

Outcome Bias in Policy Attitudes: Evidence from Beijing's License Plate Lottery

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Abstract

Governments have reasons to intervene when mass consumption is unequal or generates negative externalities, but regulatory attempts are socially and politically contentious. In contrast to research on redistribution, little is known about the public's response to ex-ante allocation. This study shows that egalitarian and restrictive policies can create supportive beneficiaries through rationalization. The analysis focuses on Beijing, where the right to buy a car is rationed through a lottery. It compares those affected by the government rationing using an original survey of prospective car owners. The results show that lottery winners perceive the rationing policy as more effective and fairer than non-winners. Beneficiaries' shifts in attitude reflect their cognitive efforts to rationalize the benefits of car ownership. The findings suggest that policies can create supporters even by chance, so their opinions reflect a psychological attachment to the policy rather than rational expectations.

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1 Introduction

The experience of accessing goods and services is a fundamental way for citizens to evaluate the regime. To the extent that many types of consumption is scarce and access is unequal, they are a political problem, and states have sought to regulate individual consumption. Existing research focuses on ex-post interventions, such as redistribution, transfers, and subsidies (Wallace, 2014; Holland, 2017; Anzia et al., 2022). Studies show that recipients of benefits, including housing (Kumar, 2021; Bueno et al., 2022), healthcare (Lerman and McCabe, 2017; Sances and Clinton, 2021), and education (Meier, 2004; Lü, 2014) become supportive beneficiaries, while those who bear the costs become discontented (Colantone et al., 2024).

Rather than responding to outcomes, governments can also manage scarcity through ex-ante allocation (Lowi, 1964; Hacker, 2004). Potential allocation mechanisms include formal rules based on luck, merit, or fairness (Stone, 2011), which determine access before outcomes are realized (Erikson and Stoker, 2011; Rossiter and Harden, 2025). While neither ex-ante nor ex-post allocation eliminates unequal outcomes, they differ in how citizens evaluate politics by altering the focus of fairness, the visibility of costs, and the clarity of responsibility.

Authoritarian regimes may find it easier to impose ex-ante allocation through bureaucratic decisions but still face a dilemma (De Mesquita et al., 2005; Blaydes, 2010; Wallace, 2013; Albertus et al., 2018). On the one hand, regimes can grant consumption privileges to some citizens but not others to incentivize loyalty to the regime, but such policies are likely to alienate non-beneficiaries. On the other hand, regimes can allocate resources in an egalitarian manner, such as through programmatic rationing, making the outcome impartial to beneficiaries and non-beneficiaries. However, such egalitarian policies seemingly create little reason for either group to be grateful to the policymaker (Stone, 2012).

This study shows that egalitarian social policies can create supportive beneficiaries, even

when the beneficiaries are chosen by chance. This can happen because beneficiaries rationalize policy outcomes, including random ones (Jost et al., 2004; Lodge and Taber, 2013). The theoretical framework starts from the assumption that individuals' assessment of policies is based on their expected gains. After the outcome is revealed, beneficiaries' experienced higher gains than they expected, which creates dissonance with their previous assessment of the policy (Kahneman et al., 1997). To reduce this dissonance, beneficiaries adjust their attitudes toward the policy to align with their positive outcomes, which is more practical than giving up the benefit (Festinger, 1957). In this context, perceived self-interest serves as a rationalizing factor to justify a policy as opposed to a rational calculation to derive a policy viewpoint.

The study focuses on China, where the Communist Party regime has proactively embraced ex-ante distribution through administrative regulations (Kornai, 1992). While the market mechanism has expanded to many consumption choices since the economic reforms, some institutional barriers to equality persist. Two of the most visible and controversial policies are the *hukou* system that regulates internal migration and the one-child policy. Some restrictive policies, such as the hukou system, sort citizen groups into policy winners and losers based on their pre-existing traits (Wu, 2019). Predictively, such policies lead to divergent attitudes about the regime between beneficiaries and non-beneficiaries (Wang, 2005).

Sometimes, however, the regime seeks to allocate consumption privileges in an unbiased manner through *programmatic rationing*, which is rule-based, transparent, and nondiscriminatory. This study focuses on one such instance: the car ownership restriction in Beijing (Liu and Malesky, 2024). To reduce traffic congestion and air pollution, the Beijing government has restricted the number of new cars by rationing the issuance of license plates since 2011. Prospective car owners cannot legally purchase a car until they win a government lottery. Trading license plates is prohibited (Li, 2018). Since the program's inception, over

four million eligible residents have entered the lottery, with around one million winners.

By policy design, the lottery system ensures that the only difference between winners and non-winners upon entry is their possession of government licenses to buy a car. Since a small percentage of winners who are eligible but choose to not buy cars, the estimation uses the lottery outcome as an instrument for car ownership status and represents the complier average causal effect. Winning the lottery is a good instrument for car ownership because it is strongly correlated with car ownership and not correlated with individual characteristics (Imbens and Angrist, 1994). Using data from an original survey of lottery entrants, this study provides causal evidence on the effect of becoming a policy beneficiary by luck.

The results show that car owners have more positive attitudes toward the license plate lottery than non-winners. Car owners are more likely to agree that the lottery program has had a positive influence on reducing traffic and pollution. They also perceive the policy as fairer than non-winners do. Car owners' positive attitudes toward the policy do not generalize to approval of the government, nor are they more in favor of government intervention in the car market. Furthermore, car ownership does not change attitudes toward social issues, such as the rights of urban migrants.

The differences in policy attitudes between car owners and non-car owners are likely to stem from cognitive biases in retrospective evaluation. Car owners increase their appreciation of the policy in order to justify the benefits they receive, which suggests that beliefs of policy beneficiaries change with their experienced gains as opposed to expected gains (Kahneman et al., 1997). Car owners report higher class status and more frequent social participation, consistent with existing transportation research (Steg, 2005; Moody et al., 2021). These findings suggest that without hand-picked recipients, egalitarian rationing policies can create appreciative issue publics.

This study bridges the policy feedback literature with research on psychological factors in political reasoning. Perceived self-interest is a key factor in shaping policy attitudes (Pier-

son, 1993; Campbell, 2002; Anzia et al., 2022). While prior scholarship has focused on the debates between self-interest and sociotropic concerns (Haselswerdt, 2020), less attention has been given to the role of self-interest in attitude formation. Conventional wisdom views self-interest as a rational calculation based on expectations, but overlooks its role as a rationalizing factor shaped by ex-post outcomes. Distinguishing these two roles is challenging because policies often have targeted populations or remain contingent at the time of the survey. My study rules out the former and provides real-world evidence that attitude change can be a result of self-justification motivated by perceived self-interest (Golman et al., 2016).

Rationalization appears to be a deep-seated cognitive preference for maintaining belief consonance (Beasley and Joslyn, 2001; Golman et al., 2016; Acharya et al., 2018; Groenendyk, 2022; Jost et al., 2022; Krishnarajan, 2023). In political settings, research has shown that individuals interpret information aligning with their prior beliefs (Taber and Lodge, 2006; Krishnarajan, 2023), the act of voting affects subsequent political attitudes (Mullainathan and Washington, 2009; Bølstad et al., 2013), election results alter beliefs about election integrity (Edelson et al., 2017), and random events influence vote choice (Huber et al., 2012; Achen and Bartels, 2016; Busby et al., 2017) My findings advance this line of literature to policy attitudes and show that beneficiaries can develop a psychological attachment to the policy.

Property ownership is one of many consumption privileges that the state regulates. Access to higher education and government jobs in industrializing countries significantly affect individuals' economic prospects, which in turn drive their political attitudes (Liu, 2023). While a regime may secure support in rural areas through clientelistic distribution (Oi, 1985; Wilkinson, 2007; Hicken, 2011; Stokes et al., 2013), co-opting the urban middle class is more difficult (Wallace, 2013, 2014; Distelhorst and Hou, 2017; Post, 2018; Rosenfeld, 2020; Norton, 2023). Persistent negative policy evaluations can alienate the urban middle class and undermine regime stability, so regimes have reasons to adopt fair and program-

matic policies. Although egalitarian allocation lacks rational incentives for beneficiaries to favor the policy, beneficiaries can justify the policy through rationalization (Jost et al., 2004; Lodge and Taber, 2013). As a result, ex-ante restrictive policies can be self-sustaining, as authoritarian distribution aims to maintain state monopoly over resource allocation (Alber-tus et al., 2018). The findings of this study suggest that policy evaluations depend on not only incentives but also individuals' experiences with the policy and its outcomes.

2 Theoretical Framework

2.1 The Political Logic of Ex-Ante Allocation

States, regardless regime types, are responsible for providing access to a variety of goods and services (Meltzer and Richard, 1981). Because of financial and physical constraints, many types of consumption are not universally accessible. When scarcity exists, governments must decide how to regulate it (Stone, 2012). Much of the literature discusses ex-post interventions, such as progressive taxation and social security, that redistribute resources to respond to realized inequality (Pierson, 1993).

This study focuses on intervention that is ex-ante. The key distinction between ex-ante and ex-post allocation lies in the timing of intervention relative to outcomes (Lowi, 1964; Hacker, 2004). The former occurs before policy gains or losses are realized, while the latter occurs after outcomes are realized. Rather than transfers or compensating losses ex-post, ex-ante allocation structures inequality in advance by defining who will have access. Outcomes and beneficiaries are unrealized and often under uncertainties. at the time of allocation, while uncertainty is settled in ex-post allocation.

The logic of ex-ante distribution is not to equalize outcomes, but to decide how outcomes are produced and perceived. Predistribution can be viewed as a special case of ex-ante allocation in which it tries to shapes market outcomes before transfers (Hacker, 2011). Ex-

ante allocation has a different set of political implications compared to ex-post redistribution.

Focus of fairness. In ex-ante allocation, fairness lies in the procedures. The state preempt to solve a problem by applying regulatory mechanisms before market or voluntary participation. Thus, citizens tend to evaluate policies based on the perceived fairness of the rules rather than the outcomes. Because benefits or costs are unrealized and often uncertain, inequality is less observable, and judgements rely on whether the rules are seen as neutral or impartial rather than actual differences in consumption (Rossiter and Harden, 2025). (Tyler, 2006) argues that individuals comply with the law because they view the process as legitimate. Similarly, the use of queuing or lotteries in conscription, school admissions, and public housing is socially acceptable when citizens view the process as fair, irrespective of the outcomes (Stone, 2011).

By contrast, ex-post allocation emphasizes outcome fairness. The state tries to solve a problem, such as poverty, after it has happened. Because benefits or costs are realized, citizens' evaluation of the policy now depends on their actual consumption differences, which makes inequality more observable (Bueno et al., 2025). While neither procedural nor outcome fairness is inherently favorable to the regime, it shapes how citizens evaluate the government.

Visibility of costs. Redistribution creates winners and losers. Predictably, the winners who benefit from the policy become supportive constituents, while losers who bear the costs feel alienated (Lowi, 1964; Hacker, 2004). For example, Colantone et al. (2024) show that in Italy, an environmental regulation that banned polluting vehicles from city centers increased support for a populist right-wing party among those who were financially burdened by the policy.

Costs are often hidden and obscured when allocation is ex-ante. Instead of materialized losses, the costs are in the form of lost opportunities and efficiency, or counterfactual trade-offs. For example, price fixing, quotas, queuing, and rationing have justifiable reasons for protecting certain segments of citizens, but they also have unintended consequences by

changing incentives. Because the costs are implicit, ex-ante allocation can appear less politically contentious, and its appeal is especially strong in communist or former communist regimes (Kornai, 1992).

Clarity of responsibility. Another difference between ex-ante and ex-post intervention is how clear is the government responsible for managing scarcity. Citizens frequently evaluate their welfare by comparing themselves to past condition or to relevant social groups, such as neighbors and co-workers. Redistribution makes such comparisons explicit (Runciman, 1966). Individuals can determine whether they are better or worse off as recipients or contributors. In ex-post interventions, transfers are closely associated with government action. The government is the sole actor in redistribution that explicitly corrects socially undesirable outcomes shaped by existing market forces, which makes responsibility concentrated.

