One Mandarin Benefits the Whole Clan:
Hometown Favoritism in an Authoritarian Regime

QUOC-ANH DO, KIEU-TRANG NGUYEN, AND ANH N. TRAN

Online Appendix Not Intended for Publication

I. Data Appendix

This appendix describes the data, sources, and variables used in "One Mandarin Benefits the Whole Clan: Hometown Favoritism in an Authoritarian Regime," (Do, Nguyen and Tran).

Data on Ranking Officials

We collect data on four groups of ranking officials: (1) Communist Party's Central Committee members, (2) Central Government officials, (3) Provincial Government officials, and (4) National Assembly's members. For each official, we record his position, its begin and end years, his year of birth, and the commune of his patrilineal hometown. One official can appear multiple times in the dataset if he held multiple positions or the same position in multiple terms during the period from 2000 to 2011.

Data on Central Committee members come from the official website of the Communist Party of Vietnam (CPV) <http://www.cpv.org.vn/cpv/index_e.html>. The data cover all members of the 9th Central Committee (2002-2006) and the 10th Central Committee (2007-2011).

Data on Central and Provincial Government officials come from the 2000's, 2004's, and 2009's Yearbooks of Administrative Organizations, published by the Ministry of Interior Affairs. The data cover all officials starting from the rank of deputy minister (Central Government) and vice chair of Provincial People's

Committees (Provincial Government). However, we only include Provincial Government officials whose patrilineal hometowns are in the same province as their positions.[1]

Data on National Assembly members come from the Vietnam National Assembly's official website <http://www.na.gov.vn/htx/English/C1330/#0TwLzt4Nw9UO>. The data cover all members of the 11th National Assembly (2003-2007) and the 12th National Assembly (2008-2011).

Finally, we exclude 4 top positions in the country from the dataset to focus on the pervasiveness of favoritism beyond the top. These 4 positions are the General Secretary of the Communist Party of Vietnam, the Prime Minister, the President, and the Chairman of the National Assembly.

Power Capital Variables

$\boldsymbol{PowerCapital}$ adds up all ranking positions by terms (excluding the above top 4 positions)[2] ever held by native officials connected to a commune (in commune-level regressions) or a district (in district-level regressions) between 2000 and the year of observation. An official is considered connected to a commune (district) if his patrilineal origin is in the commune (district). In Vietnam, a person's patrilineal origin is legally recorded, shown on the identity card, and needs not correspond to his birthplace or residence.

$\boldsymbol{CurrentPowerLevel}$ is the total number of ranking positions by terms (excluding the top 4 positions) currently held by native officials in the year of observation.

[1] The exclusion of provincial officials whose patrilineal hometowns are not located in the province he governs drops 103 observations from the baseline sample, and has little effect on the result (estimate of 0.221, significant at 1%, instead of 0.227 in the reported baseline result in column 1 of Table 2.)

[2] As discussed earlier, we also exclude Provincial Government officials whose patrilineal hometowns are in not the same provinces as their positions.

$\boldsymbol{PowerCapital\_CPV}$ (power capital from CPV's Central Committee positions) is constructed in the same way as $PowerCapital$, but includes only ranking positions in the CPV's Central Committee (excluding the Secretary of the CPV).

$\boldsymbol{PowerCapital\_Govt}$ (power capital from Executive branch positions) is constructed in the same way as $PowerCapital$, but includes only ranking positions in Central and Provincial Governments (excluding the Prime Minister and the President).

$\boldsymbol{PowerCapital\_NA}$ (power capital from National Assembly positions) is constructed in the same way as $PowerCapital$, but includes only positions in the National Assembly (excluding the Chairman of the National Assembly).

$\boldsymbol{PowerCapital\_TopRank}$ (power capital from top-ranking positions) is constructed in the same way as $PowerCapital$, but includes only positions at least equivalent to the rank of minster (but below the top 4). These positions comprise Deputy Prime Ministers, Vice Presidents, and ministers in the Central Government, and Politburo members and commission chairs in the CPV's Central Committee.

$\boldsymbol{PowerCapital\_MidRankGovtCPV}$ (power capital from Executive branch and CPV middle-ranking positions) is constructed in the same way as $PowerCapital$, but includes only positions below the rank of minister in Central and Provincial Governments and the CPV. These positions comprise deputy ministers in the Central Government, chairs and vice chairs of Provincial People's Committees, and regular (non-Politburo, non-chaired) members of the CPV's Central Committee.

$\boldsymbol{PowerCapital\_MidRankNA}$ (power capital from National Assembly middle-ranking positions) is constructed in the same way as $PowerCapital$, but includes only ordinary non-chaired positions in the National Assembly.

$\boldsymbol{NewPower}$ is the total number of new ranking positions held by native officials in the year of observation (i.e. positions with terms starting in the year of observation). Note that $NewPower_t = PowerCapital_t - PowerCapital_{t-1}$.

Data on Commune Characteristics and Infrastructures

We obtain data on commune characteristics and infrastructures from the Vietnam Household Living Standard Survey (VHLSS). The VHLSS, technically supported by the World Bank, is conducted every two years (2002, 2004, 2006, 2008, and 2010) at both commune and household levels from a random, representative sample of about 2,200 communes out of about 11,000 communes in the country. The commune survey is conducted with several commune officials, while the household survey is conducted with a random sample of households in the commune. The VHLSS covers a total of more than 4,000 communes across its 5 waves.

We extract data from both surveys, including commune characteristics (i.e. area, population, average household income, average household expenditure, geographical zone, rural/urban classification) and presence and quality of various types of infrastructure in the communes (i.e. utilities, irrigation systems, market places, post offices, radio stations, cultural centers, schools, clinics/hospitals).

Finally, we only keep communes classified as rural in the dataset, so as to avoid the complexity of infrastructure development in urban areas.

