

Figure 4 Spatial Variation in Share of Minority Children (born in 1970-74)



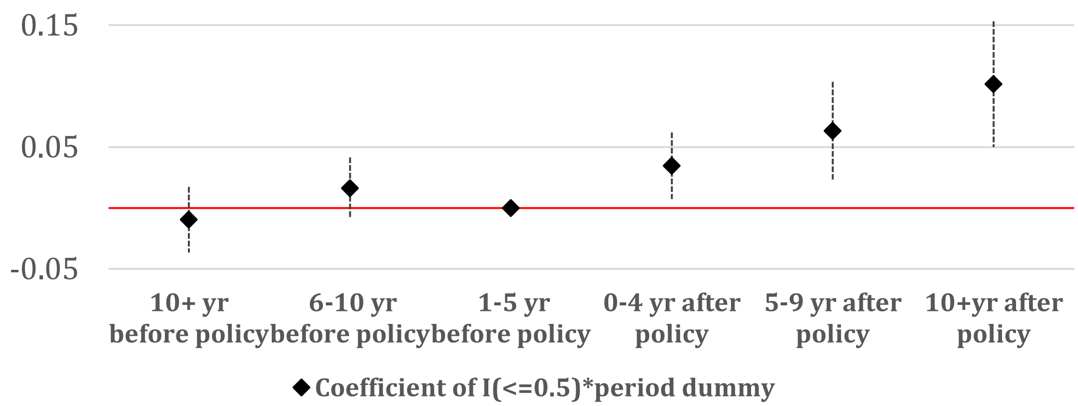
Notes: This figure maps the average share of minority children born during 1970-74 in Han-Minority families. A set of province fixed effects explains only about 36% of the variations across prefectures.

Figure 5 Results Using Different Cutoffs



Notes: This figure plots the results for prediction P1 using different cutoff values for the share of minority children, ranging from 0.1 to 0.9., using the same specification as that in column (6) of Table 2. The dots indicates the estimates and the line through each dot indicates the 95% confidence interval.

Figure 6 Dynamic Effects of Individual Benefits * Social Motives



Notes: This figure plots the dynamic immpacts of I(≤0.5) relative to the policy year, which reveals no pre-trends. The dots are the estimates in column (4) of Table A4. The dashed lines indicate the 95% confidence intervals.

Table 1 Summary Statistics by Subsample

Variable	All Obs.	All Mean (s.d.)	Pre-1980 Obs.	Pre-1980 Mean (s.d.)	Post-1980 Obs.	Post-1980 Mean (s.d.)
Child Minority (MH-family)	110,020	0.937	43,709	0.956	66,311	0.926
		(0.242)		(0.206)		(0.263)
Child Minority (HM-family)	124,940	0.465	42,140	0.411	82,800	0.492
		(0.499)		(0.492)		(0.499)
Zhuang Wife (HM-family)	124,940	0.170	42,140	0.169	82,800	0.171
		(0.376)		(0.375)		(0.377)
Son (HM-family)	124,940	0.531	42,140	0.539	82,800	0.527
		(0.499)		(0.498)		(0.499)
Religious Wife (HM-family)	124,940	0.185	42,140	0.165	82,800	0.195
		(0.388)		(0.371)		(0.396)
Post Policy (HM-family)	121,908	0.581				
		(0.493)				
Father's Education (HM)	124,940	2.094				
		(0.616)				
Mother's Education (HM)	124,940	1.878				
		(0.654)				
Urban Father (HM)	59,278	0.261				
		(0.439)				
Urban Mother (HM)	59,278	0.233				
		(0.422)				

Notes: Consistent with the model, children in Minority-Han families are very likely to be minorities. As this leaves little variation for us to explore, we focus on Han-Minority families. Urban information is based on censuses 2000 and 2005.

