Favoritism

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Abstract

Favoritism refers to the act of offering jobs, contracts and resources to members of one's own social group in preference to others who are outside the group. This paper examines the economic origins and the consequences of favoritism.

We argue that favoritism is a mechanism for *surplus diversion* away from the society at large and toward the group. As it usually entails inefficiencies, favoritism highlights the role of frictions in economic exchange. Favoritism is easier to sustain in a small homogenous group and when there is heterogeneity across groups. Favoritism has negative effects on incentives to undertake investments and innovation. These predictions appear to be consistent with empirical evidence.

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1 Introduction

Favoritism refers to the act of offering jobs, contracts and resources to members of one's own social group in preference to others who are outside the group. Over the years, a large literature has documented the prominent role of groups in the practice of favoritism in developing countries. In Tunisia, for example, members of the extended family of President Ben Ali and his wife routinely appropriated economic opportunities and granted each other special privileges; popular resentment against such favoritism played an important role in the Arab Spring (Economist (2011)). Appropriation of resources and contracts by dominant tribal groups in the African context has been highlighted by Barr and Oduro (2002), Fisman (2003), and Collier (2009). In India, caste members tend to favor each other in political and economic interactions, see e.g. Pande (2003), Anderson (2010). Charumilind, Kali and Wiwatankantang (2006) present evidence on favoritism in bank lending from Thailand. Chua (2003) provides a number of interesting examples of ethnic minorities that are economically dominant in developing countries. The aim of this paper is to examine the economic circumstances that give rise to favoritism and then to study its consequences for welfare.

We consider an economy in which people belong to distinct groups. Economic opportunities arrive over time and each opportunity is revealed to one individual - the principal. To realize this opportunity, the principal needs an agent. Match quality differs among agents: one individual, the expert, yields the most productive match. Upon matching, the output is shared among the principal and the agent. There are no information imperfections; the principal and the expert are commonly known. A principal practices *market behavior* if she matches with the expert. A principal *offers a favor* when she hires an inefficient group member in preference to an expert outsider. We study both limited favoritism (when a unique group practices favoritism) and widespread favoritism (when all groups do so).

Our main result is that favoritism is a mechanism for the *diversion of surplus* away from society for the gain of a single group. The output resulting from an inefficient within group match is smaller than in an efficient match: so favoritism is in the interest of the group only if the expert is unable to lure the principal away from the non-expert through appropriate transfers. In other words, frictions in economic exchange *must* be present for favoritism to arise. These restrictions give rise to 'rents' and our paper provides an account of how favoritism is a natural mechanism for the appropriation of such rents. The finding that frictions are necessary is consistent with empirical evidence: for instance, in a recent study, Bandiera et al. (2011) show that managers who are paid fixed wages favor workers with whom they have social connections. By contrast, managers who are paid wages based on performance do not practice favoritism with socially connected workers.[1]

We believe that such restrictions are common in developing countries. In labor contracts these restrictions take the form of unionized or minimum wages (which are above market clearing levels) or wages which are independent of performance (as in the Bandiera et al. (2011) study). In the allotment of spectrum rights or sale of public assets, 'beauty contests' set limits to transfers from bidders to the government. In government and politics, beneficiaries are constrained in the transfers they can make to politicians and bureaucrats. Finally, in planned and highly regulated economies, demand for goods or services may not be allowed to express themselves in prices.[2]

We then turn to the social welfare implications of favoritism. When a single group deviates from market behavior it increases the payoffs of group members to the detriment of outsiders. With widespread favoritism everyone loses as compared to what they would earn in the market. In either case, favoritism reduces aggregate social welfare. Welfare loss is maximized when the two groups are of equal size.[3]

Given this tension between group and societal interests we examine the *limits* on favoritism. In principle, the first limitation to the practice of favoritism are rules and legal procedures. However, our primary interest is in developing (or transition) economies and here the institutions for monitoring, assessing and penalizing favoritism may be weak or may be absent. This leads us to focus on the role of individual and group incentives in limiting the practice of favoritism.[4]

We start with individual incentive constraints. Transfer restrictions which come in the way of efficient exchange may also apply on within-group exchange. So it is likely that a principal will earn less in within-group exchange as compared to what he can earn in the market. The prospect of future favors may compensate the principal for this current loss. This is the foundation for the exchange of favors between individuals in a group which is often observed. A principal is more likely to receive a future favor in a small group – as there are fewer competing non-experts – than in a large group. Hence, individual incentive constraints

[1]For early studies on the role of rents in the organization of society, see Tullock (1967) and Kreuger (1974).