Commune Infrastructure Variables

$\boldsymbol{Infras3yr_{ct}}$ (commune total infrastructures within 3 years) is the total number of all infrastructure categories ever present in commune c in survey years t and $t+2$ (i.e. two consecutive waves of the VHLSS.) That is, $Infras3yr_{ct} = \sum_k D3yr_{kct}$ where $D3yr_{kct}$ is a binary indicator of presence of infrastructure k in commune c in either survey year t or survey year $t+2$. The 12 possible infrastructure categories are electricity, clean water supply in dry season, clean water supply in wet season, irrigation system, market place, post office, radio station, cultural center, pre-school, middle school, high school, and hospital.[3]

There are few missing values in our matched sample. If a category k's availability is a missing value for both years t and $t+2$, we record $D3yr_{kct}$ and therefore $Infras3yr_{ct}$ as missing. If the variable is available in one of the two years, we record $D3yr_{kct}$ as the presence of the category in the other year.[4]

$\boldsymbol{Infras1yr_{ct}}$ (commune total infrastructures within 1 year) is the total number of all infrastructures categories present in commune c in survey year t. That is, $Infras1yr_{ct} = \sum_k D1yr_{kct}$ where $D1yr_{kct}$ is a binary indicator of presence of infrastructure k in commune c in survey year t. $Infras1yr_{ct}$ is not available for 2002 as only 4 out of the above 12 infrastructure categories are covered in the 2002 survey. Similarly to $Infras3yr_{ct}$, the variable $Infras1yr_{ct}$ is recorded as missing if any category is missing for that year.

$\boldsymbol{NewInfras3yr_{ct}}$ (commune total new infrastructures within 3 years) is the total number of new infrastructure categories present in commune c in survey year $t+2$. An infrastructure category is considered new if it is present in commune c in survey year $t+2$ but not in survey year t. $NewInfras3yr_{ct}$ is not available for 2002 as only 4 out of the above 12 infrastructure categories are covered in the 2002 survey.

$\boldsymbol{InfrasImprv_{c,t_1,t_2}}$ (commune infrastructure improvement) is a binary indicator of improvement in the total number of all infrastructures present in

3 Besides these 12 infrastructure categories, VHLSS also covers primary school and clinic, which we do not include in our infrastructure measures due to the lack of variation. The 2002 survey covers only 4 out of 12 mentioned infrastructure categories (electricity, clean water supply in dry season, clean water supply in wet season, and hospital). The 2004, 2006, 2008, and 2010 surveys cover all 12 mentioned infrastructure categories.

4 While this choice results in some small discrepancies in the samples across different specifications, they are inconsequential to all of our results.

commune c in survey year t_2 over that in survey year t_1 $(t_1 < t_2)$. That is, $InfrasImprv_{c,t_1,t_2} = 1(Infras1yr_{c,t_2} > Infras1yr_{c,1_1})$.

$\boldsymbol{Infras3yr\_Productive}$ (productive infrastructures within 3 years) is constructed in the same way as $Infras3yr$, but includes only productive infrastructure categories. These 5 possible infrastructure categories are electricity, clean water supply in dry season, clean water supply in wet season, irrigation system, and marketplace.

$\boldsymbol{Infras3yr\_Cultural}$ (cultural infrastructures within 3 years) is constructed in the same way as $Infras3yr$, but includes only cultural infrastructure categories. These 3 possible infrastructure categories are post office, radio station, and cultural center.

$\boldsymbol{Infras3yr\_EduHealth}$ (education and health infrastructures within 3 years) is constructed in the same way as $Infras3yr$, but includes only education and health infrastructure categories. These 4 possible infrastructure categories are pre-school, middle school, high school, and hospital.

$\boldsymbol{Infras3yr\_Zscore_{ct}}$ (aggregation of z-scores of infrastructures within 3 years) is defined as $\sum_k \frac{D3yr_{kct}}{\sqrt{\mathrm{Var}(D3yr_k)}}$ where the variance is taken over (c,t) for each infrastructure k.

District Infrastructure Variables

$\boldsymbol{Infras3yr\_NCAvg_{dt}}$ (district's non-connected commune average infrastructures within 3 years) is the average of all available $Infras3yr_{ct}$ in which c is a rural non-connected commune in district d. A non-connected commune is one that does not have any native official with ranking position during our study period.

$\boldsymbol{Infras3yr\_NCTotal_{dt}}$ (district's non-connected commune total infrastructures within 3 years) is the sum of all available $Infras3yr_{ct}$ in which c is a rural non-connected commune in district d.

Other Variables

$\boldsymbol{FamilyValueScore}$ is the ratio of domestic remittances and worship expenditure over household income in 2002, averaged over surveyed households in the same district. The amount of domestic remittances a household receives, the amount it spends on worship, and the household's total income are extracted from VHLSS household survey. Because some districts surveyed in subsequent years were not present in VHLSS 2002, this variable has a few missing values.

$\boldsymbol{LocalGovernanceScore}$ aggregates relevant questions/sub-scores included in the Vietnam Provincial Competitiveness Indices (PCI) 2006. The PCI is a set of indices of industries' governance perceptions that has been systematically constructed from surveys of enterprises based in each province. It is the result of a country-wide project conducted since 2006 by the Vietnam Chamber of Commerce and Industry, with the help from the UNDP. $LocalGovernanceScore$ is calculated based on 7 questions/sub-scores:

1. Length of business registration in days
2. Land access sub-score (on a scale of 10)
3. Security of land tenure sub-score (on a scale of 10)
4. Equity and consistency of policy application sub-score (on a scale of 10)
5. Share of firms agreeing to the statement "Officials use compliance with local regulations to extract rents"
6. Share of firms agreeing to the statement "There is no discretionary initiatives at provincial level"

7. Share of firms agreeing to the statement "Legal system provides mechanism for firms to appeal officials' corrupt behavior"

Specifically, $LocalGovernanceScore = -(1) + (2) + (3) + (4) - (5) \times 10 + (6) \times 10 + (7) \times 10$. Higher $LocalGovernanceScore$ indicates less corrupted and more transparent local governance.