Table 2 Results I for P1: Individual and Social Motives

D.V.: Minority Child=0/1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
I(⩽0.5)*Post Policy		0.072***	0.069***	0.071***	0.073***	0.101***				
		(0.019)	(0.019)	(0.020)	(0.020)	(0.021)				
Post Policy	0.078***	0.031**	0.035**							
	(0.011)	(0.014)	(0.013)							
I(⩽0.5)*Post 1980								0.063***	0.063***	0.082***
								(0.020)	(0.020)	(0.021)
Post 1980							0.073***	0.031**		
							(0.010)	(0.016)		
Prefecture FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wife Ethnicity FE			Y	Y	Y	Y			Y	Y
Birth Year FE				Y	Y	Y			Y	Y
Couples' Character.					Y	Y			Y	Y
Provincial Trends						Y				Y
Observations	121,908	121,908	121,908	121,908	121,908	121,908	124,940	124,940	124,940	124,940
R-squared	0.276	0.277	0.290	0.292	0.301	0.305	0.270	0.271	0.287	0.299

Notes: The cutoff is defined by the share of minority children in Han-Minority families in the cohort of 1970-74. Columns (1)-(6) present the results using the measure Post Policy, while columns (7)-(10) use Post 1980 as a robustness check. Couples' charateristics include indicators for four education levels and 5-year birth-cohort fixed effects, both of these for husband as well as wife. The data come from three censuses and a mini census from 1982-2005. Standard errors are clustered at the prefecture level. Significance: ***, 1%, **, 5%, *, 10%. Figure 4 visualizes the results for alternative cutoff years for higher minority benefits.

Table 3 Results Using Finer Peer Groups

	(1)	(2)	(3)	(4)	(5)	(6)
(a)	Rural (Mean: 0.49)			Urban (Mean: 0.66)		
I(≤0.5)*Post Policy		0.036*	0.038**		0.110***	0.112***
		(0.020)	(0.019)		(0.023)	(0.023)
Post Policy	0.020**			0.066***		
	(0.010)			(0.013)		
Observations	42,395	42,395	42,395	13,335	13,335	13,335
(b)	Below High School (Mean: 0.44)			Above High School (Mean: 0.60)		
I(≤0.5)*Post Policy		0.058***	0.058***		0.080***	0.086***
		(0.021)	(0.021)		(0.026)	(0.026)
Post Policy	0.072***			0.056***		
	(0.011)			(0.015)		
Observations	101,262	101,262	101,262	20,646	20,646	20,646
(c)	By Ethnicity of the Wife (Mean: 0.47)					
I(≤0.5)*Post Policy		0.100***	0.102***			
		(0.019)	(0.020)			
Post Policy	0.088***					
	(0.011)					
Observations	114,269	114,269	114,269			
Prefecture FE	Y	Y	Y	Y	Y	Y
Wife Ethnicity FE		Y	Y		Y	Y
Birth Year FE		Y	Y		Y	Y
Couples' character.			Y			Y

Notes: This table shows that the baseline results hold when narrowing the definitions of peer groups. Rural/Urban is based on censuses 2000 and 2005. Couples' characteristics include indicators for four education levels and 5-year birth-cohort fixed effects, both of these for husband as well as wife. Standard errors are clustered at the prefecture level. Significance: ***, 1%, **, 5%, *, 10%. Figure 4 visualizes the results for alternative cutoff years for higher minority benefits.

Table 4 Results for P2: Heterogenous Impacts of Material Benefits (Zhuang vs. Others)

D.V.: Minority Child=0/1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Zhuang Wife * Post Policy	-0.037**	-0.065**	-0.067**	-0.067**	-0.070***	-0.081***	-0.085***
	(0.018)	(0.028)	(0.027)	(0.027)	(0.026)	(0.026)	(0.025)
Post Policy	0.084***	0.061***	0.068***				
	(0.012)	(0.021)	(0.020)				
Zhuang Wife	-0.145***	-0.100**					
	(0.037)	(0.049)					
Minority Pop. Share (Wife) * Post Policy		0.037	0.031	0.035	0.042	0.069***	0.073***
		(0.028)	(0.027)	(0.027)	(0.027)	(0.023)	(0.024)
Minority Pop. Share (Wife)		-0.053					
		(0.034)					
Prefecture FE	Y	Y	Y	Y	Y	Y	Y
Wife Ethnicity FE			Y	Y	Y	Y	Y
Birth Year FE				Y	Y	Y	Y
Couples' Characteristics					Y	Y	Y
Provincial Trends						Y	Y
Excluding Migrants							Y
Observations	121,908	121,908	121,908	121,908	121,908	121,908	113,343
R-squared	0.280	0.280	0.289	0.291	0.300	0.304	0.313

Notes: This table shows that the effect of the policy change is smaller for families with a Zhuang wife, consistent with the fact that the Zhuang minority does not enjoy ethnic benefits. Couples' charateristics include indicators for four education levels and 5-year birth-cohort fixed effects, both of these for husband as well as wife. Standard errors are clustered at the prefecture level. Significance: ***, 1%, **, 5%, *, 10%.