[2]Ledeneva (1998) offers a vivid account of how generalized favor exchange, or *blat*, came to dominate daily life in Soviet Russia.

[3]This result complements theoretical and empirical findings on the relation between social tensions and ethnic polarization; see e.g., Esteban and Ray (1994), Montalvo and Reynal-Queyrol (2005).

[4]For an interesting recent study on the role of formal versus informal institutions in developing countries, see Dhillon and Rigolini (20110.

imply that favoritism is easier to sustain in a smaller group.

Next, we consider higher-order social norms which may limit favoritism. Faced with the negative impact of favoritism on outsiders, a market abiding group can threaten a group which practices favoritism with retaliation in kind. We show that this threat is credible if the market group is small enough. These ideas are summarized in our result: both individual incentives and higher-order social norms make favoritism harder to sustain in larger groups.

In the economics literature, there are two leading explanations for the practice of privileged within-group exchange. The first explanation is that individuals offer favors due to discriminatory preferences (Becker 1957)[5] or informational asymmetry (Arrow 1973). We provide a model where in-group bias emerges with selfish agents and perfect information. It is also worth noting that taste-based and statistical discrimination both predict that discrimination is more costly to sustain in smaller groups: by contrast, in our model favoritism is easier to practice in smaller groups.[6]

The second explanation is that privileged within group exchange mitigates information problems and saves on transaction costs. Social norms resolve commitment problems (Greif (1994)), social networks mitigate asymmetric information problems (Montgomery (1991), Taylor (2000), Duran and Morales (2009)), reciprocal exchange lowers search costs (Kranton (1996)), and solidarity amongst the poor provides social insurance (Scott (1979), Fafchamps (2003)). In contrast, we show that favoritism can be purely detrimental. In our baseline model, market exchange is feasible and maximizes aggregate surplus and agents do not care about their fellow group members. Favoritism emerges as a way for group members to capture existing rents and divert surplus, and even though it does not play any useful social role.

We build on this insight and provide a unified framework in which to study the tension between the in-group benefits of tacit collusion and its consequences for the rest of society. Our model is simple and flexible, and we enrich it in systematic ways to study various facets of this tension. In particular, we obtain new results regarding the effects of group sizes, heterogeneity, and the impact of favoritism on investment.

First, our model predicts that favor exchange is easier to sustain in smaller groups. Our

[5]For recent studies of the effects of preference biases, see Prendergast and Topel (1996) and Levine et al. (2010). In evolutionary biology, there is an influential body of work which explores the fitness of altruistic and 'other regarding' preferences; for recent work on in-group altruism, see Choi and Bowles (2007). Within group bias may also be an aspect of social identity, values and norms transmitted by families and larger social groups as in Akerlof and Kranton (2010) or Bisin and Verdier (2001).

[6]In the context of medieval trading, Grief (2006) finds that smaller groups find it easier to sustain cooperation through collective punishment.

prediction stands in sharp contrast to the prediction in standard models with risk sharing or with preference bias and distinguishes our approach from earlier work. Observe that possibilities for risk diversification are smaller, and economic losses caused by taste-based discrimination are larger, in smaller groups. These considerations make larger groups more conducive for the practice of favoritism in standard models. Our prediction is consistent with the empirical studies on favoritism in corporate hiring among exclusive old-boy networks and contract/project allocation by the (extended) family of politicians discussed earlier in the introduction. It is also consistent with the account of how minority ethnic groups dominate business and commerce across the developing world that is presented in Chua (2003).

Second, we predict that favoritism is more likely to emerge under heterogeneity, when group members have both more control over opportunities and less qualification than outsiders. This turns out to be precisely the situation where favoritism is more detrimental. This prediction is consistent with accounts of crony capitalism in developing countries. In many countries, the ruling community or family typically controls domestic resources and access to foreign trade but its members often have no special economic or scientific expertise. The rulers allocate economic opportunities to individuals within the ruling family/community or to a few other socially connected individuals. For accounts of crony capitalism, see Chua (2003), Haddad (2011), and Montlake (2011).