II. A simple conceptual framework

Existing economic theory has analyzed favoritism in auctions (Laffont and Tirole 1991, Burguet and Perry 2007), in the labor market (Prendergast and Topel 1996, Duran and Morales 2011) and in queuing for public resources (Batabyal and Beladi 2008). Ethnicity (Burgess et al 2011), gender (Abrevaya and Hamermesh 2012) and social pressure (Garicano, Palacios and Prendergast 2005) have been considered as bases for favoritism. In this section, we present a simple model to illustrate how hometown-based favoritism works, and predict how officials' power and motives shape the outcomes of this type of favoritism.

The model involves a sequential game between two utility-maximizing agents, the Official and the Budget Allocator.[5] The Official corresponds to newly promoted officials with special links to their place of origin. The Allocator refers to the government unit that has authority over budget allocations to communes, namely the district budget authority in our context. The Official cares about getting additional resource allocation for his commune, which often comes in the form of additional budget infrastructure projects such as roads, markets, schools and clinics. These additional resources can benefit the Official in two ways: by providing him with additional political support from his home commune/district, as observed in the case of pork-barrel politics, and by appealing to his social

[5] For expositional convenience, we refer to the official as male and the local authority as female.

preferences to improve the welfare of his commune/district of origin and his remote relatives living there.

Let λ denote the administrative level of the place of birth. λ can be commune, district or province. A higher λ means a larger administrative level, with more potential to provide political support but less social affection from the Official. The model allows for the comparison of different λ's (commune versus district) to gain insight into the Official's motivation.

To achieve his objective, the Official has to work out a deal with the Allocator, who has direct control over budget allocation. The Official can give the Allocator certain favors, such as political promotion, that enhance the Allocator's utility by P, at a cost g for the Official. In return, the Allocator will channel an additional amount B from the budget to the Official's hometown's infrastructure projects, at a cost h for the Allocator. This favored allocation B is valued by the Official at $\pi(B,\lambda) + \sigma(B,\lambda)$, where π represents the utility from additional political support and σ represents the utility from social preference satisfaction. We pay particular attention to B, as it manifests explicit evidence of favoritism between the Official and Allocator.

We assume that the Official's cost function g(P,r) is increasing and convex in P and decreasing in r, where r represents the Official's power such that higher r implies higher power. Next, the Allocator's cost function h(B,d) is increasing and convex in B and increasing in d, where d measures institutional constraints on the Allocator's discretion. We further assume that $\pi(B,\lambda)$ and $\sigma(B,\lambda)$ are both increasing and concave in B.[6]

The Official is the first mover and makes an offer to the Allocator involving (P,B). The Allocator will accept if it satisfies his participation constraint, namely

[6] We assume that the costs of direct monetary transfers between the two agents are much higher than the costs of providing favor, so monetary transfers, or bribes, are not realistic options. In practice, exchanges of both bribes and favors may coexist. We refrain from modeling explicit bribes because it would not add insight to our empirical setup.

that the benefit of accepting is not lower than the cost. As the first mover, the Official can fully appropriate the game's rent by making an offer such that the Allocator is indifferent as to whether to accept or refuse it. The offer then solves the following maximization problem:

$$\mathrm{Max}_{(P,B)}\ \pi(B,\lambda) + \sigma(B,\lambda) - g(P, r) \text{ s.t. } P - h(B,d) \geq 0. \ (1)$$

We will now state three propositions about the existence, distribution and motives of favoritism. These propositions provide the basis for the subsequent empirical investigation presented in this paper.

Proposition 1: Assume that (A1): $\pi'_B(0,\lambda) + \sigma'_B(0,\lambda) - g'_P(h(0,d),r)h'_B(0,d) > 0$. There exists a unique solution (P^*,B^*) to this model, with positive favored allocation $B^*>0$, determined by the following equations:

$$\pi'_B(B^*,\lambda) + \sigma'_B(B^*,\lambda) - g'_P(h(B^*,d),r)h'_B(B^*,d) = 0 \quad (2),\ P^* = h(B^*,d).$$

Intuitively, this proposition shows that if there is positive net marginal benefit of favored allocation B at 0, then a positive level of favoritism will occur. As a result, even in an authoritarian regime where the electoral motivation is absent, if the marginal social motivation is sufficiently large then favoritism will arise.

Proposition 2: (a) Assume that (A2a) the marginal cost g'_P is decreasing in r, then the favored allocation B^* is increasing in r; (b) Assume that (A2b) the marginal cost h'_B is increasing in d, then the favored allocation B^* is decreasing in d.

Result (a) implies that a higher-powered official can exercise more favoritism for his home commune. This relation allows us understand the power structure in a political system through observing the favoritism of different officials. Notice that what matters is the cross derivative of g with respect to P and r, and not the first derivative of g with respect to r. A higher-ranked official can get a better deal because P and r are complements. Result (b) implies that favoritism is more widespread when local authorities are less constrained in making deals, typically under low quality of local governance.

Proposition 3: If the marginal benefits $\sigma'_B(B,\lambda) + \pi'_B(B,\lambda)$ are increasing (decreasing) in λ (A3), then the favored allocation B* is increasing (decreasing) in λ.

This result shows that the effect of administrative level λ on the value of favored allocation essentially depends on its effect on the marginal benefits. As discussed previously, it is realistic to assume that at a larger administrative level, social preferences become less important and political motivation more important. At a larger level, social connections arguably become less frequent or salient, so the improved utility derived from more favored allocation is less valuable, i.e. $\sigma'_B(B,\lambda)$ decreases when λ increases. On the other hand, a larger level is more politically influential, so additional favored allocation can potentially bring more benefit, i.e. $\pi'_B(B,\lambda)$ increases when λ increases. Overall, our prior on the effect of λ on the total marginal benefit, namely $\sigma'_B(B,\lambda) + \pi'_B(B,\lambda)$, depends on whether social preferences or political influences are more dominant. Empirically, evidence that B* is increasing in λ is consistent with $\sigma'_B(B,\lambda) + \pi'_B(B,\lambda)$ being increasing in λ, in which case the social preference effect through σ'_B must have dominated the political motivation effect through π'_B.