Table 5 Results I for P3: Heterogenous Effects of Intrinsic Costs

D.V.: Minority Child=0/1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Son * Post Policy	-0.017***	-0.019***	-0.019***	-0.019***	-0.016***					
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)					
Relig. Wife * Post						-0.050***	-0.045***	-0.049***	-0.029**	-0.033**
						(0.015)	(0.015)	(0.016)	(0.013)	(0.013)
Son	-0.000	0.001	0.001	0.001	0.001					
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)					
Religious Wife						0.092***				
						(0.017)				
Post Policy	0.087***					0.087***				
	(0.011)					(0.012)				
Prefecture FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wife Ethn. FE		Y	Y	Y	Y		Y	Y	Y	Y
Birth Year FE		Y	Y	Y	Y		Y	Y	Y	Y
Couples' Characteristics			Y	Y	Y			Y	Y	Y
Prov. Trends.				Y	Y				Y	Y
Excl. Migrants					Y					Y
Observations	121,908	121,908	121,908	121,908	113,343	121,908	121,908	121,908	121,908	113,343
R-squared	0.276	0.291	0.300	0.304	0.313	0.277	0.291	0.300	0.304	0.313

Notes: This table shows that the effect of the policy change is smaller for sons, consistent with the interpretation that it is more costly for a Han man to have a son (than a daughter) with a different ethnicity. Couples' charateristics include indicators for four education levels and 5-year birth-cohort fixed effects, both of these for husband as well as wife. Standard errors are clustered at the prefecture level. Significance: ***, 1%, **, 5%, *, 10%.

Table 6 Alternative Explanation 2: Bargaining Power

	(1) Edu. Dif.	(2) Edu. Dif.	(3) Minority Child	(4) Age Dif.	(5) Age Dif.	(6) Minority Child	(7) Sex Ratio	(8) Sex Ratio	(9) Minority Child	(10) Minority Child
I(≤0.5)*Post Policy		-0.009	0.099***		0.303**	0.101***		0.027*	0.097***	0.099***
		(0.015)	(0.021)		(0.117)	(0.021)		(0.014)	(0.020)	(0.020)
Post Policy	-0.116***			-0.465***			0.022***			
	(0.007)			(0.069)			(0.007)			
I(≤0.5)* (Hus. – Wife Edu.)			-0.002							-0.002
			(0.006)							(0.006)
Husband – Wife Edu.			-0.007							-0.007
			(0.004)							(0.005)
I(≤0.5)* (Hus. – Wife Age)						0.003**				0.003**
						(0.001)				(0.001)
Husband – Wife Age						-0.004***				-0.004***
						(0.001)				(0.001)
I(≤0.5)* Sex Ratio									-0.022	-0.025
									(0.056)	(0.056)
Sex Ratio									0.090*	0.093**
									(0.046)	(0.046)
Prefecture FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wife Ethnicity FE		Y	Y		Y	Y		Y	Y	Y
Birth Year FE		Y	Y		Y	Y		Y	Y	Y
Provincial Trends		Y	Y		Y	Y		Y	Y	Y
Observations	121,908	121,908	121,908	121,908	121,908	121,908	120,094	120,094	120,094	120,094
R-squared	0.036	0.044	0.297	0.066	0.082	0.297	0.373	0.415	0.299	0.299

Notes: This table shows that our main results cannot be explained by changes in the bargaining power of minority women proxied by education differences, age differences and sex ratio (for the husband's birth cohort). Standard errors are clustered at the prefecture level. Significance: ***, 1%, **, 5%, *, 10%.