Finally, we examine the implications of favoritism on investments. We show that it can discourage investment in new opportunities. Having to hire unqualified group members decreases the returns from investment and this depressing effect is stronger in smaller groups. These results are consistent with empirical and anecdotal evidence on the negative impact of favoritism on entrepreneurship and on the business climate in Africa and the Middle East. See e.g. Alby, Auriol and Nguimkeu (2013), Baland et al. (2011), Loewe et al. (2008), and Grimm et al. (2013).[7]

The basic model is presented in section 2 and analyzed in section 3. Section 4 explores the role of heterogeneity across individuals and groups, multiple experts, and arbitrary rules for division of surplus in the practice of favoritism. Section 5 studies the impact of favoritism on investments that enhance output. Section 6 discusses some limitations of our analysis and concludes. Appendix A contains formal development of the repeated game and proofs omitted from the main text, Appendix B studies the stability of groups sizes with respect to secession and expansion, while Appendix C presents an analysis of the relationship between

[7]For a theoretical model on the negative pressure of social connections, see Hoff and Sen (2006).

favor exchange and risk aversion and altruism.

2 Model

We consider a society with n individuals, who are partitioned in two groups $\mathcal{A}$ and $\mathcal{B}$ of respective sizes g_A and g_B with $g_A + g_B = n$; we will assume throughout that $n \geq 3$.[8]

One individual is picked uniformly at random and gets an economic opportunity. Call him the principal. To realize this opportunity, this principal needs to transact with an agent. One other individual is picked uniformly at random among the remaining individuals to be the expert. Thus the probability that a pair of individuals i and j, respectively are principal and expert is given by p and is defined as

$$p = \frac{1}{n}\frac{1}{n-1}. \tag{1}$$

If the principal interacts with the expert, the output produced is equal to 1. If the principal hires a non-expert, the output produced has a value of $L \leq 1$. We assume that there are no information problems: the principal and expert are commonly known once nature draws them.[9] The value of L reflects the *relative* importance of the match quality. In poor countries, we expect that the efficient match – being not very productive – is not too dissimilar from the inefficient match: so we interpret L to be inversely related to the level of development.

We shall say that a principal practices *market behavior* if she always offers the job to the expert. By contrast, we shall say that a principal practices *favoritism* if she always hires someone from her group, *irrespective* of whether the expert is in her group or not. When a principal hires an inefficient group member, we say that he provides a favor. We will refer to the situation where a unique group practices favoritism as *limited favoritism* and the situation where both groups practice favoritism as *widespread favoritism.*

We now turn to the rules for the division of output. In the absence of frictions, competitive bidding provides a natural benchmark. Potential agents all bid for a contract; the expert is hired and earns $1 - L$ while the principal earns L and non-experts earn 0.

To capture the role of frictions and rents, we adopt a two-stage model introduced in Eeckhout and Kircher (2011). In the first stage, a principal and an agent bargain over the

[8]Two groups is a simplifying assumption made for expositional convenience. Appendix B explores the stability of group sizes, with respect to individual and collective incentives.

[9]Information asymmetries are central to the model of favor exchange in Mobius (2001).

division of output. If bargaining fails, the opportunity disappears with probability $q \in [0, 1]$. With probability $1 - q$, the second stage is reached and competitive bidding takes place. One interpretation of this probability is that it reflects the fact that bargaining takes time and, during this time, alternative competing opportunities may arise. An alternative interpretation is simply that it takes time to locate potential partners and in this period the exchange or economic opportunity may be superseded by alternatives. Payoffs in the first stage are determined via Nash bargaining. We now work out the payoff outcomes in this bargaining model.

Consider an interaction between the principal and the expert. Their reservation utilities are, respectively, $(1 - q)L$ and $(1 - q)(1 - L)$. It then follows that their Nash Bargaining payoffs are then, respectively, equal to

$$L - q(L - \frac{1}{2}) \text{ and } 1 - L + q(L - \frac{1}{2}). \tag{2}$$

Consider next bargaining between the principal and a non-expert. The reservation utilities are $(1-q)L$ and 0. So their first period payoffs are given by $L - \frac{1}{2}qL$ and $\frac{1}{2}qL$, respectivey. As q increases, frictions worsen and payoffs get increasingly further away from the competitive benchmark.

This model provides a parsimonious representation of transaction costs and rents. Section 4 extends the analysis to any fixed rule of division of surplus. We note that if $L > \frac{1}{2}$ and $q > 0$, then experts earn more than under frictionless competition and their rents are equal to $q(L - \frac{1}{2})$. These rents are increasing in the level of friction, q, and falling in the (un)importance of match quality, L.