We can also consider the special case where the Official is the same as the Budget Allocator, political favor exchange becomes irrelevant and the Official only has to pick B to maximize his net gain of $\pi(B,\lambda) + \sigma(B,\lambda) - h(B,d)$. This problem has a unique solution B* that satisfies $\pi'_B(B^*,\lambda) + \sigma'_B(B^*,\lambda) - h'_B(B^*,d) = 0$ (as $\pi'_B(B,\lambda)$ and $\sigma'_B(B,\lambda)$ are both decreasing in B while $h'_B(B,d)$ is increasing). As in propositions 2 and 3 above, this unique solution B* increases when d is lower (assuming that h'_B is increasing in d) and when $\sigma'_B(B,\lambda)$ is higher for every value of B.

This model provides a simple framework for understanding favoritism under various political systems. In institutional environments with strong governance and high accountability, both $g'_{\mathbf{P}}$ (the Official's marginal cost to grant political favor) and h'_B (the Allocator's marginal cost to distort the local budget) are prohibitively high. The resulting amount of budget distorted by favoritism B* is then minimal, if at all. This applies to strong democracies as well as non-democratic regimes with a well-functioning system of checks and balances on the majority of officials, such as Singapore's – the lack of political incentives in those regimes, i.e. low π'_B, may further dampen favoritism. In effect, it suffices to raise either g'_P or h'_B, i.e. either the accountability of high-rank officials or that of local administrative units, to curb B*.

A strong dictatorship may limit widespread favoritism beneath the top level, if a strong dictator only tolerates his own favoritism and punishes his subordinates'. This is a case of $g'_P=0$ for the dictator, but very high for everyone else. In such cases, democratization and/or decentralization could increase π' and lower h'_B, both leading to more widespread favoritism. For that reason, favoritism may also be found in democratic countries, such as in certain cases in the U.S. or India where the marginal cost g'_P is low.

The model's application to an authoritarian setting yields key empirical predictions on the effects of officials' promotions on home commune infrastructure, a manifestation of favored budget allocation. First, because of a lack of checks and balances, the marginal costs g'_P and h'_B are expected to be low in Vietnam, so the phenomenon of hometown favoritism is predicted to be widespread among officials, even beyond the top leaders (**Hypothesis I**). Second, hometown favoritism depends positively on the official's power in the authoritarian hierarchy and on the home province's local governance quality (**Hypothesis II**). Third, hometown favoritism is most present where the attachment between the official and the hometown is strongest. We expect that the marginal social preference σ'_B is close to zero for communes aside from the home commune and that σ'_B for the home district is diluted to a much lower level than that of the home commune. Therefore, favoritism is predicted to decrease as we move from the home commune to neighboring communes or to the home district (**Hypothesis III**). While marginal political interest π'_B may be slightly higher at the district level, we do not expect it in practice to be of a relevant magnitude (as districts barely matter in Vietnamese politics).

III. Proofs of Propositions

Proof of Proposition 1: The Lagrangian of this optimization problem, $\pi(B,\lambda) + \sigma(B,\lambda) - g(P, r) - \lambda[P - h(B,d)]$, implies the first order conditions:

$$\pi'_B(B,\lambda) + \sigma'_B(B,\lambda) + \lambda h'_B(B,d) = 0 \text{ and } -g'_P(P,r) - \lambda = 0.$$

The participation constraint is binding as $P = h(B,d)$.

These conditions yield:

$$\pi'_B(B,\lambda) + \sigma'_B(B,\lambda) - g'_P(h(B,d),r)h'_B(B,d) = 0.$$

This equation has a unique solution B* because the left-hand side's derivative with respect to B is negative, as:

$$\pi''_{BB}(B,\lambda) < 0,\ \sigma''_{BB}(B,\lambda) < 0, \text{ and } g''_{PP}(h(B,d),r)[h'_B(B,d)]^2 + g'_P(h(B,d),r)h''_B(B,d) > 0.$$

The Lagrangian is concave in (P,B) because its Hessian matrix is negative definite. Therefore, (h(B*,d),B*) is the unique solution to this optimization problem under constraint. Furthermore, since the left-hand side of this equation is positive when B=0, the result of favored allocation B* must be positive **(QED)**.

Proof of Proposition 2: (a) The partial differentiation with respect to r from equation (2) yields:

$$\pi''_{BB}(B^*,\lambda)B^{*\prime}_r + \sigma''_{BB}(B^*,\lambda)B^{*\prime}_r =$$
$$[g''_{PP}(P^*,r)h'_{\mathbf{B}}(B^*,d)B^{*\prime}_r + g''_{Pr}(P^*,r)]h'_B(B^*,d) + g'_P(P^*,r)h''_{BB}(B^*,d)B^{*\prime}_r$$

$$\Leftrightarrow \{\pi''_{BB}(B^*,\lambda) + \sigma''_{BB}(B^*,\lambda) - g''_{PP}(P^*,r)[h'_{\mathbf{B}}(B^*,d)]^2 - g'_P(P^*,r)h''_{BB}(B^*,d)\}B^{*\prime}_r$$
$$= g''_{Pr}(P^*,r)h'_B(B^*,d).$$

The expression in the bracket on the left-hand side is negative while the right-hand side is positive as $g''_{Pr}(P^*,r) < 0$ based on the proposition's assumption. Therefore, $B^{*\prime}_r$ must be positive, indicating that the solution B* is increasing in r **(QED).**

(b) The partial differentiation with respect to d from equation (2) yields:

$$\pi''_{BB}(B^*,\lambda)B^{*\prime}_d + \sigma''_{BB}(B^*,\lambda)B^{*\prime}_d =$$
$$g''_{PP}(P^*,r)[h'_B(B^*,d)B^{*\prime}_d + h'_d(B^*,d)]h'_B(B^*,d) + g'_P(P^*,r)[h''_{BB}(B^*,d)B^{*\prime}_d + h''_{Bd}(B^*,d)]$$
$$\Leftrightarrow \{\pi''_{BB}(B^*,\lambda) + \sigma''_{BB}(B^*,\lambda) - g''_{PP}(P^*,r)[h'_B(B^*,d)]^2 - g'_P(P^*,r)h''_{BB}(B^*,d\}B^{*\prime}_d$$
$$=$$
$$g''_{PP}(P^*,r)h'_d(B^*,d)h'_B(B^*,d) + g'_P(P^*,r)h''_{Bd}(B^*,d).$$