Ex-ante allocation, however, operates at a systemic level and affects chances and expectations. Because final outcomes is the result of a series of rules or criterion subject to effort, luck, or arbitrary reasons, citizens may attribute results to individual and non-political factors. To assign responsibility, citizens must imagine alternative rules or counterfactual systems, which makes the comparison complex and ambiguous and weakens the perceived link between outcome and government action. When responsibility is diffuse, citizens are less likely to blame the state for unfavorable outcomes (Javeline, 2009; Schwindt-Bayer and Tavits, 2016). Moreover, the time lag between policy design and realized consequences further weakens the perceived link between government action and individual welfare. Ex-ante policies are often set long before outcomes materialize. The government becomes one actor among many, which attenuates its perceived responsibility (Hacker, 2004).

2.2 An Authoritarian Distributive Dilemma

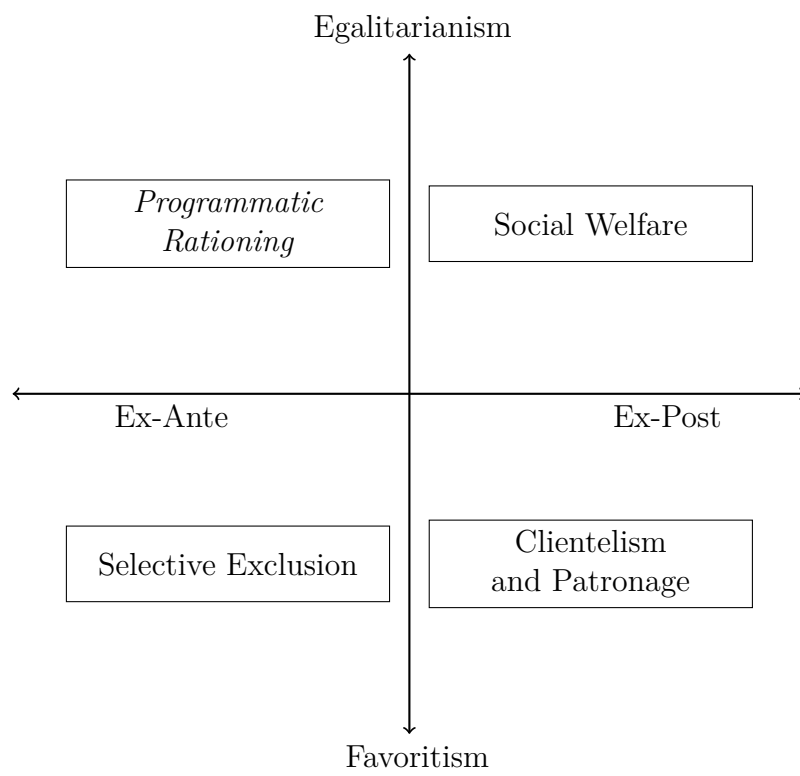
The allocation of resources and burdens is central to maintaining the political status quo in authoritarian contexts. Regimes face a fundamental dilemma in their distributive choices to

citizens between showing favoritism and minimizing grievance. On the one hand, regimes can distribute only to selected beneficiaries who will then have reasons to be loyal to the regime. This strategy is discussed in theoretical and empirical accounts of authoritarian distribution. Authoritarian regimes, for instance, tend to distribute towards their supporters and towards urban areas (De Mesquita et al., 2005; Wallace, 2013; Albertus et al., 2018). A drawback of this strategy is that it risks alienating non-beneficiaries. When some citizen groups are persistently discriminated against in distribution, they may develop grievance that destabilizes the regime. To mitigate dissatisfaction among non-beneficiaries, authoritarian regimes can attempt to distribute in a nondiscriminatory manner, following distributive principles, such as equality or desert, through programmatic policies. If the rules of the distribution are perceived as fair, everyone is likely to accept the outcome, but beneficiaries have little incentives to feel grateful to the regime (Bueno et al., 2023).

A limitation of existing studies is that they have tended to focus on rural areas or underdeveloped regions. In these contexts, it is feasible to buy political loyalty through clientelistic distribution (Wilkinson, 2007; De La O, 2013; Stokes et al., 2013). In cities with industrialized economies, it is more challenging for regimes to co-opt urban sectors when citizens have financial independence and growing expectations for governance (Gottlieb, 2016, 2024). Research has shown that simple favoritism may cause more disruption than benefit in an developed authoritarian city (Norton, 2023). The urban middle class no longer faces absolute deprivation, and instead competes for common-pool resources, such as education, housing, and healthcare (Kosec and Mo, 2023). Classical theories of democracy view the urban middle class as a destabilizing force to authoritarian rule (Moore, 1966), but exceptions from Russia and China suggest nuanced approaches that have helped these regimes to maintain social and political stability (Chen, 2013; Dimitrov, 2013; Rosenfeld, 2020).

Industrialized authoritarian regimes face a challenge to design a systematic approach to allocate goods and services without disrupting social cohesion (Borisova et al., 2024). Sum-

Figure 1: A Typology of Distributive Politics under Scarcity



marized in [Figure 1](#), this study introduces a new type of distributive method, programmatic rationing, where the right to consume is non-discretionary and irrespective to political loyalty ([Wilkinson, 2007](#); [Stokes et al., 2013](#)). Relative to discretionary politics, the political advantage of programmatic rationing is perceived fairness, as it does not discriminate against certain segments of the population. Beneficiaries and non-beneficiaries are equally likely to support the policy because they have equal chances. Even if some citizen groups are denied favorable outcomes, they are unlikely to attribute the results to the political system. Programmatic rationing differs from transfer-oriented welfare programs, where the latter is designed to respond to outcomes that are already happened.

The perception of fairness in the broader society further bolsters the political advantage of programmatic rationing. Authoritarian regimes seek compliance from citizens, but enforcing it through coercion is costly. To cultivate voluntary compliance, regimes must make rules that are perceived as just and fair. When the public believes in the righteousness of these rules, they are likely to comply and support the status quo out of fairness rather than fear ([Tyler, 2006](#)). The transparency of programmatic rationing can also curb rent-seeking opportunities captured by lower-level bureaucrats who have incentives to exploit their power for personal gain, such as accepting bribes or showing favoritism in allocation decisions ([Niehaus et al., 2013](#)). Limiting corrupt practices helps to prevent the undermining of regime legitimacy.

Common allocative methods of programmatic rationing include lotteries, queueing, and point-based systems. Lotteries, in particular, stand out as a non-reasoned method, which has been used in sortition and is still used in contemporary political settings, including citizen assemblies, visas, and conscription. Lotteries are easy to implement and perceived as impartial, which make them an ideal allocative method in cases where no groups of recipients has stronger normative claims than others ([Stone, 2011](#)). Outside the political domain, lotteries have been used in school admission, research fund allocation, and entertainment

tickets.¹

2.3 Rationalization in Policy Attitudes

The central role of self-interest in forming policy attitudes is well-documented (Pierson, 1993; Campbell, 2002; Lerman and McCabe, 2017; Haselswerdt, 2020; Anzia et al., 2022). An implicit interpretation is that self-interest is rational calculation of one's expected gains and losses. In a rational framework, beneficiaries and non-beneficiaries of an egalitarian policy should be equally likely to accept the policy, as both groups have equal chances.

In contrast, this study explains how policy outcomes can lead to rationalization, causing self-interest to be a rationalizing factor (Jost et al., 2004; Lodge and Taber, 2013). Before policy outcomes are revealed, each individual attitudes toward the policy are aligned with their expected policy benefit, which under an egalitarian system is equal across groups because distribution decisions have not yet been made. Once policy outcomes are revealed, beneficiaries receive a stream of benefits from the policy greater than their expectation. Beneficiaries then face a misalignment between their observational policy benefits and their attitudes toward the policy. Cognitive dissonance theory suggests that individuals are likely to alter the more malleable of two conflicting beliefs to achieve internal consonance (Festinger, 1957; Kunda, 1990). If beneficiaries do not give up policy benefits, they will develop more favorable attitudes toward the policy, resulting in outcome bias (Baron and Hershey, 1988).

The greater gap between expected utility and experienced utility, which can come from the value and the scarcity of a consumption good, the more cognitive dissonance the individuals experience when they are allowed to consume it, and the higher effort they exert for ex-post rationalization. Even when a good is not especially valuable, programmatic rationing can make it more valuable by making it more scarce. Even if the outcome is randomly

¹A collection of real-world examples is available at <https://www.conallboyle.com/ExsCurrent.html>

decided, individuals have a need to justify the status quo rather than feeling the reward is unwarranted (Kay et al., 2002; van der Toorn et al., 2011).

This halo effect for the policy influences not only individuals' overall perception of the policy but also specific aspects of the policy, such as policy fairness. Citizens' subjective experiences are strongly associated with their political attitudes (Soss, 1999; Cramer and Toff, 2017). Research shows that individuals are more likely to perceive an allocation method as fair when their self-interests are met, and similarly, individuals tend to prioritize their stakes in the distribution when they propose allocation methods they deem fair (Konow, 2000). Subjective perception of fairness is associated with support of an allocation choice. Therefore, self-interest serves as a rationalizing factor to justify a policy as opposed to a rational factor to derive a policy viewpoint.

Implementation of social policies is highly susceptible to principal-agent problems, where street-level bureaucrats with discretionary power subvert the goals of higher-level politicians for their own ends (Niehaus et al., 2013; Grossman and Slough, 2022). In most authoritarian contexts, demonstrating the policy is fairly implemented is at least important as demonstrating the policy is well-intentioned. For example, in low-capacity states, citizens who doubt the fairness of the allocation process may refuse to support welfare policies (Holland, 2018). When law obliged citizens who play by the rule receive policy benefits, they are likely to respond positively to their policy experience. While this reasoning is not irrational, it is driven by outcomes rather than by expectations.

The mismatch between expectations and outcomes requires uncertainty. Lotteries are one convenient way to generate randomness, but other mechanisms, such as queues and even exams, can also introduce randomness in addition to pre-determined factors (Kuipers, 2023; Liu, 2023; Peng, 2025). The public's acceptance of randomness is likely to vary depending on the contexts to which it is applied. For example, Bueno et al. (2025) find that the public in Brazil is unwilling to approve the use of lottery to allocate social housing. However, lotteries

in other contexts, including school admission and draft used during the Vietnam War, were relatively uncontroversial (Stone, 2011). Acceptance is likely to depend on whether the randomness is seen as impartial or arbitrary and whether the state can provide justifications, for example, framing as way to preserve a public good.

3 Background

3.1 Rationing in Underdeveloped China

In the name of social efficiency, China has an extensive history of attempting to regulate individuals' access to goods and services, making it a suitable context to discuss the political implications of these measures (Nee, 2000, 1989). The regime has been able to implement some of the most radical consumption regulation policies in history that have greatly altered individual welfare but that have also had unintended social consequences.

Between the 1950s and the early 1990s, China implemented rationing on food and a wide range of consumer staples. This rationing was important in this era because prices were kept artificially low and incomes were artificially compressed, so limited consumption, including consumer staples and private transport, was the primary place where social inequality manifested (Siegelbaum, 2011). The program was further justified as a means to support industrialization. While rationing helped to prevent absolute poverty, it created new forms of inequality, as quotas were differentially allocated across regions and professions (Smil, 1978). Urban residents had a significant advantage in access to consumer products over rural residents, who were largely excluded from the program, and employees in the state sector were entitled to greater consumption benefits than those outside the state sector. This bureaucratic system cultivated corruption, as bureaucrats engaged in rent-seeking activities, such as reselling rationed goods on the informal market at high profits. The growing discontent with corruption, along with increasing frustration over shortages of necessities, turned public sen-

timent against the supposed egalitarian distribution (Oi, 1986, 2018). While food rationing ended in unpopularity as China moved forward with market reforms, rationed coupons have become a cultural symbol representing the collective memory of egalitarianism.