We denote by $\pi_j(F, M)$ the expected payoff of an individual in group $j \in \{\mathcal{A}, \mathcal{B}\}$ when his group practices favoritism while the other group practices market behavior; analogous notation is used for the other combinations. We will sometimes write $\pi_j(F)$ when the behavior of outsiders is irrelevant.

3 Analysis

We analyze the economic circumstances under which favoritism may arise and then examine its implications for welfare. We obtain three results. First, we show that favoritism may arise if and only if it allows a group of individuals to retain more surplus within the group than if the group abides by the market rule. Second, we show that the practice of favoritism creates payoff advantages for insiders and harms those outside the group. This inequality goes hand in hand with social inefficiency, as favoritism involves suboptimal surplus creation. This tension between group incentives for favoritism and social welfare motivates a study of the limits to favoritism. Our third result shows that favoritism is self-limiting: individual incentives and higher order across-group social norms will generally prevent large groups from practicing favoritism.

3.1 Group incentives

The analysis starts with group incentives for the practice of favoritism. Suppose that group members can commit, ex ante, to a common norm of behavior. What are the circumstances under which they would choose to engage in favoritism?

When the expert is in the same group as the principal, in-group bias and efficiency are aligned. In this case, favoritism does not affect payoffs. Favoritism comes into play when the expert is an outsider to the group. A favor then costs $\frac{1}{2}q(1-L)$ to the principal, relative to market behavior, and yields $\frac{1}{2}qL$ to the favored group member. The group gains $q(L-\frac{1}{2})$ while the other group loses $1-L+q(L-\frac{1}{2})$ and society loses $1-L$. This happens every time the principal is in the group while the expert is an outsider, hence with probability of pg_Ag_B. Therefore, the (expected) net group gain from favoritism is equal to $pqg_Ag_B(L-\frac{1}{2})$ while the other group loses $pg_Ag_B(1-L+q(L-\frac{1}{2}))$ and society loses $pg_Ag_B(1-L)$. The per capita gain from a collective switch to favoritism is thus:

$$\pi_A(F) - \pi_A(M) = pqg_B(L - \frac{1}{2}) \tag{3}$$

When $q > 0$ and $L < 1/2$, experts' rents are negative and there is no gain to practicing favoritism. Indeed market behavior then becomes a dominant strategy. In the rest of the analysis, we will focus on the setting where $L > 1/2$. We observe that the above equality holds no matter what the other group does.

Proposition 1 *A group gains from favoritism if and only if $q > 0$ and $L > \frac{1}{2}$. The rewards to favoritism for a group are increasing in both q and L.*

An important message of the result is that (if $L > 1/2$) then *frictions* are both necessary and sufficient for a group to desire favoritism. If the total payoff from an inefficient *within-group* match is higher than the fraction of an efficient match's payoff that stays in the group, then the group gains from favoritism. Therefore, groups may choose to practice favoritism even in the absence of informational frictions, social preferences or social dilemmas. When $q > 0$ and $L > \frac{1}{2}$, experts earn rents in their economic transactions. Group gains from favoritism are precisely proportional to these rents, and are increasing in the extent of frictions q and L. As market frictions are greater and match quality less important (hence L is larger) in developing countries, this result also suggests that favoritism is more attractive in poor countries.

In addition, if a group faces discrimination or if there are other significant contracting costs with outsiders, principals in the group may not be able to get a fair reward for economic opportunities in dealings with outsiders. Terms of trade would then be group-specific, and our analysis easily extends to such situations. A group would then gain from favoritism when expert outsiders earn rents, no matter what happens for expert insiders. We finally observe, that under competitive bidding, $q = 0$ and the principal's group is indifferent between favoritism and the market rule.

When $L > \frac{1}{2}$ and $q > 0$, the game played by the two groups has the structure of a Prisoner's dilemma. Playing favoritism is a dominant strategy for each group.

3.2 Economic consequences

We now turn to the economic consequences of the practice of favoritism. Suppose to begin that everyone abides by the market rule: principals hire experts. An individual is a principal with probability $\frac{1}{n}$ and earns $L - q(L - \frac{1}{2})$. Similarly, he is an expert with probability $\frac{1}{n}$ and then he earns $1 - L + q(L - \frac{1}{2})$. Therefore his expected payoff is:

$$\pi_A(M, M) = \pi_B(M, M) = p(n-1) \tag{4}$$

As expected, the market generates equal payoffs across individuals. Moreover, total welfare is simply the sum of individuals utilities and is equal to 1.