The expression in the bracket on the left-hand side is negative while the right-hand side is positive as $h''_{Bd}(B^*,d) > 0$ based on the proposition's assumption. Therefore, $B^{*\prime}_d$ must be negative, indicating that the solution B* is decreasing in d **(QED.)**

Proof of Proposition 3: Suppose the marginal benefits are decreasing in λ, as in the case where social preferences outweigh political supports (the opposite case is proven analogously.) Let $\lambda_1 < \lambda_2$, so $\sigma'_B(B,\lambda_1) + \pi'_B(B,\lambda_1) \geq \sigma'_B(B,\lambda_2) + \pi'_B(B,\lambda_2)$ for every B, and B_1^* and B_2^* be the corresponding solutions. We now need to show that $B_1^* \geq B_2^*$.

Recall from equation (2) that : $\sigma'_B(B,\lambda) + \pi'_B(B,\lambda) = g'_P(h(B,d),r)h'_B(B,d)$. Denote this expression as M(B). $\sigma'_B(B,\lambda) + \pi'_B(B,\lambda)$ is decreasing in B as σ+π is concave in B, while M(B) is increasing in B as g and h are convex.

Assume that $B_1^* < B_2^*$, then $M(B_1^*) = \sigma'_B(B_1^*,\lambda_1) + \pi'_B(B_1^*,\lambda_1) \geq \sigma'_B(B_1^*,\lambda_2) + \pi'_B(B_1^*,\lambda_2) \geq \sigma'_B(B_2^*,\lambda_2) + \pi'_B(B_2^*,\lambda_2) = M(B_2^*)$, contradictory to M(B)'s increasing in B. Therefore, $B_1^* \geq B_2^*$ **(QED)**.

IV. Semi-parametric method used for Figure 1

We modify the benchmark empirical regression in section IV.B to model the heterogeneous effect of officials' promotions on infrastructure improvements as a function $\beta(.)$ of a baseline variable x_c:

$$Infras3yr_{ct} = \beta(x_c)PowerCapital_{c,t-1} + \gamma(x_c)\boldsymbol{X}_{ct} + \delta_t(x_c) + \mu_c(x_c) + \varepsilon_{ct}$$

Figure 2 plots the estimated function $\beta(x_c)$ for three different baseline variables, namely the percentiles of family value measure, income per capita, and local governance quality. The function $\beta(x_c)$ is estimated from semi-parametric local linear regressions of the outcome variable $Infras3yr_{ct}$ at each value of x_c, weighted by a Gaussian kernel with a bandwidth of 25% of the total range of x_c, on the treatment variable $PowerCapital_{c,t-1}$, including controls and fixed effects as in the benchmark regression. The observed pattern is much similar across a wide range of cross-validated bandwidths (see Li and Racine 2006, ch. 2.) To provide an example, in Figure 2's first plot we divide the range of the family value measure into a 100-point grid, run a local linear regression with Gaussian kernel weight at each of these points, using all controls and fixed effects in the benchmark regression in Table 2A, and then report the estimated coefficient of $PowerCapital_{c,t-1}$ as a point on the graph.

V. Inference based on Monte Carlo simulations

To further verify the statistical inference of our benchmark results, we show in Figure A2 results from 1,000 Monte Carlo simulations in which each commune's power capital is drawn randomly from the baseline-sample power capital distribution. We then estimate the effect of this "random" power capital on real commune infrastructures using the same baseline specification as in column 1 of Table 2 in each simulation. As expected, the distribution of the resulting estimates centers around zero, confirming that power capital should not have any impact on commune infrastructures when there is no real linkage between the two. On the other hand, our baseline estimated effect of 0.227 is at the 99.9th percentile of this distribution, indicating that the impact we find is unlikely to be spurious but reflects a causal relationship between native official promotions and home commune infrastructure.

VI. Additional references for online appendix

Abrevaya, Jason and Daniel S. Hamermesh (2012). "Charity and Favoritism in the Field: Are Female Economists Nicer (To Each Other)?" *Review of Economics and Statistics*, 94(1), 202-7.

Batabyal, Amitrajeet A. and Hamid Beladi (2008). "Bribery and Favoritism in Queuing Models of Rationed Resource Allocation." *Journal of Theoretical Politics,* 20, 329-38.

Burguet, Roberto and Martin K. Perry (2007). "Bribery and Favoritism by Auctioneers in Sealed-Bid Auctions." *B.E. Journal of Theoretical Economics*, 7(1), 23.

Duran, Miguel A. and Antonio J. Morales (2011). "Favoritism in the Matching Process: The Rise and Spread of Favoritism Practices in the Labor Market." Unpublished paper. University of Málaga.

Garicano, Luis, Ignacio Palacios-Huerta, and Canice Prendergast (2005). "Favoritism Under Social Pressure." *Review of Economics and Statistics*, 87(2), 208-216.

Laffont, Jean-Jacques and Jean Tirole (1991). "Auction Design and Favoritism." *International Journal of Industrial Organization*, 9(1), 9-42.

Li, Qi and Jeffrey Scott Racine (2006). *Nonparametric Econometrics: Theory and Practice.* Princeton, NJ: Princeton University Press.

Prendergast, Canice and Robert H. Topel (1996). "Favoritism in Organizations." *Journal of Political Economy*, 104, 958-78.