Material scarcity in China reached its peak during the Great Famine and the Cultural Revolution (Yang, 1996; Cao et al., 2022). Consumption restrictions extended to cultural products, such as foreign-imported novels and movies, which were deemed counter-revolutionary to the regime's ideology. The government justified these austerity measures on moral and ideological reasons, framing them as necessary sacrifices for the greater good (Walder, 2015). One of the most significant policies during this period was the Sent-down Movement, in which urban teenagers were resettled in the countryside for several years to assist with production. The social upheaval, characterized by personal hardships, violence, and social structural changes, had complex implications for regime stability (Wang, 2019; Lee et al., 2021). Nevertheless, the strict egalitarian measures might have paved the way for China's rapid growth in later years (Olson, 1999).

The most persistent institutional barrier to freedom of movement in China is the household registration system, hukou. Every citizen is tied to a place of civil registration, classified as either rural or urban. Traveling across regions required special permits from employers or local authorities until the cancellation of food coupons and the introduction of individual identification cards in the 1990s. However, changing one's hukou status or obtaining hukou in a desirable urban area remains extremely difficult. While many rural residents migrate to urban areas for work, they cannot receive public services such as education and healthcare without a proper hukou (Wang, 2005). The differential treatment has created tensions between migrants and natives and fueled widespread regional discrimination (Solinger, 1999). This system has perpetuated an urban bias and reinforced urban-rural inequality (Rozelle and Hell, 2020). However, hukou provides a mean for limiting access to scarce public services, which helps the regime to maintain social and political stability in a rapid urbanizing

society (Wallace, 2013, 2014).

The Chinese government has also put limits on a deeply personal form of consumption: having and raising children. Confronted with the Malthusian trap, from the late 1970s to 2015 China implemented the one-child policy to control population growth. The justification was environmental and economic, as expanding population could lead to an environmental collapse threatening China's modernization. However, the policy created profound unintended social consequences, including gender imbalance and aging population (Ebenstein, 2010; Eggleston et al., 2013; Cai and Feng, 2021).² A reversal of population control has gained policy momentum as China faces population decline with birth rates far below replacement level.

3.2 Promoting Fairness in Industrialized China

As China has modernized, it has transitioned from a homogenous agricultural population to a complex urban society. Maintaining social cohesion through micro-managing individual consumption becomes increasingly difficult as citizens' needs expand, expectations grow, and competition for scarce resources intensifies (Tomba, 2004; Ren, 2013; Goodman, 2014; Dimitrov, 2017). With improved living standards, inequality in China has steadily risen since the market reform and has reached to one the highest levels of inequality in the world (Riskin et al., 2016). Promoting perceived social fairness amid rapid growth has posed a challenge for the government, which has responded with a variety of measures, some distributive and others restrictive (Dickson, 2023).

In politics, the government implemented rounds of anti-corruption campaigns. Although anti-corruption is not a distributive tool to the public, it has considerable influence in swaying the public's perception of social fairness. Tsai et al. (2022) find that the popularity of anti-

²Despite that the policy had dramatically altered individuals' lives, a 2008 poll showed that 76% of respondents approved of the one-child policy (Pew Research Center, 2008).

corruption campaigns stems from citizens' appreciation for retributive justice. Furthermore, political selection, though highly restrictive, has a reputation of being meritocratic. In an institutional environment where the public sector enjoys privileged welfare, the selection of state employees is effectively distribution. Individuals who pass the civil service exam tend to have more positive attitudes toward the political system, as their perceived prospects for economic mobility improve (Liu, 2023).

In public services, the Chinese government has expanded coverage on a range of social welfare programs, including pensions (Li and Wu, 2018; Cai and Cheng, 2014), healthcare (Huang, 2020), housing (Huang, 2012), and education (Lü, 2014). One of the most high-profile areas of focus has been poverty eradication, with targeted transfers to both rural and urban populations (Gao, 2017; Pan, 2020). These programs are highly programmatic, aiming to improve the sense of distributive justice among selected beneficiaries as well as the broader public. Although the quality of these services remains uneven across regions and sectors, studies generally suggest that the expansion of social protection contributes to the regime's stability by gaining public support (Tsai, 2007; Dickson et al., 2016; Ratigan, 2017; Huang and Gao, 2018).

Besides positive distributive outcomes, the policy-making process in China has also become more inclusive (Gueorguiev, 2021), characterized as "consultative authoritarianism" (He and Thøgersen, 2010; Xiaojun, 2011; Teets, 2013) and "responsive authoritarianism" (Heurlin, 2016; Truex, 2016; Qiaoan and Teets, 2020). The government has increased transparency by open information (Stromseth et al., 2017), engaged with citizens to gauge public opinion (Distelhorst and Hou, 2017), and responded to citizens' requests (Chen et al., 2016; Tsai and Xu, 2018). Even in the absence of electoral competition, authoritarian regimes have incentives to manage public expectations to prevent social unrest, although critics argue that there are limits to this top-down approach (Truex, 2017). Through this managed civic participation, the government creates citizen dependence and fosters the perception

that it is acting in the best interest of the common people.

Raising consumption has been a major policy goal for the Chinese Communist Party and a significant source of its legitimacy. However, rapid urbanization has led to overcrowding, placed severe strains on public infrastructure, and amplified inequality, which hinders citizens' ability to consume more in services with finite availability, such as school spaces, housing, and healthcare (Nye, 2018). This competition among the urban middle class presents a modern distributive challenge for the government, particularly in sectors that generate externalities. Instead of relying on traditional distributive policies, the government has increasingly turned to restrictive measures as policy tools.

The social credit system, designed to punish or reward individual behavior based on data-driven decisions, is arguably the most ambitious attempt (Kostka, 2019). Public support for the system appears favorable, but it is sensitive to perceptions of the system, whether it is used to invade privacy and restrict freedom or to promote moral values and enforce social order (Xu et al., 2022). While the system has yet to reach a comprehensive scope, its potential expansion casts concerns that the government can build a programmatically justified tool to regulate individual consumption and behavior.

Such concerns are not unfounded, as the government has formally restricted citizens' access to some goods and services. For example, homeownership is the largest component of wealth for Chinese households and is positively associated with regime approval. To reduce homeownership inequality, the state has implemented homeownership restrictions, such as prohibiting the purchase of second homes and capping housing prices, which added uncertainties to homeownership particularly for first-time homeowners. In addition, local governments had protective measures that banned non-locals from buying housing in an effort to keep prices down. To promote educational equality, the government has implemented reforms to evenly distribute resources. Policies include randomly allocating school spots across districts and reshuffling teachers to avoid the concentration of best schools in affluent

neighborhoods. A recent drastic policy is the ban on private tutoring, aimed at reducing educational workloads and educational inequality. Private tutoring, seen as giving students an unfair advantage in the college entrance exam, threatened the perceived fairness of public education (Lü, 2013). In this instance, strict equality is at the expense of the positive externalities of education. While these restrictions are not without controversies (Chen and Xu, 2017), the government has adopted a programmatic approach to confront the equality and efficiency trade-off in policy-making (Stone, 2012).

3.3 The License Plate Lottery

As a byproduct of modernization and urbanization, car consumption generates negative externalities and strains public infrastructure (Meyer et al., 1965; Downs, 2005). Air pollution, in particular, is one of the most criticized social issues in China and is closely tied to the government’s reputation (Alkon and Wang, 2018; Ding, 2022; Chen et al., 2023). In response, cities such as Beijing have imposed stringent emission standards and relocated or closed highly polluting factories. The government has also imposed restrictions on transportation by private vehicles, another major source of air pollution. In the 1990s, Shanghai was the first city in mainland China to attempt to restrict car growth by auctioning off license plates. Around the same time, Beijing began to restrict the use of compact cars and older cars that fell short of new emission standards. These restrictions that were designed to reduce congestion and pollution are not unique to China and have been implemented in Singapore, London, Stockholm, and now in New York. However, making driving more expensive is socially and politically contentious, as the costs are perceived to fall on specific groups of citizens while the benefits are widely distributed (Gerth, 2015; Li et al., 2020).

Beijing has introduced a car ownership restriction program for local residents by rationing the issuance of new license plates since 2011. The rationing is implemented through a lottery system, where the outcome of possessing a government license to buy a car is completely

random, regardless of the eligible entrant’s personal traits, including gender, income, occupation, and political status. All first-time car buyers are required to enter the government-run license plate lottery, and lottery winners are then eligible to buy a car within the next six months.³ Once they become car owners, their ownership of the license plates is secured indefinitely, and this policy does not affect existing car owners who bought cars before 2011 and held legitimate license plates.

This lottery system is a non-market method of limiting car consumption that creates a zero-sum competition for prospective car buyers in Beijing.⁴ This lottery system stands in contrast to mainstream market-based methods, such as congestion pricing and auctions, which face a common critique that they further increase economic inequality, while the effect of a lottery system on inequality is more complex. A response from the mayor at the time clearly indicated that the government was concerned with the perceived social fairness of restricting car consumption. When a public representative questioned the simplicity of the license plate lottery as “lazy governance” at a meeting in 2015, the mayor responded with a rhetorical question: In Beijing, whoever with more money gets to buy, can that work? He further explained that the government had compared multiple plans and asserted that “the lottery is diligent governance.”⁵ This response explains why the government opted for the lottery system, which from an economic perspective is never a socially efficient way of allocation (Li, 2018). Despite hidden costs, the lottery is simple to understand, easy to implement, and guarantees ex-ante fairness. Since the policy effectively places the burden of reducing congestion and pollution on non-car owners, it is important to make non-beneficiaries feel acceptable to the outcome (Chun et al., 2019).

³An exception was made during the public health emergency for COVID-19 that extended the eligibility of buying a car until the end of the health emergency.

⁴Out-of-province vehicles cannot freely enter Beijing, so it is not practical for a local resident to drive an out-of-province vehicle in Beijing.

⁵<http://politics.people.com.cn/n/2015/0124/c1001-26442525.html>

Most of people who enter the lottery do not win. With fixed quotas, the probability of winning has quickly dropped from 10% in 2011 to below one in a thousand in several years, as the number of participants has increased. The lottery started with a common pool for all eligible zero-vehicle individuals, giving each entrant an equal chance of winning. The lottery is technically weighted to favor long-term non-winners, but the advantage is negligible given the extremely low baseline winning rates. Eligibility requires a Beijing hukou, while out-of-province residents must meet residency requirements and have made five years of social security payments. Starting in 2014, in compliance with a national policy that prohibits restrictions on the sale of electric vehicles, a separate queuing system was introduced for electric vehicles based on a first-come-first-served rule. Zero-vehicle individuals must choose between one of the two quotas. To align with broader environmental policies, the annual issuance of license plate has gradually decreased over time, and the quotas for electric vehicles (queuing) have increased relative to regular quotas (lottery), making the lottery even more difficult to win. The lottery was initially conducted monthly and reduced to every other month and most recently to twice a year.

In 2021, a new rule allowed participants to enter as zero-vehicle households, which were eligible to simultaneously enter both regular quotas and electric vehicle quotas, with better chances of winning relative to zero-vehicle individuals based on a point system. Despite these changes, the zero-vehicle individual lottery remains the largest pool of entrants. By March 2024, over 2.59 million individual entrants and an additional 620 thousand households were competing for an annual quota of 20 thousand license plates.⁶ At the aggregate level, since the program's inception, over four million residents have entered the lottery, with one million winners who have been able to purchase cars.

The policy has sparked debates about the state's right to restrict car ownership and its effectiveness in reducing congestion and pollution. Skeptics have raised concerns about the

⁶<https://www.beijing.gov.cn/shipin/Interviewlive/1064.html>

randomness of the lottery and the superficial fairness of the policy. In response to public concerns, the license plate lottery has been run with transparency, including live broadcasts of the lottery process and publishing results online.⁷ No rumors have indicated that the lottery was ever corrupted. Despite the uncertainty of owning a car, the public acknowledges the need to regulate the number of vehicles in Beijing, a city with a population of around 20 million. In 2022, the city imposed additional restrictions on car ownership, limiting each resident to owning at most one car. Those with multiple cars must relinquish the extras when their cars reach retirement, with the option of transferring to immediate family members.