Next, suppose that group $\mathcal{A}$ practices favoritism while group $\mathcal{B}$ abides by the market rule. Consider some individual i in $\mathcal{A}$. There are three possibilities. (1) With probability $\frac{1}{n}$, individual i is the principal. Then, the expert is a group member with probability $\frac{g_A - 1}{n-1}$, in which case i earns $L - q(L - \frac{1}{2})$. Or, with the remaining probability $\frac{g_B}{n-1}$, the expert is an outsider and i provides a favor and earns $L - \frac{1}{2}qL$. (2) With probability $\frac{1}{n}$, individual i is the expert. Since the other group does not practice favoritism, he is always hired and earns $1 - L + q(L - \frac{1}{2})$. (3) Individual i obtains a favour: when the principal is another group $\mathcal{A}$ member while the expert is an outsider This happens when the principal is another group member while the expert is an outsider. In addition, the opportunity to receive a favor is shared with all group members. So with probability $\frac{(g_A-1)g_B}{n(n-1)}\frac{1}{g_A-1}$, favored individual i earns $\frac{1}{2}qL$. Formally,

$$\begin{aligned}\pi_A(F,M) &= \frac{1}{n}\left(\frac{g_A-1}{n-1}(L-q(L-\frac{1}{2}))+\frac{g_B}{n-1}(L-\frac{1}{2}qL)\right)\\ &\quad+\frac{1}{n}(1-L+q(L-\frac{1}{2}))+\frac{(g_A-1)g_B}{n(n-1)}\frac{1}{g_A-1}\frac{1}{2}qL \end{aligned} \tag{5}$$

Regrouping and simplifying gives us the expected payoff to an individual i in group $\mathcal{A}$ which practices favoritism, while group $\mathcal{B}$ does not:

$$\pi_A(F,M) = p[n-1+qg_B(L-\frac{1}{2})] \tag{6}$$

In contrast, group $\mathcal{B}$ loses $1-L+q(L-\frac{1}{2})$ per favor provided. So the individual's expected payoff is:

$$\pi_B(M,F) = p[n-1-g_A(1-L+q(L-\frac{1}{2}))] \tag{7}$$

We see that $\pi_A(F,M) > \pi(M,M) > \pi_B(M,F)$. Starting from a market, a switch to favoritism by one group increases the payoffs of the group members at the expense of the payoffs of the outsiders. Interestingly, holding n constant, payoffs in the favoritism group are *decreasing* in its size. Benefits from exclusive favors are lower when they have to be shared with more individuals. Payoffs in group $\mathcal{B}$ also decrease as group $\mathcal{A}$ grows. Moreover, member in group $\mathcal{B}$ lose more than what insiders gain, and the payoff advantage to group $\mathcal{A}$,

$$\pi_A(F,M) - \pi_B(M,F) = p[qn(L-\frac{1}{2})+g_A(1-L)] \tag{8}$$

is positive and increasing in size of group $\mathcal{A}$.

Consider next a society with *widespread favoritism*. An expert in group $\mathcal{A}$ is only hired when the principal is also a group member. Therefore,

$$\pi_A(F,F) = p[n-1-g_B(1-L)] \tag{9}$$

and by symmetry $\pi_B(F,F) = p[n-1-g_A(1-L)]$.[10] Recall that $\pi_A(M,M) = \pi_B(M,M) =$

[10]Under widespread favoritism, a group gains only when the principal belongs to it. Group gains then depend on the total surplus of a transaction and do not depend on frictions q. Since agents are homogeneous ex-ante,

$p(n-1)$, and so individuals in *both* groups lose relative to the market!

Inequality is now a consequence of differences in group size. Since

$$\pi_A(F,F) - \pi_B(F,F) = p(g_A - g_B)(1-L), \tag{10}$$

individuals in the larger group earn more than individuals in the smaller group. As both groups are practicing favoritism, a larger group means more access to opportunities. Holding n constant, increasing the size of the larger group magnifies this effect: it raises payoffs in the larger group and lowers them in the other group.

Finally, consider aggregate social welfare. Recall that welfare drops by $1-L$ every time a favor is given. Total welfare loss is then equal to $pg_Ag_B(1-L)$ under limited favoritism and $2pg_Ag_B(1-L)$ under widespread favoritism. In either case welfare loss is maximal in a society with two groups of equal size.