Table 7 Alternative Explanation 4: Endogenous Marriage

	(1)	(2)	(3)	(4)	(5)
Sample	Married before Policy		All	All	All
D.V.	Minority Child	Minority Child	Share of HM Marriage	Minority Child	Minority Child
I(≤0.5)*Post Policy		0.042**	-0.482		0.089***
		(0.021)	(0.828)		(0.015)
Post Policy	0.024***				-0.077***
	(0.008)				(0.012)
I(≤0.5)*HM Share				0.009**	0.005
				(0.004)	(0.004)
HM Share				-0.003	-0.000
				(0.003)	(0.003)
Prefecture FE	Y	Y	Y	Y	Y
Wife Ethn. FE		Y	Y	Y	Y
Birth Year FE		Y	Y	Y	Y
Couples' Characteristics		Y	Y	Y	Y
Prov. Trends.		Y	Y	Y	Y
Observations	17,648	17,648	121,908	121,908	121,908
R-squared	0.295	0.328	0.924	0.958	0.305

Notes: Columns (1)-(2) present the results using a subsample of only those couples married before the policy. The results show that the baseline pattern is robust to the concern of endogenous marriage. Standard errors are clustered at the prefecture level. Significance: ***, 1%, **, 5%, *, 10%.

Table 8 Alternative Explanation 5: Censoring (Shares between 0.3 and 0.7 only)

D.V.: Minority Child=0/1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
I(≤0.5)*Post Policy		0.062**	0.062**	0.062**	0.059**	0.100***	0.102***
		(0.028)	(0.027)	(0.027)	(0.027)	(0.029)	(0.028)
Post Policy	0.108***	0.071***	0.076***				
	(0.015)	(0.020)	(0.020)				
Prefecture FE	Y	Y	Y	Y	Y	Y	Y
Wife Ethnicity FE		Y	Y	Y	Y	Y	Y
Birth Year FE			Y	Y	Y	Y	Y
Couples' Characteristics				Y	Y	Y	Y
Provincial Trends					Y	Y	Y
Excluding Migrants						Y	Y
Observations	54,345	54,345	54,345	54,345	54,345	54,345	49,839
R-squared	0.093	0.094	0.113	0.117	0.130	0.136	0.140

Notes: This table shows the baseline results on a sample restricted such that the share of minority children lies between 0.3 and 0.7. It shows that the room to change should not be a critical concern. Standard errors are clustered at the prefecture level. Significance: ***, 1%, *, 5%, *, 10%.

Table 9 Alternative Explanation 6: Composition Effects

	(1)	(2)	(3)	(4)	(5)	(6)
	Household-Level Analysis		Individual-Level Analysis			
			Single-child Family		Multiple-children	
D.V.	#Children	#Children	Minority	Minority	Minority	Minority
I(≤0.5)*Post Policy				0.105***		0.099***
				(0.020)		(0.024)
Minority Family * Post Policy	0.045	0.046				
	(0.035)	(0.035)				
Minority Family	-0.107***	-0.101***				
	(0.028)	(0.027)				
Post Policy	-0.245***	-0.248***	0.085***		0.073***	
	(0.037)	(0.037)	(0.011)		(0.012)	
Prefecture FE	Y	Y	Y	Y	Y	Y
Wife Ethnicity FE		Y		Y		Y
Birth Year FE				Y		Y
Couples' Characteristics				Y		Y
Provincial Trends				Y		Y
Observations	68,372	68,372	34,120	34,120	87,788	87,788
R-squared	0.114	0.118	0.233	0.261	0.296	0.317

Notes: This table shows that compostion effects are unlikely to drive our baseline findings. Standard errors are clustered at the prefecture level. Significance: ***, 1%, *, 5%, *, 10%.

Web Appendix to Jia, Ruixue and Torsten Persson

Individual vs. Social Motives in Identity Choice:
Theory and Evidence from China

A.1 Quantile Predictions

In this section, we consider an alternative version of Prediction P1, and the empirical results when this alternative prediction is tested.

Theory

P1 relies on a comparison of the effects above and below a cutoff share. An alternative way to get at the interaction of individual and social motives is to consider the comparative statics for different parts of the distribution of shares $G(\varepsilon^*)$ observed in the data, say different quartiles of shares corresponding to different quartiles of ε^*. Letε_q^*, $q = 1,2,3,4$ denote cutpoints located at the middle of the quartiles of the ε distribution. The (weak) positive skew of the distribution implies that $g(\varepsilon_4^*) \leq g(\varepsilon_1^*)$ and $g(\varepsilon_4^*) \leq g(\varepsilon_3^*) \leq g(\varepsilon_2^*)$. Moreover, under the assumption that $\frac{\mathrm{d}^2\Delta}{d\varepsilon^{*2}}>0$, the first derivatives of the social multiplier are monotonically ordered as: $\frac{d\Delta(\varepsilon_1^*)}{d\varepsilon^*}<\frac{d\Delta(\varepsilon_2^*)}{d\varepsilon^*} < \frac{d\Delta(\varepsilon_3^*)}{d\varepsilon^*} < \frac{d\Delta(\varepsilon_4^*)}{d\varepsilon^*}$. Using these facts in equation (5), we obtain an alternative testable prediction:

P1': *Suppose all peer groups in a province experience the same increase in benefits, due to a provincial policy. Then, the effect on the probability of having minority children is (i) larger in the first, second and third quartile than in the fourth quartile of the share distribution, (ii) larger in the second than in the third quartile, (iii) ambiguous when we compare the first and second quartiles.*

The third part of this prediction is also useful to explain why we cannot use a simple linear interaction between the initial share and the $Post_{r,t}$ indicator to test the theory. The reason for the ambiguity in a comparison of the effect in the first and second quartile is that the density is increasing in the cutoff ε^* in the left part of the distribution. A cutoff in the first quartile is thus associated with a lower density, but a higher social multiplier than a cutoff in the second quartile. Since the effect in equation (5) is the product of density and the social multiplier, the prediction is ambiguous. And for this reason, assuming a linear interaction term is thus inconsistent with the model (without very strong functional-form assumptions).

Data

We now consider the prediction P1', about the interaction between individual and social motives, based on the behavior in different quartiles. To do that we replace $I(\leq X)_p$ in equation (9) with three indicators for the share of minority children in the early 1970s cohort being in one of the three first quartiles: $I(0-0.25)_p$, $I(0.25-0.50)_p$ and $I(0.50-0.75)_p$. We thus leave the fourth quartile as the reference group.

Table A7 shows the results, when the peer group is always defined as the mixed couples in the 1970-74 cohort in the same prefecture (Definition 1). Column (1) presents the interaction effects with prefecture fixed effects. Columns (2) and (4) add ethnic fixed effects (referring to the ethnicity of the minority wife), birth year fixed effects and province-specific trends. Column (5) excludes migrants.

Consistent with prediction P1', the effect is generally larger for the first, second and third quartile. In addition, the point estimates for the second quartile are indeed significantly higher than that for the third quartile (with a p-value smaller than 0.05 in all specifications). These effects are again large: the difference in effects of higher material benefits, say, in the first vs. the fourth quartile is on the order of the average effect estimated in column 1 of Table 2. This corresponds to the theoretical prediction of a social multiplier above 1 in the first quartile -- due to crowding in -- and a social multiplier below 1 in the fourth quartile -- due to crowding out.

A.2 Dynamic Extension of the Model

In this section, we show how one can extend the model to get a dynamic adjustment to a new steady state after a one time shock.

Introducing dynamics

Suppose that the social-reputation motives of the parents in a given birth cohort (where a cohort could, e.g., be defined as a year) are tied to the behavior of the parents in the previous birth cohort. Specifically, the cutoff entering the gain in social reputation for Han-minority couples with birth cohort t is tied to the behavior of the Han-minority couples with birth cohort $t-1$. One rationale for this assumption could be that the behavior of other couples is only observed with a period's lag. This assumption is similar to the one made by Besley, Jensen and Persson (2015) in their analysis of tax evasion in a dynamic version of the Benabou-Tirole model.

Drawing on their results, equation (3) still defines a steady-state value for ε_H^*. As long as other parameters, b and $e(H)$ are constant, the equilibrium cutoff (and therefore the share of minority children) adjusts gradually towards the new steady state according to the non-linear difference equation[1]:

$$b - e(H) - \varepsilon^*_{H,t} = \mu\Delta(\varepsilon^*_{H,t-1}) \qquad \text{(A.1)}$$

A Shift in b

Consider now an upward shift in benefits b that occurs in period 1. Consider two peer groups L and H with low and high initial shares $\varepsilon^{*L}_{H,0} < \varepsilon^{*H}_{L,0}$ of minority children. In the dynamic setting, the steady-state shift in the minority share is going to be larger in group L than in group H, in the same way as in the static model. But the impact effect of the shift in b in period 1 is the same in the two groups, as the behavior by the previous cohort $\varepsilon^{*L}_{H,0}$ is given at the time of the shock. However, the cutoff starts changing from birth cohort 1 and onwards. Because the minority share of the group L is adjusting more than the one of group H, its share will become progressively higher as we go forward in time from period 2.