Beijing’s license plate lottery has been one of the longest-running social experiments in consumption rationing not because of car shortages but because of their overabundance. To preserve common-pool resources, this policy intervention has been successful in reducing the absolute number of vehicles, but it has also had unintended social consequences. For example, (Lyu, 2022) finds that housing prices closer to mass transits, workplaces, and schools have risen after the car ownership restriction. Anderson et al. (2019) find that car ownership is associated with weight gain and fewer physical activities. The uncertainty of car ownership also delays fertility choices (Liu et al., 2018). Furthermore, Liu and Malesky (2024) examine the role of cultural norms in environmental attitudes and find that individuals who do not believe in lucky numbers are more likely to embrace the environmental policy.

4 Research Design

4.1 Data and Variables

An empirical challenge in the policy feedback literature is disentangling citizens’ policy attitudes between ex-ante expectations and ex-post outcomes, which are often intertwined in real-world policy contexts. Beijing’s license plate lottery provides an excellent setting to

⁷<http://politics.people.com.cn/n/2012/1214/c1001-19895179.html>

study changing attitudes in policy evaluations that exclusively stem from ex-post outcomes. First, unlike programs that target particular segments of the population, the license plate lottery applies to all local residents who do not already own cars but wish to buy one, giving each participant an equal chance of winning. Because the outcome is the luck of the draw, participants cannot anticipate their status as winners or non-winners. The randomness of the lottery process isolates confounding factors, such as individuals' prior expectations or personal traits, which might systematically correlate with their policy attitudes. Second, once the lottery winners are determined, the rationing policy stops being relevant to them. Without contingency, there is no policy lock-in for lottery winners. Therefore, any differences in policy attitudes between winners and non-winners can be attributed to winners' retrospective evaluations based on the random outcomes.

Around one-fifth of the Beijing population have entered the license plate lottery. The data is drawn from an online survey. The samples consists of 662 lottery participants, 547 lottery non-winners and 115 lottery winners, and 86 of the lottery winners have bought cars. The conversion rate from winning the lottery to buying a car is consistent with previous studies (Liu et al., 2018; Anderson et al., 2019).⁸ Among car owners, 39 bought gasoline cars, and 47 bought electric vehicles. 74% of them spent between 100 thousand and 300 thousand yuan on their cars, an equivalent of 15 thousand to 40 thousand U.S. dollars. Figure A.1 shows that lottery winners and non-winners have similar profiles, except for two variables: their lengths of residency in Beijing and lottery entering year. This is expected because the lottery went from being reasonably competitive in the beginning to hypercompetitive after a few years, as the total number of lottery entrants grew while the total quotas shrank. Early

⁸Among lottery winners who did not purchase cars, four respondents answered that they did not purchase a car, and the remaining 25 answered that they were considering of purchasing a car. This backlog is likely due to a policy response to COVID restrictions that extended winners' eligibility to buy a car beyond the immediate six-month window.

entrants had significantly better chances of winning and were also likely to have resided in the city longer than later entrants. The analysis confirms that the results are robust to the differences in these two factors between lottery winners and non-winners.

To measure policy attitudes, respondents were asked to evaluate the effectiveness of the policy in achieving its policy objectives (i.e., Does the license plate lottery have a positive effect on reducing air pollution and traffic congestion? [no/a minimum/a moderate/a somewhat/a very big positive effect]). Evaluating policy effectiveness has an advantage over directly asking respondents' approval of the license plate lottery because the latter might be susceptible to sensitivity bias in an authoritarian context. Perceived effectiveness, on the other hand, is highly correlated with citizens' support of a policy (Kostka, 2019), while it has the benefit of reducing preference falsification.

Another measure of policy attitudes is perceived fairness of the license plate lottery (i.e., According to your personal views, please indicate your level of satisfaction toward the fairness of the license plate lottery on a seven-point scale). Lottery winners who own cars may alter their views about the effectiveness of the policy through intermediate steps, such as their updated knowledge about cars or first-hand experience of congestion and air pollution from driving. Assessing the fairness of the policy is directly related to the distributive outcome, the right to buy a car and benefits associated with car ownership, rather than the subsequent experiences as a result of owning a car. Perceived policy fairness, together with policy effectiveness, provides a robust assessment of respondents' policy attitudes as well as a clearer interpretation of the results (Hartzmark et al., 2021; Margalit and Shayo, 2021).

4.2 Estimation

A comparison between lottery winners and non-winners is an estimate of the effect of randomly becoming policy beneficiaries of the license plate lottery. However, the policy outcome in this context is to distribute the right to buy a car, which means that lottery winners do

not receive any material benefits. They must finance their purchases by themselves. A substantively meaningful definition of being a policy beneficiary is a lottery entrant who won the lottery, bought a car, and experienced the benefits of car ownership in Beijing, where car ownership is restricted. Since not every lottery winner bought a car, the empirical strategy takes advantage of the lottery process and uses the lottery outcome as an instrument for car ownership (Imbens and Angrist, 1994). Winning the lottery is strongly correlated with car ownership and not correlated with individual characteristics. Figure 2 confirms a strong and positive association between winning the lottery and car ownership, and the estimates are stable across model specifications with and without covariate adjustments (Table C.1). The license plate lottery was an exogenous policy shock, so neither winners nor non-winners could have anticipated the restriction on car ownership in Beijing. The lottery by construction satisfies the exclusion restriction. While non-compliance is possible from non-winners who might obtain cars via alternative channels, it does not bias for my results.

The first-stage equation is

$$CarOwnership_{it} = \gamma_0 + \gamma_1 LotteryOutcome_i + \gamma_2 X_i + \delta_t + v_{it} \quad (1)$$

where $CarOwnership_{it}$ is an indicator that equals to 1 if person i has bought a car after winning the lottery in year t and equals to 0 if person i does not have a car. $LotteryOutcome_i$ is an indicator that equals to 1 if person i has won the lottery and equals to 0 if person i has not won the lottery; X_i are covariates that include gender, age group, education, and sectors of employment; δ_t is lottery entering year fixed effects; v_{it} is the error term.

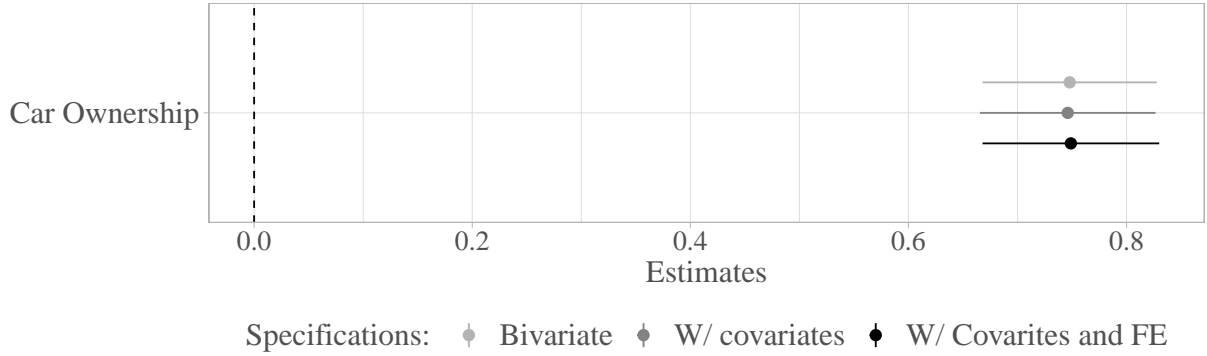
The second-stage equation is

$$Y_{it} = \beta_0 + \beta_1 \hat{CarOwnership}_i + \beta_2 X_i + \delta_t + \epsilon_{it} \quad (2)$$

where Y_{it} is the attitudinal outcome; β_1 is the quantity of interest, which represents the

effect of randomly becoming policy beneficiaries (car owners).

Figure 2: First-Stage Estimates of Winning the Lottery on Car Ownership



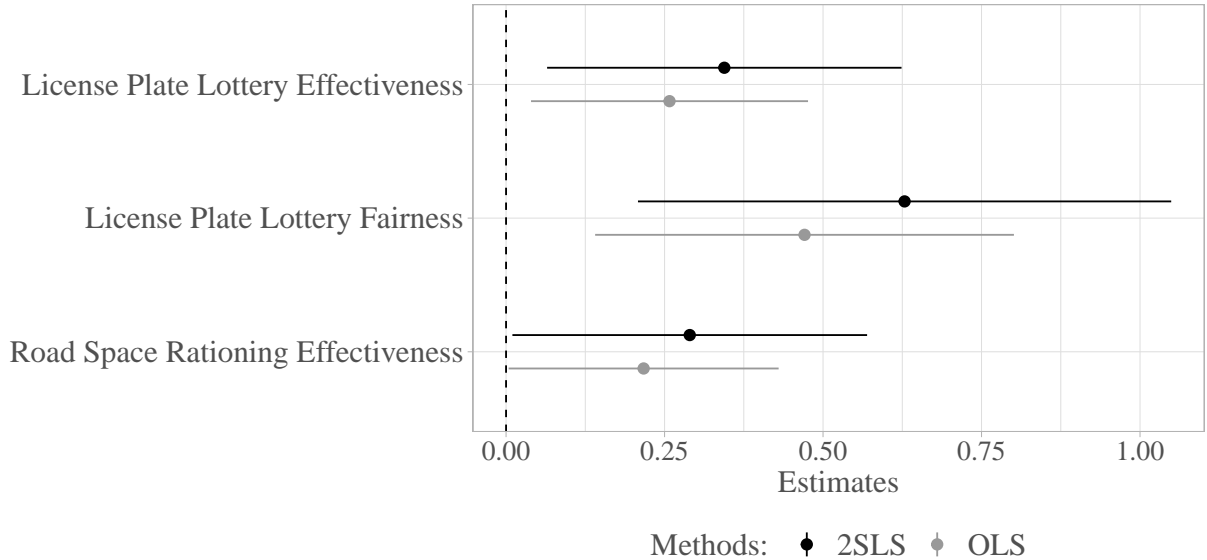
5 Results

5.1 Policy Attitudes

Figure 3 shows the estimated effects of becoming beneficiaries of the license plate lottery on policy evaluations. Compared to non-car owners, car owners are more likely to approve of the statement that the license plate lottery reduces congestion and air pollution. In addition to their positive evaluations of policy effectiveness, car owners are also more likely to agree with the statement that the license plate lottery is fair. Table C.2 and Table C.3 report the full sets of coefficients of the model specifications.

Are these results a product of lottery winners becoming more appreciative about the policy or lottery losers becoming more angry? The pilot study, which included a sample of lottery non-entrants, including both pre-existing car owners and non-car owners, allow us to get this question. The finding suggests that the change in attitudes largely comes from lottery winners, because non-winners show similar evaluations of policy effectiveness to non-entrants (Figure A.2). Loss aversion potentially explains the lack of frustration among non-winners,

Figure 3: Estimated Differences in Policy Evaluations



who have never owned cars in the first place (Kahneman and Tversky, 1979). Specifically, the intensity of potentially receiving the right to buy a car is weaker than the potential losses after completing a purchase, so car owners experience a stronger psychological attachment to the lottery outcome than lottery non-winners. Furthermore, cars are considered premium products rather than necessities. The lack of a car may not significantly lower their living standards in a densely populated urban environment, which does not lead to disappointment among lottery non-winners.

Do car owners' favorable evaluations of the license plate lottery extend to other restrictive transportation policies? Besides rationing the right to own a car, Beijing has also implemented road space rationing, another established practice in some of the busiest cities around the world where only some cars are eligible to drive on a given day. Figure 3 shows that car owners are more likely to approve of the policy effectiveness of the road space rationing than non-winners, with an estimated effect size similar to the license plate lottery. The results suggest a halo effect in government transportation policy-making that is strong enough to

make car owners approve policies that restrict their own consumption to some extent.