We summarize our arguments in the following proposition.

Proposition 2 *Assume that $L > 1/2$. The welfare effects under:*

- *Limited Favoritism: individuals in favoritism group earn more than in the market, while individuals in the other group earn less than in the market. The payoff to favoritism group is declining in group size. However, payoff difference between the two groups is increasing in the size of the favoritism group.*

- *Widespread favoritism: all individuals earn lower payoffs as compared to the market. The individuals in the larger group earn more than those in the smaller group; this difference is increasing in the size of the larger group.*

- *Social welfare is lower under favoritism and is minimized in a society with two equal size groups.*

Thus, favoritism always reduces aggregate social welfare. Propositions 1 and 2 highlight a tension between group incentives and aggregate social welfare and motivates an examination of factors which may limit the actual practice of favoritism.

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this holds for individual payoffs as well.

3.3 Limits on favoritism

Offering contracts or jobs to members of own group in preference to more qualified or better suited experts from another group is typically illegal: so, in principle, the first limitation to the practice of favoritism are rules and legal procedures. However, in developing (or transition) economies the institutions for monitoring, assessing and penalizing favoritism may be weak or may be absent. We take this as a background condition and in what follows we study the role of individual and group incentives in limiting the practice of favoritism.

Broadly speaking, there are two factors which act as constraints on the practice of favoritism: one, individuals may be unable to commit themselves to favoritism. Principals may not be willing to offer favors to non-experts as it entails a potential loss in their static payoff. Two, there may exist social norms – which involve punishments of one group by another – which may restrain the practice of favoritism.

If $L < 1$, providing a favor entails a current period cost – equal to $\frac{1}{2}q(1-L)$ – for the principal. If individuals cannot commit ex-ante to favoritism, market behavior is then the unique equilibrium outcome of the one-shot game. This means that the practice of 'favoritism' is a problem of collective action *at the group level*. We explore the power of repeated interactions to recover some commitment ability. Favoritism practiced by a group creates negative effects on those outside the group; we then examine how outsiders can restrain a group from practicing favoritism.

We outline the main ingredients of the repeated game; for formal definitions see the Appendix A. We will suppose that time is discrete; in any period $t = 1, 2...$, nature picks a principal and an expert. Each player has an equal and independent chance of being picked as principal in each period. Moreover, conditional on choice of principal, each of the other players have an equal and independent (across time) probability of being chosen as experts.[11] In each period, the principal chooses to offer the job to someone. The player who receives the offer now decides on whether to accept the offer or to decline it. The split of the output between the principal and the receiver of the offer is defined as in the basic model defined in the the previous section. So at any time, t, the history of the game consists of moves of nature in choice of principal and expert and the actions of the principal and the respondent. A strategy of players at time t specifies behavior as a function of past history. For the principal picked at time t it specifies a choice of agent; for the respondent, it specifies an acceptance

[11]We view the model as a reduced-form representation of different types of productive opportunities that arise in an economy. So we have in mind a number of different sectors/markets rather than a single market. This makes it reasonable to allow for the changing roles of agents, over time.

or a rejection. All other players have no choice of action at time t. Players seek to maximize discounted sum of one period payoffs.

There are generally multiple equilibria in such repeated games and they may entail rather complex and sophisticated strategies; for a survey of the the theory of repeated games, see Mailath and Samuelson (2006). Here, our aim is to illustrate the ways in which individual incentives will shape the relation between the practice of favoritism and the size of the group.

Groups may try to enforce favoritism in a variety of ways. A simple possibility is that, if a group member deviates, other group members stop offering favors to this person. We shall refer to this as the threat of *losing out on favors*. As usual, strategies must specify actions following every possible history. In particular, group members who fail to punish deviators must be punished themselves.