Table A1. Increased commune's power capital improves infrastructures

	(1)	(2)	(3)	(4)
Specification	OLS in level equation	Conditional logit model	Negative binomial model	OLS in level equation
Dependent variable	Aggregation of z-scores of infrastructures within 3 years	Change in total infrastructures	Change in total infrastructures	Total infrastructures within 1 year
Power capital	**0.608**			
	[0.199]* **			
Change in power capital		**0.333**	**0.201**	
		[0.170]*	**[0.0749]*** **	
New power *t*+1				-0.00858
				[0.147]
New power *t*				-0.0604
				[0.125]
New power *t*-1				0.147
				[0.151]
New power *t*-2				0.319
				[0.220]
Power capital *t*-3				0.243
				[0.167]
Commune controls	Yes	Yes	Yes	Yes
Fixed effects	Commune & Year	Province & Year	Province & Year	Commune & Year
Cluster	Commune	Commune	Commune	Commune
Observations	1,237	722	728	941
R-squared				0.757

Note: This table relates native officials' promotion to a home commune's new infrastructure. Each observation is a connected commune in a year. Controls include commune's log average income per capita, log population, and geographical zone. Column (1) follows Table 2's column (1), using Kling et al.'s (2007) aggregation of z-scores as the outcome variable (footnote 22 in the main text). Columns (2) and (3) respectively report the conditional logit model and the negative binomial model (footnotes 18 and 19 in the main text). Column (4) reports the regression that produces Figure 1. Robust standard errors in brackets are clustered at commune level. Statistical significance is denoted by *** (p < 1%), ** (p < 5%), and * (p < 10%).

Table A2. Results are robust to alternative specifications

	Dependent variable: Total infrastructures within 3 years						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Power capital	**0.358**	**0.349**	**0.193**	**0.138**	**0.187**	**0.216**	**0.164**
	[0.135]* **	**[0.116]*** **	**[0.0942]** **	**[0.0613]** **	**[0.0617]*** **	**[0.0963]** **	**[0.0795]** **
Commune controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Commune & Year	Commune & Year	Commune & Year	Commune & Year	Province x Year	District x Year	Commune & Year
Trends							Province trends
Cluster	Commune	Commune	Commune	Commune	Province	District	Commune
Sample	Baseline; excluding 2002	Baseline; less developed	Baseline; more developed	Full sample	Baseline	Baseline	Baseline
Observations	945	525	712	8,566	1,237	1,237	1,237
R-squared	0.800	0.724	0.649	0.761	0.440	0.802	0.788

Note: This table relates native officials' promotion to a home commune's new infrastructure. Each observation is a commune in a year (2002, 2004, 2006, or 2008 for columns (2) to (7) and 2004, 2006, or 2008 for columns (1), (8), and (9)). Controls include commune's log average income per capita, log population, and geographical zone. All columns report OLS regressions in level, with infrastructure outcomes measured within 3 years and power capital measured as total positions accumulated by native officials. Columns (1) to (4) explore using different samples, with commune and year fixed effects. Column (1) excludes 2002 from the baseline sample. Columns (2) to (3) split the baseline sample into subsamples of communes with less or more than 6 categories of infrastructures observed in 2004. Column (4) uses the full sample of all surveyed rural communes that also includes non-connected communes. Columns (5) to (7) explores different fixed effects, including province and year fixed effects in column (5), district and year fixed effects in column (6), and commune and year fixed effects with province trends in column (7). Robust standard errors in brackets are clustered at commune level unless indicated otherwise. Statistical significance is denoted by *** (p < 1%), ** (p < 5%), and * (p < 10%).

Table A3. Increased commune power capital does not affect infrastructures in neighboring communes

	(1)	(2)	(3)	(4)	(5)
Sample	Non-connected communes in home district			All other communes in home district	Home district
Dependent variable	Total infrastructures within 3 years			Total infrastructures within 3 years	Non-connected commune average total infrastructures within 3 years
Source of power capital	All positions	Executive branch	Middle-ranking	All positions	All positions
Home commune's power capital	0.00553 [0.00563]	-0.00882 [0.00603]	-0.000501 [0.00733]	0.00804 [0.00493]	
Home district's power capital					0.0202 [0.0214]
Observation unit	Commune x Year	Commune x Year	Commune x Year	Commune x Year	District x Year
Commune/district controls	Yes	Yes	Yes	Yes	Yes
Fixed effects	Commune & Year	Commune & Year	Commune & Year	Commune & Year	District & Year
Cluster	Commune	Commune	Commune	Commune	District
Observations	16,539	16,539	16,539	21,165	1,521
R-squared	0.759	0.759	0.759	0.756	0.815

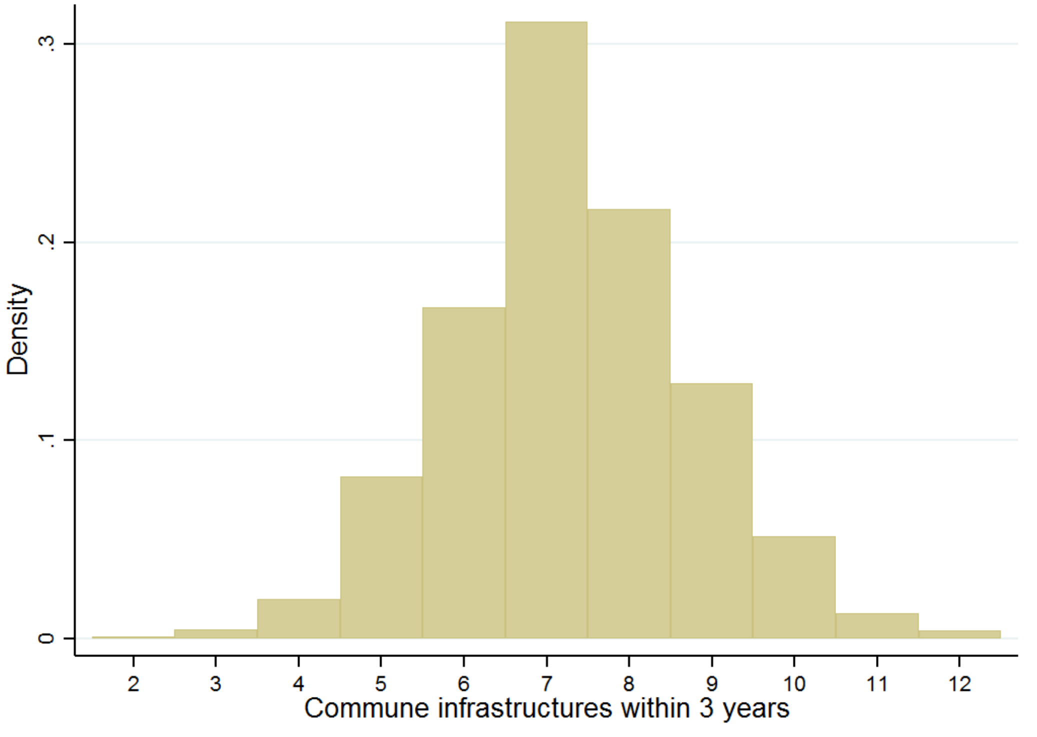
Note: This table extends Table 5 on the effect of native officials' promotions on infrastructure construction in home district. Controls include commune's or district's log average income per capita, log population, and geographical zone, with commune (or district) and year fixed effects. All columns report OLS regressions in level, with infrastructure outcomes measured within 3 years and power capital measured as total positions accumulated by native officials. Columns (1) to (3) consider non-connected rural communes in the same home district. Column (4) uses all other communes in home district (including other connected communes). Column (5) uses the measure of average total infrastructures per non-connected rural commune in the home district (as in column (7) of Table 5), and includes all connected districts in each year. Commune or district and year fixed-effects are included. Robust standard errors in brackets are clustered at commune or district level as indicated. Statistical significance is denoted by *** (p < 1%), ** (p < 5%), and * (p < 10%).