This is precisely what we see in Figure 6 in the main text and in the corresponding regression estimates in Table A5 of this Web Appendix.

[1] The steady state is stable under the assumption we have already made that $1 + \mu\frac{d\Delta(\varepsilon^*_1)}{d\varepsilon^*} \geq 0$. This guarantees the root on non-linear difference equation (A.1) is less than 1 in absolute value.

Table A1 Fact F1: HM-Families versus MH-Families
D.V.: Minority Child = 0/1

	(1)	(2)	(3)	(4)
MH-Marriage	0.475***	0.447***	0.448***	0.448***
	(0.028)	(0.028)	(0.028)	(0.028)
Prefecture FE		Y	Y	Y
Birth Year FE			Y	Y
Provincial Trends				Y
Observations	235,930	235,930	235,930	235,930
R-squared	0.260	0.370	0.371	0.374

Notes: This table shows that fact F1 in Figure 1 also holds at the individual level. Standard errors are clustered at the prefecture level. Significance: ***, 1%, **, 5%, *, 10%.

Table A2 Fact F2: Ethnicity of Children by Cohorts
D.V.: Minority Child = 0/1

	(1)	(2)	(3)	(4)	(5)	(6)
Born 1975-79	-0.002	0.017***	0.003	-0.004*	-0.002	0.008***
	(0.009)	(0.005)	(0.006)	(0.002)	(0.002)	(0.003)
Born 1980-84	0.040**	0.048***	0.020**	-0.016***	-0.015***	0.005
	(0.015)	(0.008)	(0.010)	(0.003)	(0.003)	(0.005)
Born 1985-90	0.086***	0.089***	0.048***	-0.024***	-0.020***	0.010
	(0.017)	(0.011)	(0.013)	(0.004)	(0.004)	(0.007)
Born 1990+	0.108***	0.109***	0.047***	-0.059***	-0.047***	-0.003
	(0.024)	(0.015)	(0.018)	(0.006)	(0.005)	(0.009)
Prefecture FE		Y	Y		Y	Y
Provincial Trends			Y			Y
Observations	124,940	124,940	124,940	110,020	110,020	110,020
R-squared	0.008	0.272	0.277	0.007	0.082	0.086

Notes: This table shows that fact F2 in Figure 1 also holds at the individual level. Standard errors are clustered at the prefecture level. Standard errors are clustered at the prefecture level. Significance: ***, 1%, **, 5%, *, 10%.

Figure A1 Anecdotal Evidence on Ethnic Choice

父亲是汉族，母亲是少数民族，那孩子的民族怎么决定？可以随母亲吗？

父亲是汉族，母亲是少数民族，那孩子的民族怎么决定？可以随母亲吗？wsjssc.com

"If the father is a Han and the mother is a minority, could the child be a minority?"

林医宝贝轩 来自：网页 2012-08-28

Generally should follow the father's. But following the mother's has the benefits of ethnic favors.

一般都随父亲，听说这样的孩子聪明，不过随母亲有好处，少数民族人国家有照顾 0

郭高高 来自：网页 2012-08-28

小女孩 4岁2个月

Ok. I have a friend who followed the mother's.

可以的。。。。。我有个朋友就随母亲的 2

育儿2011 来自：网页 2012-08-28

Generally should follow the father's. It is fine if you insist on following the mother's.

一般都是随父亲的，你一定要随母亲应该问题也不大 0

嘴角溽痴味 来自：网页 2012-08-28

小女孩 3岁7个月

The parent can make a choice. It is fine following the mother's.

父母可以自己决定，随母亲也行的 0

三口之家免 来自：网页 2012-08-28

The child should follow the father's ethnicity. Only the children of a live-in husband will follow the mother's.

亲这样的话，孩子的民族一般是跟着孩子的父亲的，如果是跟着母亲的话，一般是上门女婿才可以的啊。 0

西西1011 来自：网页 2012-09-02

You can follow the mother's. A minority has the option of having a second child.