This is only one out of many different punishment strategies; the discussion below focuses on equilibria sustained with this punishment. We have also studied more severe punishments, when group members stop hiring the deviator or stop interacting with him. Our analysis directly extends to the threat of market reversion - if a group member deviates, all other group members reverse to market behavior. By contrast, stronger punishments such as ostracism – where group members refuse to undertake any economic exchange with deviators from favoritism – cannot be sustained in a sub-game perfect equilibrium.[12]

To fix ideas suppose that group $\mathcal{A}$ practices favoritism, and group $\mathcal{B}$ abides by the market. The arguments we develop also apply when both groups practice favoritism; the details of the derivations are presented in Appendix A. The key point to note is that incentives to deviate do not depend on the mode of functioning - market or favor exchange - of the other group. This is due to the fact that group incentives to practice favoritism are independent on the other group's behavior, i.e., $\pi_A(F, M) - \pi_A(M, M) = \pi_A(F, F) - \pi_A(M, F)$. This is a form of separability, which arises from the exclusive nature of group membership. Circumstances where favors may be given within one group are disjoint from those where they may be given in the other group.[13]

For favoritism to be sustained in equilibrium, a principal's potential loss from an inefficient match must be compensated by prospects of future gains. So let us consider the incentives of an individual in $\mathcal{A}$ who controls an economic opportunity. If he provides a favor, the present

[12]By ostracism here we mean that if an individual deviates, then group members refuse to interact with her again, either as an employee or as an employer. Alternative and weaker notions of ostracism could be sustained in equilibrium.

[13]Separability may not hold in more complicated setups such as overlapping groups or in the presence of search frictions in the market, as in Kranton (1996).

discounted payoff is given by:

$$L - \frac{1}{2}qL + \frac{\delta}{1-\delta}\pi_A(F, M) \tag{11}$$

where $\delta \in [0, 1]$ is the common discount factor across all agents and, recall, $\pi_A(F, M)$ is the expected one-shot payoff from belonging to group $\mathcal{A}$ in this situation.

If he deviates and offers the contract to the expert, he earns $L - q(L - \frac{1}{2})$ in the present period. In subsequent periods, if group members carry out their threat, they practice market behavior selectively with him in future interactions: he is hired if he happens to be an expert but receives no favors. He then earns payoffs as if he were a member of a market abiding group. In this case, the present discounted value is given by:

$$L - q(L - \frac{1}{2}) + \frac{\delta}{1-\delta}\pi_A(M, M). \tag{12}$$

A principal will only offer a favor to a non-expert in his group if (11) $\geq$ (12). Substituting values of $\pi_A(F, M)$ and $\pi_A(M, M)$ from equations (5) and (4), simplifying and rearranging yields us the following inequality:

$$\frac{1}{2}q(1 - L) \leq \frac{\delta}{1-\delta}pq(n - g_A)(L - \frac{1}{2}) \tag{13}$$

This inequality is necessary for favoritism. To see whether it is also sufficient, two issues have to be further investigated. First, we need to study incentives for any possible history of play. And second, we need to check that group members indeed have an incentive to carry out punishments on members of their own group, who do not practice favoritism.

We complete the proof in Appendix A, and show that equation (13) is, in fact, necessary and sufficient. The notion of *effective* group members – the subset of individuals who have not deviated from the norm of within group favoritism – plays an important role in our discussion there. We show that under the 'losing out on favors' punishment scheme being considered here, equation (13) *also* captures the incentives faced by effective group members.

When $q > 0$, let δ^* be the unique discount factor for which the left hand side and right hand side of equation (13) are equal.

$$\frac{1}{2}(1 - L) = \frac{\delta^*}{1-\delta^*}p(n - g_A)(L - \frac{1}{2}) \tag{14}$$

Observe that the right hand side of the equation is falling in g_A. So, given an n, larger groups require a larger discount factor to sustain favoritism. Our discussion on individual incentives to practice favoritism is summarized as follows:

Proposition 3 *Suppose* $q > 0$ *and* $L > \frac{1}{2}$*. Given a threat of losing out on favors and absent influence from non-group members, the practice of favoritism by a group is a subgame perfect equilibrium outcome if and only if* $\delta \in [\delta^*, 1]$*. Favoritism is easier to sustain in smaller groups under these circumstances.*

The key idea here is that a principal does a favor today because he expects to receive favors in the future, from members of his group. It may be that Mr. A does a favor to Mr. B, who in turn does a favor to Mr. C and Mr. C does a favor to Mr. A, in due course. So reciprocity may be indirect and, indeed, frequently will be.

Equation (14) also helps us understand the effects of different parameters on the prospects of favoritism. A growth in L makes favoritism easier: favors cost less today and the returns from favors are larger in the future. Given the inverse relation between L and development, this suggests that favoritism will become less easy to sustain as an economy develops and the quality of the match becomes more important.