These attitudinal differences in transportation policies do not generalize to other issue domains. [Figure B.1](#) shows that car owners are not more likely to support government intervention in the car market to combat social externalities, nor are they more likely to support government intervention in general. In [Figure B.2](#), results from the pilot indicate that their positive policy attitudes do not extend to the overall evaluation of the government performance.⁹ This is consistent with findings in other contexts that changes of opinion on a single policy may not affect the evaluation of the entire political system ([Anzia et al., 2022](#)).

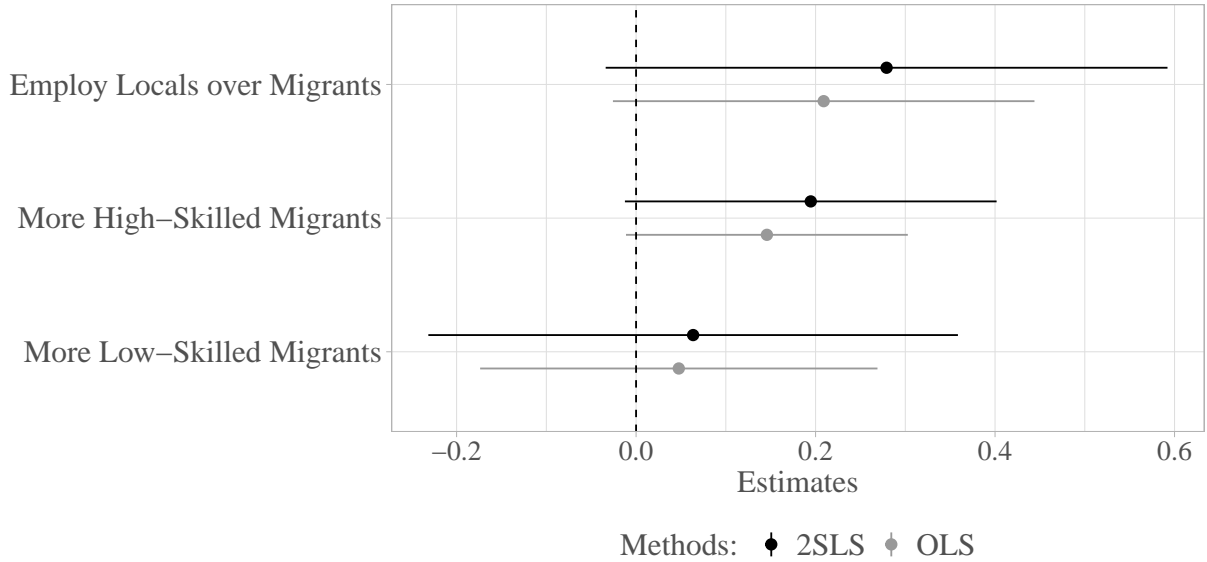
5.2 Social Attitudes

Managing city populations has been a top political objective of urban governance in China. As economic hubs with job opportunities, cities attract a large number of migrants. However, without obtaining a hukou, urban migrants are not entitled to receive the full benefits of public services in the localities where they work. A Beijing hukou is one of the scarcest social resources in China, making the right to live in Beijing highly competitive among urban migrants ([Wallace, 2014](#)).

One of the debates on Beijing’s license plate lottery is tied to its broader societal implications for population control. Restricting the right to own a car is likely to intensify the zero-sum competition among urban residents when public infrastructure cannot keep pace with demand. A conjecture is that car ownership may exacerbate the NIMBY (Not In My Back Yard) problem ([Marble and Nall, 2021](#)), where car owners increase their exclusionary attitudes toward migrants ([Singer and Quek, 2022](#)). However, [Figure 4](#) does not find evidence supporting this claim. Car owners are not more likely than non-car owners to hold higher exclusionary attitudes toward migrants than non-car owners, measured by their preferences

⁹For reasons beyond the researcher’s control, a battery of assessing government performance was not fielded.

Figure 4: Car Ownership on Social Attitudes



for accepting migrants in the labor market. Figure B.4 corroborates this null finding and shows that car owners and non-car owners do not significantly differ in their evaluations of the impact of hypothetical migration inflow on a set of local issues, including transportation and air quality. On the contrary, car owners are less prone to exhibit zero-sum thinking in labor market outcomes and common-pool resources. Together, no evidence suggests that car ownership status exacerbates exclusionary attitudes.

A broader and more difficult question to discuss is how the license plate lottery affects the choices of migrant, including both existing migrants in Beijing and potential migrants who might consider moving to Beijing in the future. Not being able to own a car can increase the possibility of existing migrants leaving Beijing for a less “crowded” city. Potential migrants might be deterred from moving to Beijing when car ownership is restricted. While this study cannot answer this question with certainty, Figure C.3 provides clues that some existing migrants, particularly those who have resided in Beijing for a considerable amount of time (over 10 years), express a higher possibility of leaving Beijing in the next decade. Restricting

the right of car ownership is likely to be conducive to Beijing’s urban planning that has kept its population cap of 23 million since 2017.

6 Mechanisms

What motivates beneficiaries to hold more positive policy attitudes than non-beneficiaries if the policy outcome is the luck of the draw? Section 2 suggests that individuals have preferences for belief consonance. In this context, because car owners are beneficiaries by chance, they cannot not anticipate their status and derive a favorable policy viewpoint relative to non-beneficiaries based on prospective calculation. Therefore, their attitudinal change comes from after experiencing the policy outcome. This section suggests two aspects of policy outcome that motivate car owners to rationalize their beneficiary status.

6.1 The Symbolic Value of Cars

The automobile is a cultural symbol, and having a car in a developing nation is regarded as a symbol of upper-middle class status (Hansen, 2016; Zhang, 2019). According to transportation research, the symbolic value of cars is at least as great as the instrumental value to owners (Steg, 2005; Moody et al., 2021). Artificially restricting the supply of cars makes car ownership even more valuable. Figure 5 confirms this expectation. Compared to non-car owners, car owners report a higher self-perceived class status both relative to their locality and their own social circles. Respondents with cars are more likely to report that they are middle class and above than respondents without cars. Owning a car is also positively associated with participating in social activities. Consistent with the transportation literature (Hiscock et al., 2002; Kent, 2014; Munford, 2017), Figure B.5 shows that car owners report a range of higher socioeconomic indicators, including income and subjective well-being. These downstream effects indicate that the positive shock associated with owning a car is larger

than the car’s economic value, which might increase the incentive to rationalize the opinions about this shock.¹⁰ While my analysis does not adjudicate the relative importance of the instrumental and the symbolic values of car ownership, the results indicate both of these benefits are high.

Consistent with the resource effect in policy feedback literature (Lerman and McCabe, 2017; Mettler et al., 2023), the results suggest this as one reason why programmatic rationing is politically salient. Although the license plate lottery is restrictive and does not directly provide material benefits, it strictly affects the access to a scarce resource that is associated with socioeconomic status.

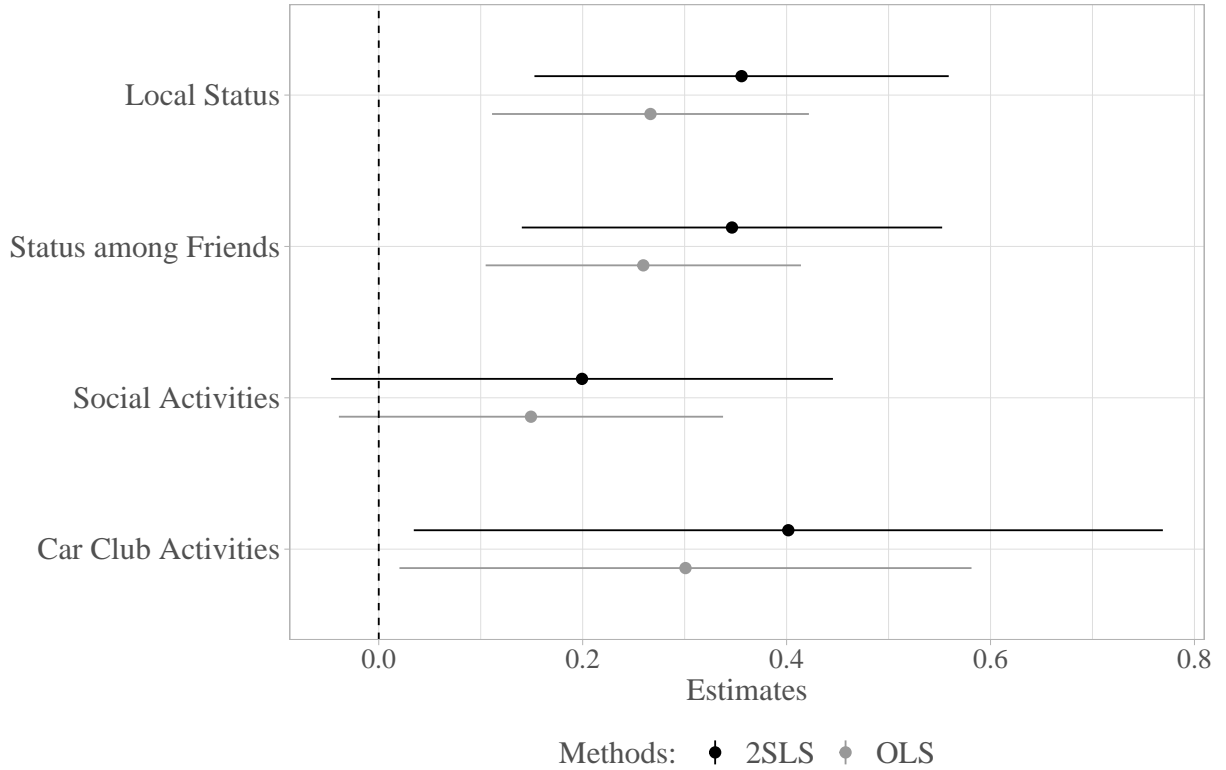
6.2 The Experience

Another key factor that explains policy approval is procedural and outcome fairness perceived by citizens (Tyler, 2006). As we have seen in Figure 3, car owners are likely to have more positive perceptions of the fairness of the policy than non-car owners. Since bureaucratic corruption is known to the public (Wang, 2022), lottery entrants have reasons to suspect that the fairness of bureaucratic allocation through lottery and the fairness of the rationing program that places the policy burden on non-car owners.

Winning the lottery motivates citizens to view policy fairness more positively for two reasons. First, lottery winners’ self-interest is satisfied, which leads them to justify their favorable outcome by rationalizing the fairness of the policy (Konow, 2000). Second, they won the lottery without special connections or paying a bribe, so winners have reasons to believe that the lottery was indeed fairly conducted (Chen, 2017). Thus, winners justify the

¹⁰While additional evidence on the better performance of socioeconomic well-being is likely to strengthen respondents’ desire to rationalize, caution is advised in interpreting the magnitude of those findings. The survey was in the field in December 2022, coincided with a surge of COVID-19 cases in China, which could inflate the instrumental value of car ownership.

Figure 5: Estimated Differences in Social Status and Social Participation



outcomes by improving their perceptions of their subjective experience with the policy.

6.3 Alternative Explanations

Problem Perceptions. An alternative possibility is that winning the lottery does not change perceptions of the rationing policy not directly but instead by altering perceptions of the problems that the lottery designed to solve. Owning a car might lead individuals to judge existing social problems more leniently, such that their positive thinking extends to their evaluations of the license plate lottery rather than serving as retroactive justification for the policy (Hartzmark et al., 2021). However, Figure B.3 shows that car owners do not evaluate transportation and air quality more positively compared to non-car owners.