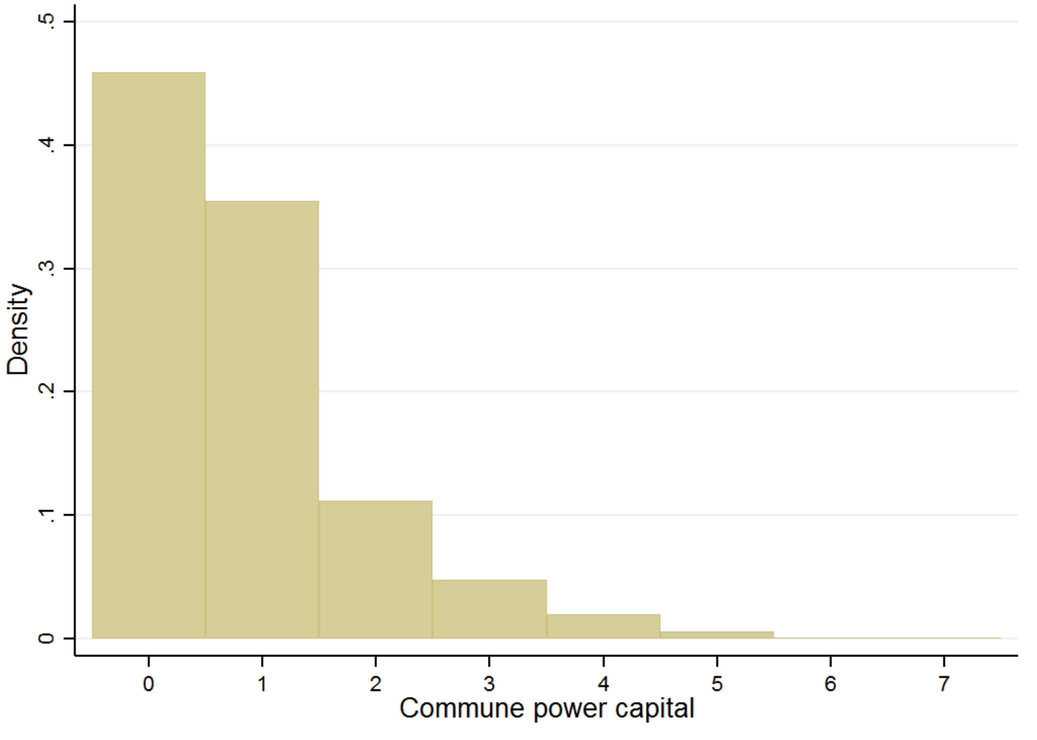
Table A4. Effects on infrastructures are different by income, traditional value, and governance

	Dependent variable: Total infrastructures within 3 years					
	(1)	(2)	(3)	(4)	(5)	(6)
	By family value		By average income per capita		By local governance quality	
Sample	Stronger value districts	Weaker value districts	Poorer communes	Richer communes	Higher local governance quality provinces	Lower local governance quality provinces
Power capital	**0.364** **[0.107]*** **	0.0752 [0.0975]	**0.274** **[0.112]** **	0.146 [0.0991]	0.0837 [0.0982]	**0.340** **[0.0944]*** **
Difference of coefficients	**0.289** **[0.145]** **		0.129 [0.149]		**-0.256** **[0.136]***	
Commune controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Commune & Year	Commune & Year	Commune & Year	Commune & Year	Commune & Year	Commune & Year
Cluster	Commune	Commune	Commune	Commune	Commune	Commune
Observations	600	613	589	579	608	629
R-squared	0.742	0.778	0.773	0.742	0.737	0.780

Note: This table relates native officials' promotion to a home commune's new infrastructure across different subsamples of communes. Each observation is a connected commune in a year (2002, 2004, 2006, or 2008). Controls include commune's log average income per capita, log population, and geographical zone, with commune and year fixed effects. All columns report OLS regressions in level, with infrastructure outcomes measured within 3 years and power capital measured as total positions accumulated by native officials. Columns (1) and (2) use subsamples of communes in districts with stronger and weaker family values (measured by the income share of domestic remittance and worship expenditure in 2002). Columns (3) and (4) use subsample of communes with below and above median average income per capita in 2002. Columns (5) and (6) use subsamples of communes in provinces with higher and lower local governance quality (computed from first PCI survey in 2006, see text for details). Differences of coefficients are tested against zero in regressions with interaction terms. Robust standard errors in brackets are clustered at commune level. Statistical significance is denoted by *** (p < 1%), ** (p < 5%), and * (p < 10%).