可以随母亲，当个少数民族，然后还可以再生一个。 0

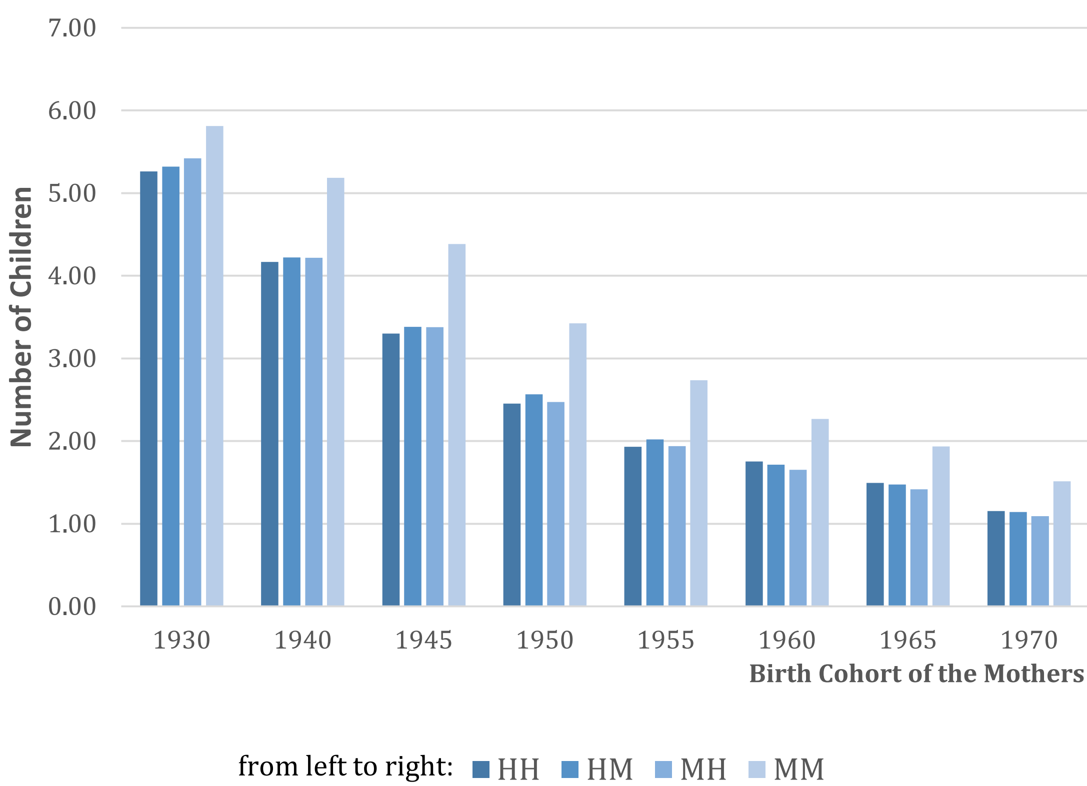
Source: http://www.babytree.com/ask/detail/3690549

Table A3 Differences across Marriages

	HH	MM	HM	MH	
#Couples	6436486	417089	90704	81570	
Share in total marriages	91.60%	5.90%	1.30%	1.20%	
HM Share for a minority woman					1.3/(1.3+5.9)=18%
MH Share or a minority man					1.2/(1.2+5.9)=17%
Husband Edu-Wife Edu	0.27	0.26	0.21	0.23	
Husband Age-Wife Age	2.41	2.72	2.8	2.48	

Notes: This table describes the marriage patterns among all the married couples in the four censuses. This sample includes all the couples in the data while our analysis on mixed marriages focuses on those with children born between 1970 and 2005

Figure A2 Number of Children across Marriages



Notes: This figure plots the number of children across marriages. It shows that only Minority-Minority couples have a different pattern from the other three groups. This is the same finding as in Guo and Li (2008).

Table A4 Dynamic Impacts

D.V.: Minority Child=0/1

	(1)	(2)	(3)	(4)
I(≤0.5)*10+ years before Policy	-0.013	-0.012	-0.010	-0.010
	(0.014)	(0.014)	(0.013)	(0.014)
I(≤0.5)*6-10 years before Policy	0.016	0.017	0.016	0.016
	(0.013)	(0.013)	(0.013)	(0.013)
I(≤0.5)*1-5 years after Policy	0.032**	0.029**	0.033**	0.035**
	(0.013)	(0.013)	(0.013)	(0.014)
I(≤0.5)*6-10 years after Policy	0.061***	0.058***	0.061***	0.063***
	(0.022)	(0.022)	(0.020)	(0.020)
I(≤0.5)*10+ years after Policy	0.099***	0.094***	0.100***	0.102***
	(0.029)	(0.028)	(0.027)	(0.026)
Prefecture FE	Y	Y	Y	Y
Wife Ethnicity FE		Y	Y	Y
Birth Year FE			Y	Y
Couples' Characteristics				Y
Observations	121,908	121,908	121,908	121,908
R-squared	0.279	0.292	0.293	0.301