Modes of Transportation. Another alternative explanation is that owning a car alters the day-to-day lives of car owners in ways that alter their political attitudes. This does not appear to be the case. Although car owners travel by car more frequently than non-car owners, there is no correlation between how often individuals drive or take public transit and their policy beliefs. This is likely due to the fact that Beijing is a densely populated city with heavy traffic, limited parking spaces, and decent public transportation services in the urban core, so the majority of citizens irrespective of their car ownership status support transportation policies that prioritize public transportation (Holland, 2023).

7 Conclusion

This study shows that an ex-ante allocation that is consumption-restrictive can be perceived as popular because of rationalization rather than expectation. Self-interest is a strong determinant of policy attitudes and is often viewed as a rational calculation of gains and losses. However, retrospective evaluations are prone to cognitive biases, where individuals alter their evaluations based on outcomes, even if they are random (Baron and Hershey, 1988; Huber et al., 2012). This study provides real-world evidence that individuals' attitudes can be shaped by their cognitive preference of justifying the outcome ex-post rather than holding their ex-ante expectations. The findings underscores the importance of both psychological and institutional contexts in policy evaluations, and suggest that policy design should consider cognitive biases, such as the fundamental attribution error, the status quo bias, and rationalization (Malhotra and Shotts, 2022; Thorson, 2024). Policy complexity, including the randomness of outcomes, can affect citizens' preferences.

This study also contributes to the understudied area of policy feedback in authoritarian contexts (Béland et al., 2022) and has implications for authoritarian distribution and regime durability. Authoritarian regimes strategically allocate scarce resources to incentivize loyalty

from the population. However, this approach often leads to unequal distribution and alienates certain citizen groups, which breeds grievances and ultimately social unrest. If a regime refrains from distributing in a biased way, then citizens lack reasons to feel dependent on the regime. My findings suggest that a programmatic approach that is perceived as egalitarian or justified can foster grateful supporters. In this context, loyalty is not derived from ex-ante incentives, such as spoils or patronage. Instead, it stems from ex-post rationalization where citizens justify the status quo and their places within the system. By cultivating this psychological attachment, authoritarian regimes can maintain stability without relying on discretionary politics, which strengthens the regime in the short term but harm it in the long term (Wallace, 2013). This strategy underscores the importance of perceived fairness in maintaining authoritarian stability.

Today, over half of the world's population lives in urban areas, and this number is projected to grow to over two thirds by 2050 (Ritchie et al., 2024). Urbanization has significantly improved quality of life, but it has also led to a host of environmental and social externalities and intense competition for resources. As societies grapple with the consequences of mass consumption, the challenge has shifted from managing scarcity to managing abundance in order to achieve sustainability (Frank, 1987, 2008). While the need to exercise restraint in consumption is urgent, scholarship has barely explored the consequences of allocating costs while preserving public goods (Gaikwad et al., 2022; Colantone et al., 2024). Compared to democratic governments, authoritarian regimes may circumvent the political challenges and implement social experiments through top-down bureaucratic decisions. The experiences of these authoritarian governments provide lessons into the social and political consequences of such policies, including the effects on public opinion, social cohesion, and regime stability (Campbell, 1969). This knowledge is indispensable as the global community transitions to sustainable consumption practices, a critical issue of our time.

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Online Appendix

A Summary Statistics	1
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A Summary Statistics

Table A.1: Summary Statistics of Main Variables

Statistic	N	Median	Mean	St. Dev.	Min	Max
Lottery winner	662	0	0.17	0.38	0	1
Car owner	662	0	0.13	0.34	0	1
Male	662	0	0.45	0.50	0	1
Age group	662	3	3.17	0.98	2	8
Ethnic minority	662	0	0.04	0.20	0	1
party membership	662	0	0.24	0.42	0	1
Education	662	5	4.94	0.87	2	6
State employment	662	0	0.36	0.48	0	1
Residency length	662	2	2.23	1.31	0	4
Entering year	658	2,017	2,017.11	3.32	2,011	2,022
License plate lottery effectiveness	662	3	3.17	0.98	1	5
License plate lottery Fairness	662	5	4.50	1.56	1	7
Road space rationing Effectiveness	662	4	3.58	1.00	1	5
Employ locals over migrants	662	3	3.08	1.13	1	5
More high-skilled migrants	662	1	1.09	0.79	-2	2
More low-skilled migrants	662	0	-0.10	1.02	-2	2
Local status	662	0	-0.47	0.74	-2	1
Status among friends	662	0	-0.17	0.76	-2	2
Social activities	662	1	1.13	0.86	0	4
Car club activities	662	0	0.97	1.27	0	6

Figure A.1: Covariates Balance between Lottery Winners and Non-Winners

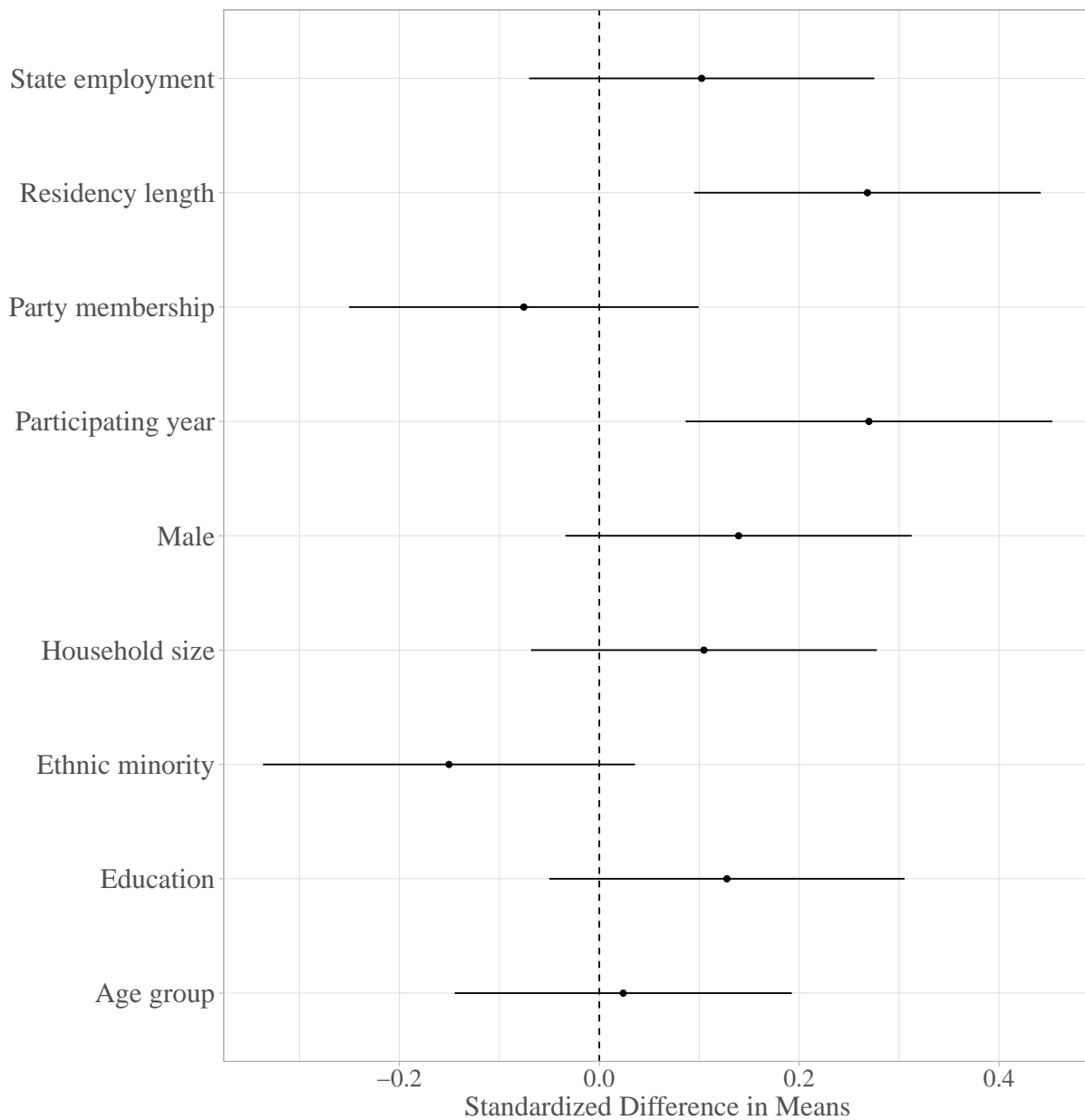


Figure A.2: Comparison between Lottery Entrants and Non-Entrants



B Further Results

Figure B.1: Estimated Differences in Preferences for Government Intervention in the Car Market