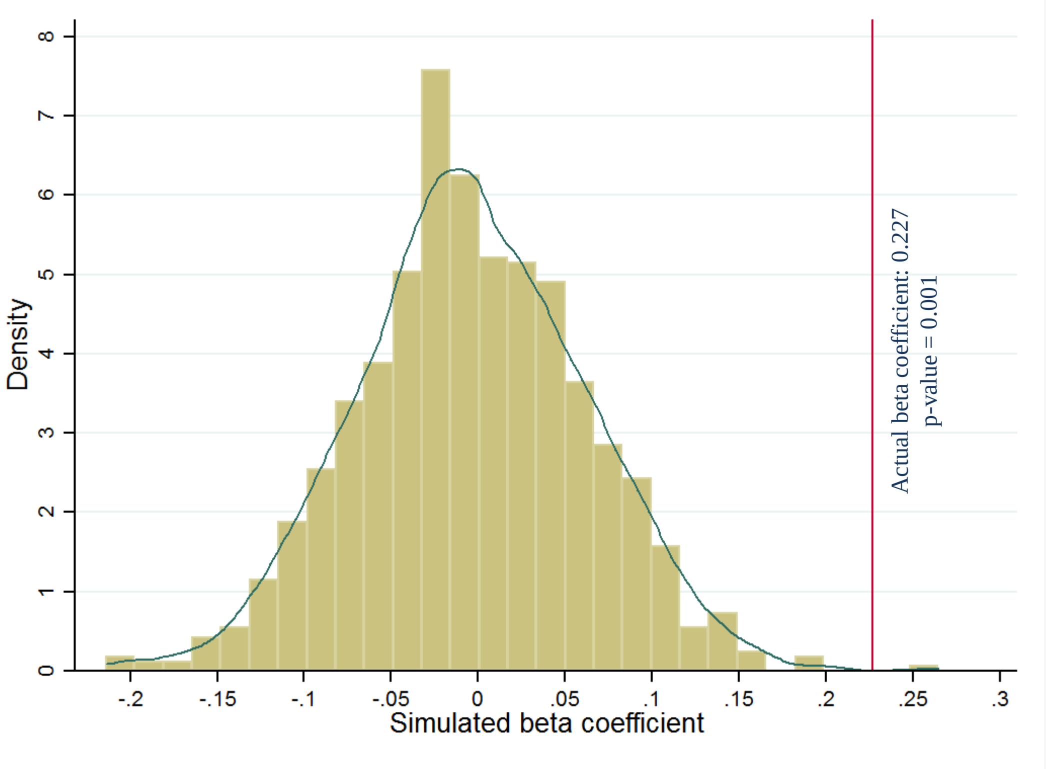
Figure A1. Commune total infrastructures and power capital distributions





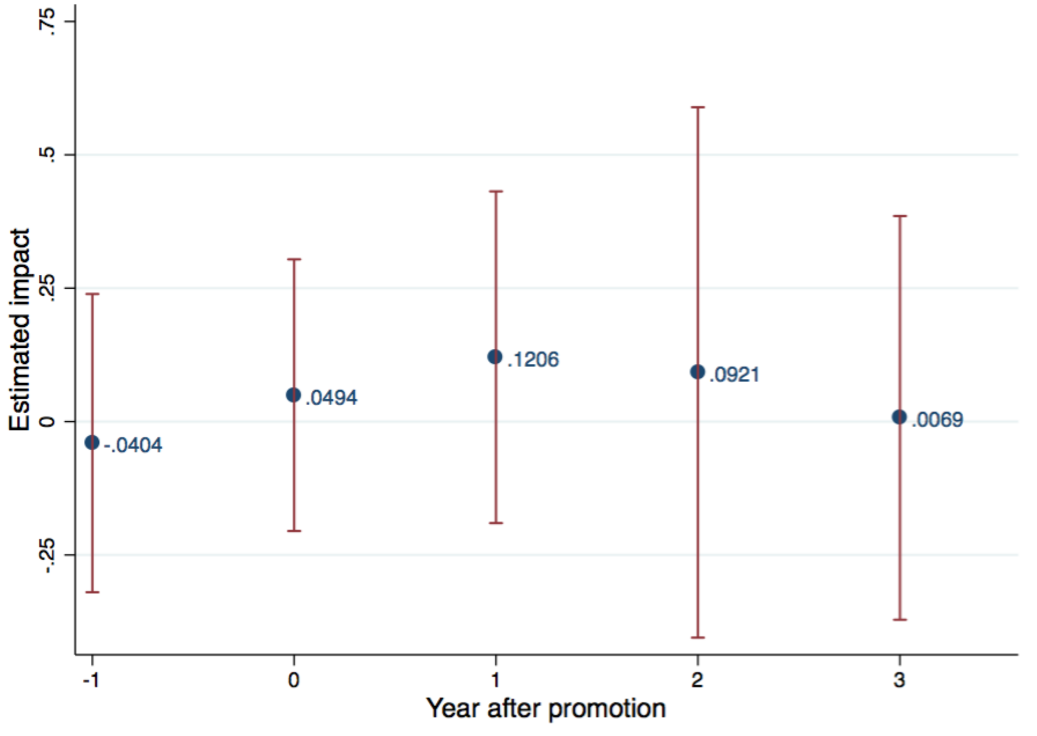
Note: Distributions of number of categories of infrastructures by commune, and of accumulated number of native officials from the commune.

Figure A2. Actual versus simulated beta coefficients



Note: Monte Carlo simulated beta coefficients of the effect of power capital on hometown infrastructures, where each simulation every commune's power capital is sampled randomly from the baseline power capital distribution. The red line marks the actual beta coefficient, and its p-value with respect to the simulated distribution.

Figure A3. Impact of officials' promotions on total infrastructures in matched communes over time



Note: This figure shows the impact over time of officials' promotions on infrastructure categories in communes similar to home communes (see text for details). The dependent variable is commune infrastructures within one year. Each point denotes a coefficient of the number of *new* promotions in years *t+1*, *t*, *t-1*, *t-2*, and the accumulated power capital up to year *t-3*. Each corresponding bar represents the coefficient's 95% confidence interval. Controls include commune's log average income per capita, log population, and geographical zone, and commune and year fixed effects.