Notes: This table presents the dynamic comparisons, using the period 0-4 year before the policy as the reference. It shows no pre-trends. Standard errors are clustered at the prefecture level. Standard errors are clustered at the prefecture level. Significance: ***, 1%, **, 5%, *, 10%. Results in column (4) are visulized in Figure 6.

Table A5 Results Using Information on Fines

D.V.: Minority Child = 0/1

	(1)	(2)	(3)	(4)	(5)	(6)
I(⩽0.5)*Fines (relative)		0.050***	0.047***	0.048***	0.047***	0.055***
		(0.013)	(0.012)	(0.012)	(0.012)	(0.018)
Fines (relative)	0.027***	-0.006	-0.004			
	(0.007)	(0.010)	(0.009)			
Prefecture FE	Y	Y	Y	Y	Y	Y
Wife Ethnicity FE			Y	Y	Y	Y
Birth Year FE				Y	Y	Y
Couples' Characteristics					Y	Y
Provincial Trends						Y
Observations	81,902	81,902	81,902	81,902	81,902	81,902
R-squared	0.299	0.286	0.299	0.302	0.312	0.315

Notes: This table presents results using the level of fines (relative to provincial annual income) to measure the importance of one-child policy in the subsample of mixed couples whose children are born after 1980. The same data has been used by Ebenstein (2010) and Wei and Zhang (2011). Standard errors are clustered at the prefecture level. Significance: ***, 1%, **, 5%, *, 10%.

Table A6 Results Excluding Migrants

D.V.: Minority Child = 0/1

	(1)	(2)	(3)	(4)	(5)	(6)
I(≤0.5)*Post Policy		0.067***	0.063***	0.066***	0.068***	0.098***
		(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Post Policy	0.078***	0.035**	0.038***			
	(0.011)	(0.014)	(0.014)			
Prefecture FE	Y	Y	Y	Y	Y	Y
Wife Ethnicity FE			Y	Y	Y	Y
Birth Year FE				Y	Y	Y
Couples' Character.					Y	Y
Provincial Trends						Y
Observations	113,343	113,343	113,343	113,343	113,343	113,343
R-squared	0.285	0.286	0.300	0.302	0.309	0.314

Notes: This table presents results excluding all data after the 2000 census as well as individuals whose birth county and residency county are different. Standard errors are clustered at the prefecture level. Significance: ***, 1%, **, 5%, *, 10%.

Table A7 Interaction Effects by Quartiles

D.V.: Minority Child=0/1

	(1)	(2)	(3)	(4)	(5)
I(0-0.25)*Post Policy	0.097***	0.092***	0.099***	0.109***	0.155***
	(0.024)	(0.023)	(0.023)	(0.022)	(0.028)
I(0.25-0.5)*Post Policy	0.145***	0.143***	0.144***	0.151***	0.171***
	(0.027)	(0.026)	(0.026)	(0.026)	(0.027)
I(0.5-0.75)*Post Policy	0.079***	0.078***	0.080***	0.089***	0.086***
	(0.025)	(0.024)	(0.024)	(0.024)	(0.025)
Prefecture FE	Y	Y	Y	Y	Y
Wife Ethnicity FE		Y	Y	Y	Y
Birth Year FE			Y	Y	Y
Couples' Characteristics				Y	Y
Provincial Trends					Y
p-value	0.014	0.018	0.020	0.028	0.001
Observations	121,908	121,908	121,908	121,908	121,908
R-squared	0.278	0.291	0.293	0.301	0.305

Notes: According to the model, the interaction effects estimated for the first three quartiles should be larger than that for the fourth quartile. Further, the effect for the second quartile should be larger than that for the third quartile – the p-values refer to tests for a difference between the effects in the second and third quartile. Standard errors are clustered at the prefecture level. Significance: ***, 1%, **, 5%, *, 10%.