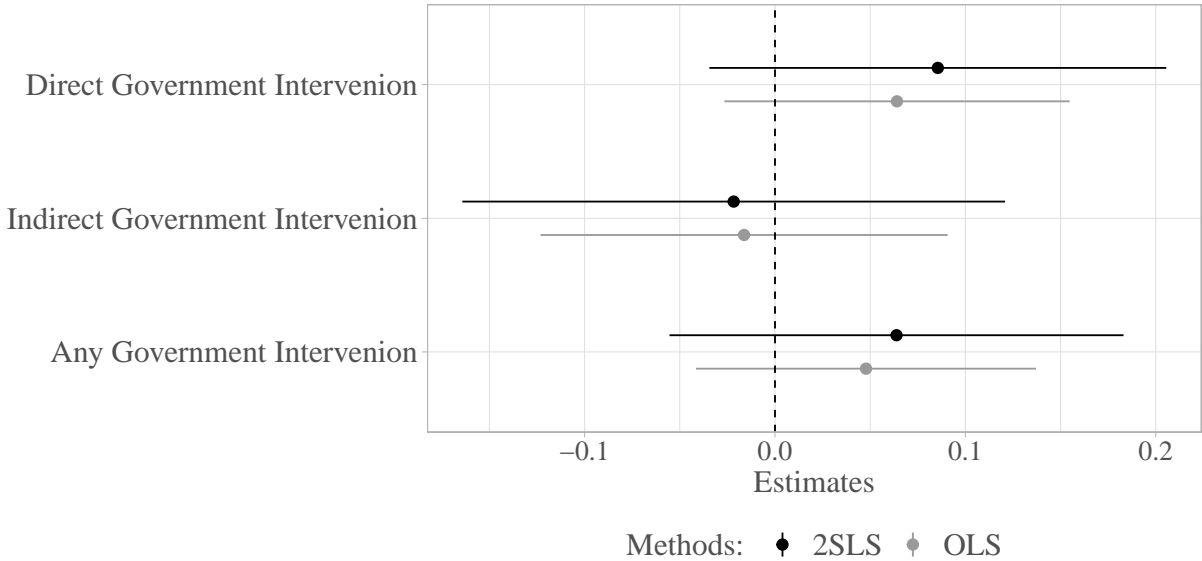


Figure B.2: Estimated Differences in Evaluations of Government Performance

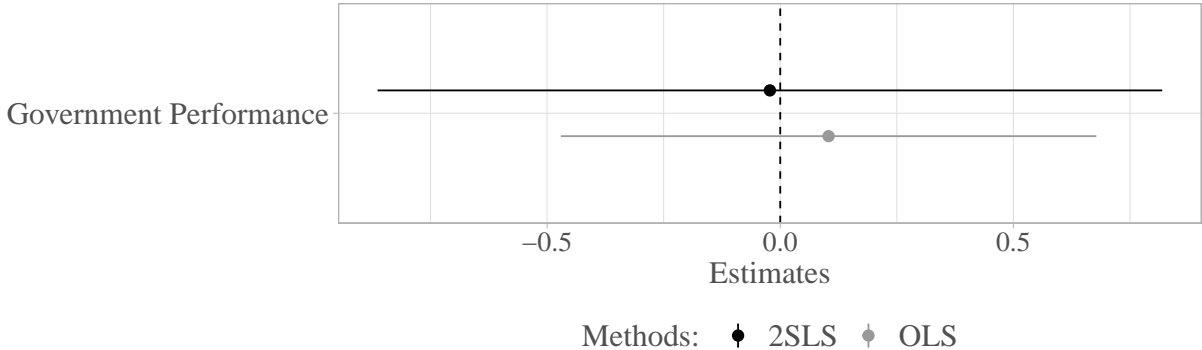


Figure B.3: Estimated Differences in Evaluations of Public Welfare

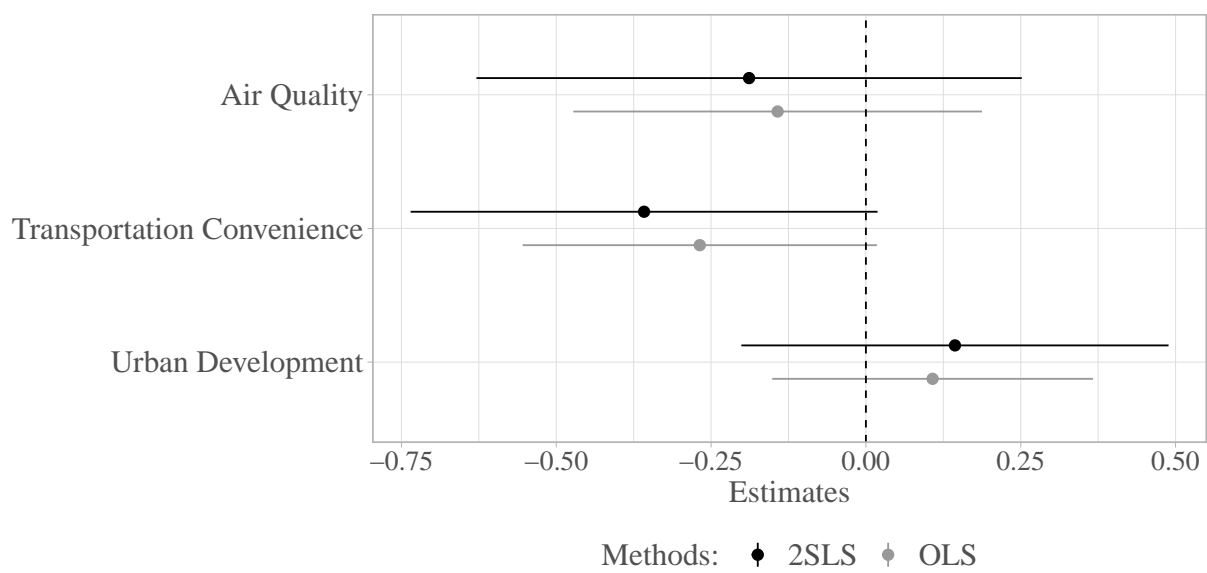


Figure B.4: Estimated Differences in Perceived Effects of Hypothetical Urban Migration Inflow on Local Issues (Higher-Positive)

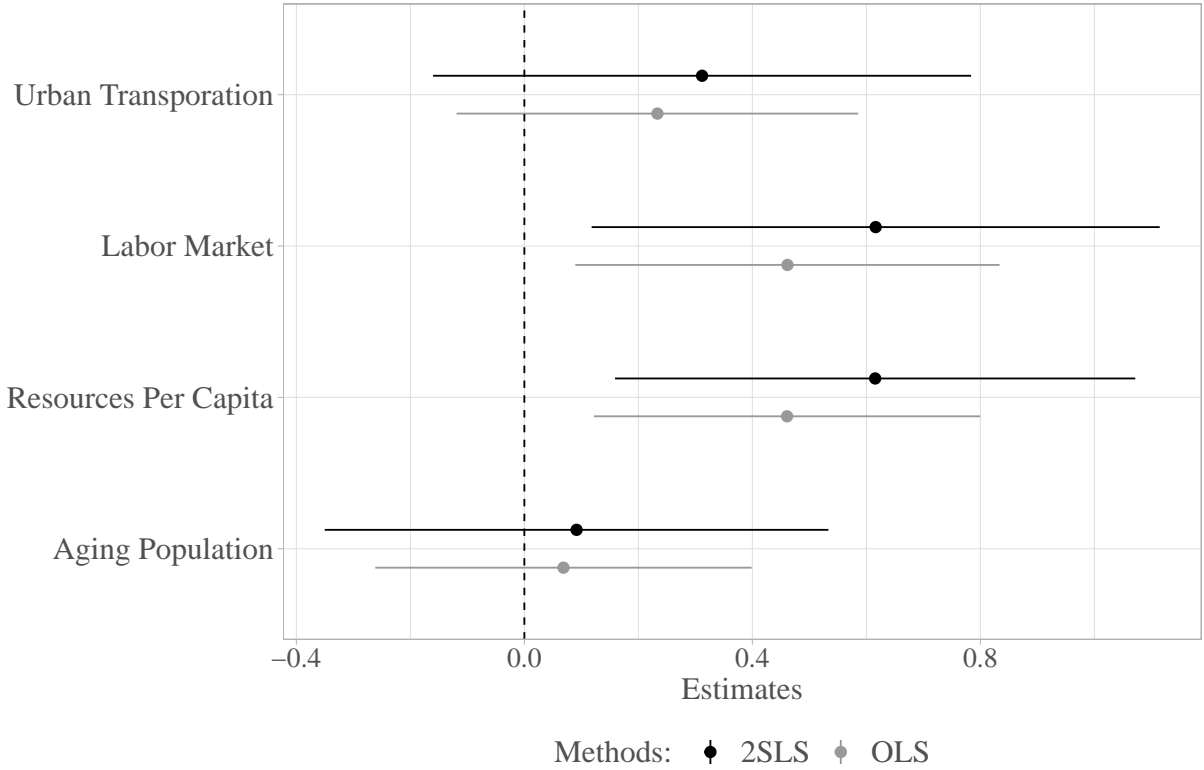


Figure B.5: Estimated Differences in Income and Subjective Well-Being

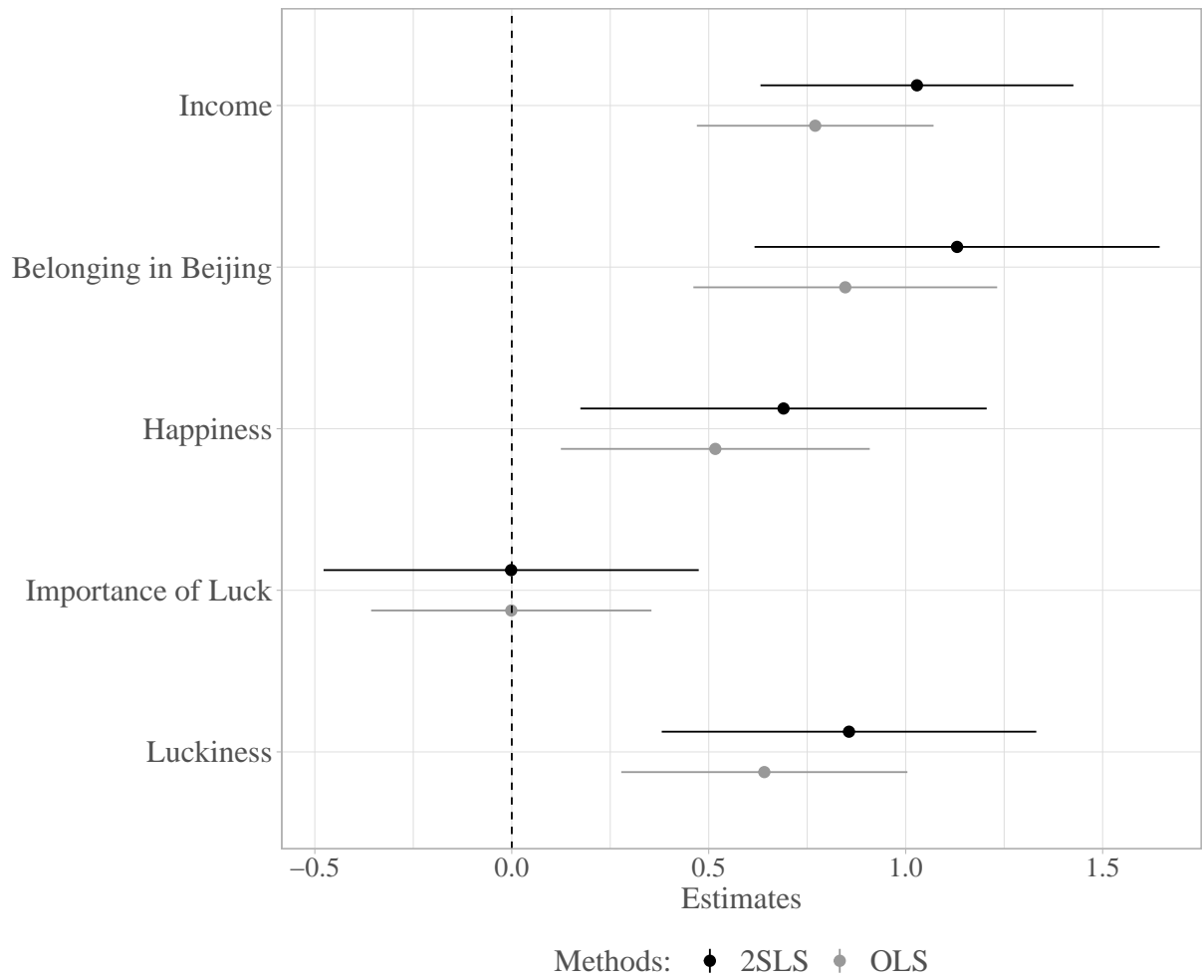
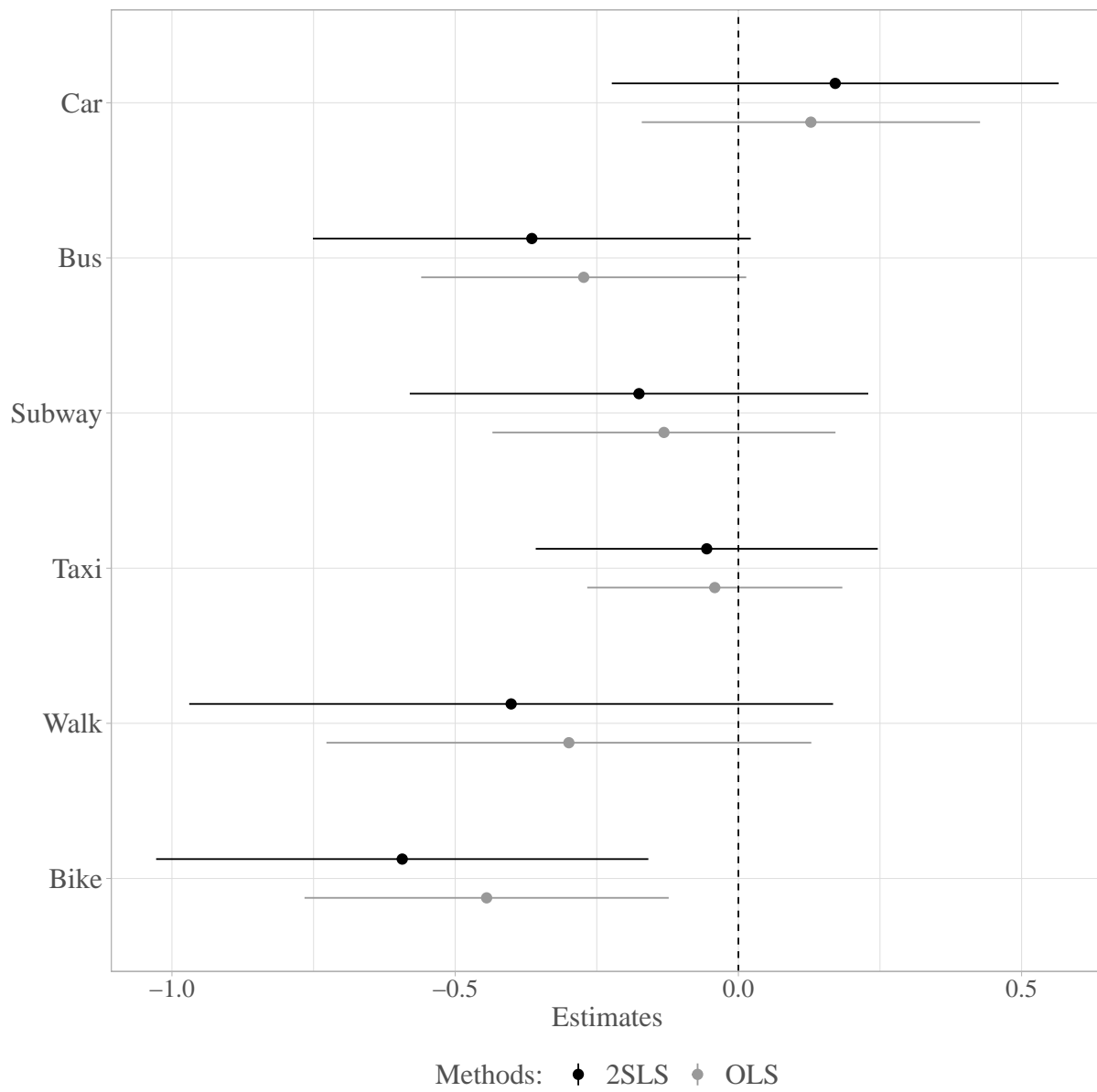


Figure B.6: Estimated Differences in Transportation Mode



C Robustness Checks

Table C.1: First-Stage Estimates of Winning the lottery on Car Ownership

	(1)	(2)	(3)
Lottery winner	0.748*** (0.041)	0.746*** (0.041)	0.749*** (0.041)
Male		0.006 (0.014)	0.005 (0.014)
Age group		0.009 (0.007)	0.010 (0.007)
Ethnic minority		-0.028 (0.028)	-0.023 (0.028)
Party membership		0.007 (0.018)	0.003 (0.018)
Education		-0.006 (0.006)	-0.006 (0.006)
State employment		-0.009 (0.016)	-0.015 (0.016)
Residency length		0.001 (0.006)	0.001 (0.006)
Constant	0.000*** (0.000)	-0.005 (0.041)	0.007 (0.045)
Year FE	N	N	Y
Num.Obs.	662	662	662

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

Table C.2: Estimated Differences in Perceived License Plate Lottery Effectiveness

	OLS		2SLS	
	(1)	(2)	(3)	(4)
Car owner			0.375*** (0.138)	0.344** (0.142)
Lottery winner	0.282*** (0.108)	0.258** (0.111)		
Male		-0.072 (0.077)		-0.073 (0.076)
Age group		0.042 (0.037)		0.038 (0.037)
Ethnic minority		-0.265 (0.179)		-0.257 (0.180)
Party membership		-0.175* (0.091)		-0.176* (0.090)
Education		-0.013 (0.046)		-0.011 (0.046)
State employment		-0.054 (0.082)		-0.049 (0.081)
Residency length		0.023 (0.029)		0.022 (0.029)
Constant	2.969*** (0.158)	2.964*** (0.299)	2.967*** (0.158)	2.962*** (0.297)
Year FE	Y	Y	Y	Y
Num.Obs.	662	662	662	662

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

Table C.3: Estimated Differences in Perceived License Plate Lottery Fairness

	OLS		2SLS	
	(1)	(2)	(3)	(4)
Car owner			0.623*** (0.213)	0.629*** (0.214)
Lottery winner	0.468*** (0.167)	0.471*** (0.168)		
Male		0.010 (0.125)		0.007 (0.124)
Age group		-0.075 (0.062)		-0.081 (0.061)
Ethnic minority		-0.407 (0.340)		-0.393 (0.341)
Party membership		-0.202 (0.155)		-0.204 (0.154)
Education		-0.134* (0.072)		-0.130* (0.071)
State employment		0.177 (0.135)		0.187 (0.133)
Residency length		-0.039 (0.048)		-0.040 (0.048)
Constant	4.710*** (0.231)	5.628*** (0.499)	4.707*** (0.230)	5.624*** (0.498)
Year FE	Y	Y	Y	Y
Num.Obs.	662	662	662	662

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

Figure C.1: Estimated Differences in Evaluations of the License Plate Lottery Effectiveness by Residency

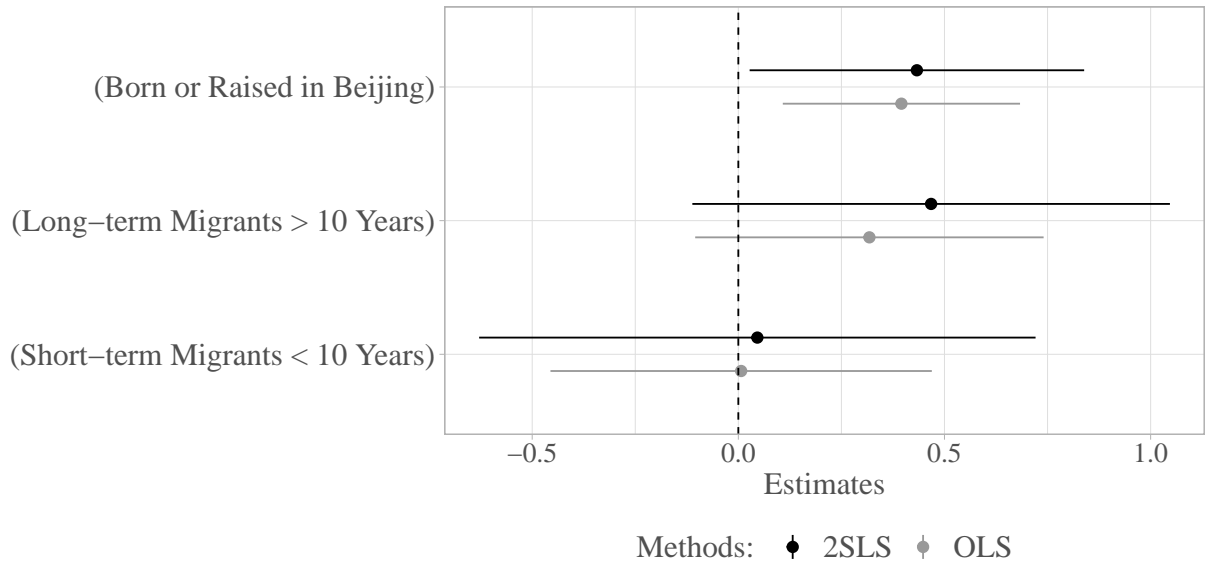


Figure C.2: Estimated Differences in Evaluations of the License Plate Lottery Fairness by Residency

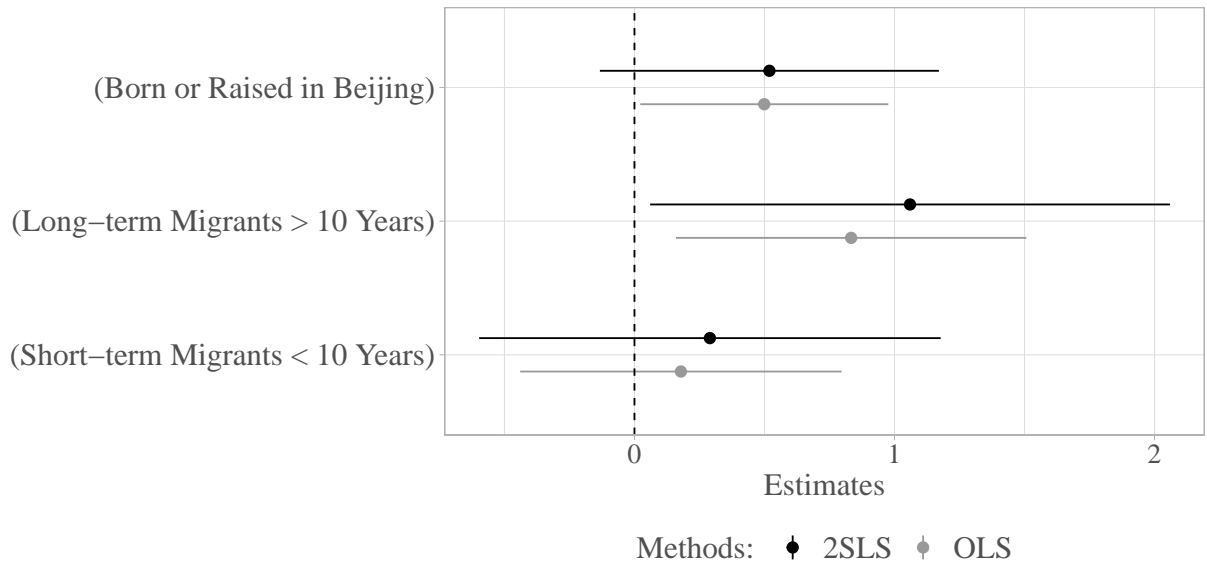


Figure C.3: Estimated Differences in the Probability of Leaving Beijing in the next 10 Years by Residency

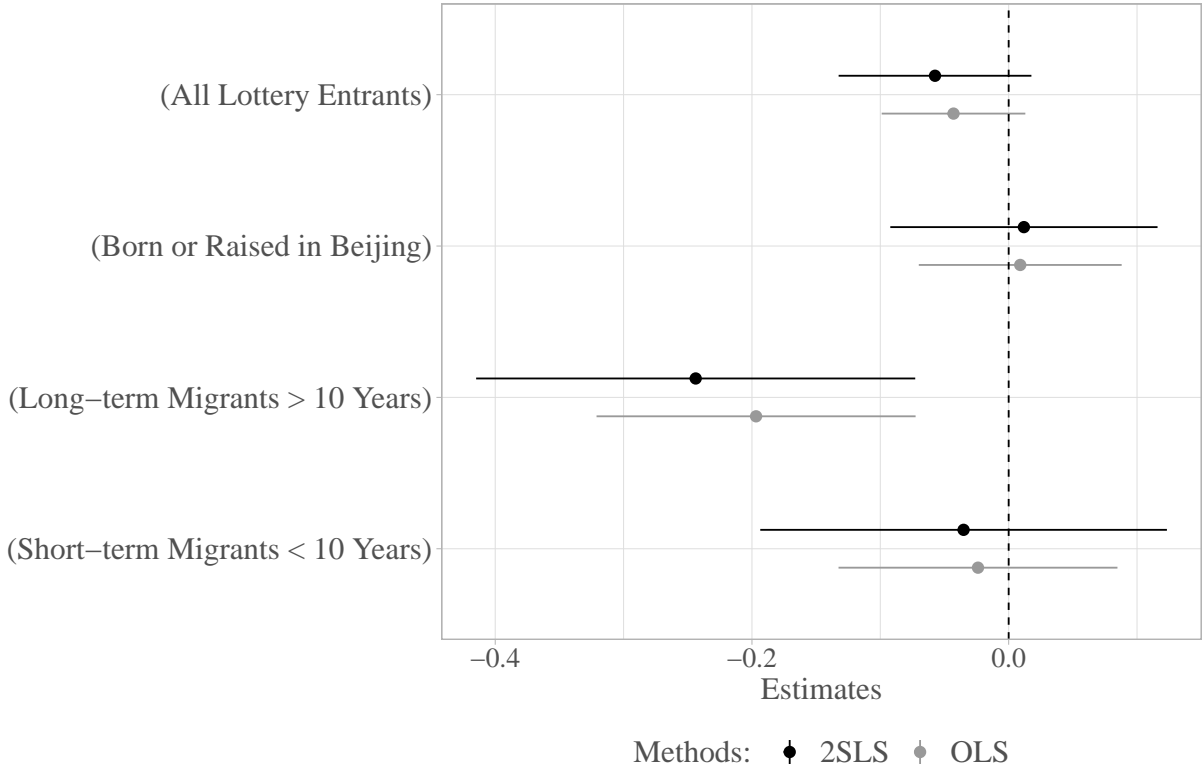


Figure C.4: Estimated Differences in Evaluations of the License Plate Lottery among Homeowners