Proposition 3 covers the case of a single group. The arguments can be extended to cover widespread favoritism. Observe that $g_A + g_B = n$; so for given n, as g_A grows, g_B declines in size. It then follows that the binding constraint on discount factors for the practice of widespread favoritism is the size of the larger of the two groups. Thus the prospects for widespread favoritism are best when the two groups are of equal size.

So individual incentives restrict the size of groups which can practice favoritism. The negative impact of group size on the prospects of favoritism arises from the combination of three forces: control over opportunities, competition for favors and match efficiency. In a larger group, it is more likely that a principal will be a member of the group. This increases the likelihood to receive a favor. This effect is of order $(g_A - 1)/n$. Running counter to this is the fact that competition for favors is fiercer in larger groups. This reduces the likelihood of receiving a favor, and hence the benefits that individual derive from favoritism. This effect is of order $1/(g_A - 1)$. Observe that these two effects cancel each other. Finally, an increase in group size lowers the probability that the expert is in the other group. This effect is of order $(n - g_A)/(n - 1)$ and reduces the frequency of favors given and hence lowers the benefits from favoritism. The first two factors cancel each other out and the third factor, which is negative, prevails. Thus favoritism has a *self-limiting* property: groups which practice favoritism cannot grow beyond a certain size.

Inter-temporal individual incentives thus place limits on the size of groups which can practice reciprocal exchange of favors. Our result stands in contrast to earlier results on group size and reciprocal exchange. For example, in a setting with search frictions, Kranton (1996) shows that individual returns to engaging in reciprocal exchange are increasing in the size of the group. So if a group of size x can sustain reciprocal exchange, then any group of size larger than x can also sustain it.[14]

So far, we have assumed that the practice of favoritism by a group does not provoke a response from those outside the group. In other words, there are no penalties or punishments on those who practice favoritism. As our interest is primarily in developing countries, it is reasonable to suppose that formal institutions for monitoring favoritism are weak. This motivates our study of how decentralized norms which entail cross group punishments restrain the practice of favoritism.[15]

Suppose then that outsiders may react to actions taken by insiders. One possibility would be for a group X to threaten to practice favoritism, if its members detect the practice of favoritism by group Y. What are the circumstances under which this threat is credible?

Consider the following strategy of players in group $\mathcal{B}$: start with the market rule of principal offering the job to expert and the expert accepting such an offer. At any point t, keep this rule if all history until time t has been market abiding. If at some point $t' < t$ in the past, a member of group $\mathcal{A}$ has deviated from the market abiding rule then practice favoritism within group $\mathcal{B}$ with respect to this member. If members of group $\mathcal{B}$ have deviated from the market rule then persist with the market rule.

The key issue here is whether a player in group $\mathcal{B}$ would have an incentive to practice favoritism within the group. From the discussion after Proposition 3 we know that for given δ, there is a maximal group size g^* which can practice favoritism. This group size is defined as:[16]

$$\frac{1}{2}(1-L) = \frac{\delta}{1-\delta}p(n-g^*)(L-\frac{1}{2}) \tag{15}$$

[14]A similar general point may be made with respect to the role of group size in the presence of risk-sharing and altruism; larger groups are at an advantage; see Appendix C below.

[15]Indeed, in their theory of economic history, North et al. (2009) argue that *open access and economic competition* plays a central role in growth and development. Favoritism implies that personal characteristics, that are economically irrelevant, affect access to opportunities; it thus violates the principle of open access. They argue that the establishment of formal institutions aimed at preventing exclusionary practices, such as favoritism and discrimination, constitutes an important aspect of the transition between a natural state and an open access society. Thus it is natural to focus on the role of informal institutions and social norms in the context of developing countries.

[16]When this equation does not have a solution, we set $g^* = 0$.

Also recall, from discussion on equation (14) that this number g^* is independent of whether the other group is practicing market or favoritism. We can now state:

Proposition 4 *Suppose $q > 0$ and $L > \frac{1}{2}$. Suppose a market group coordinates on collective punishment against a favoritism group. Then limited favoritism by group $\mathcal{A}$ is possible if and only if $g_A \leq g^*$ but $g_B > g^*$.*

The proof is presented in Appendix A. This result illustrates the scope of higher order social capital or cross group social norms in restraining within group favoritism. Consider a society with two equal groups and suppose that $g^* > n/2$. Then Proposition 3 and the discussion following that result tell us that limited favoritism is sustainable in this society. By contrast, Proposition 4 tells us that in a society where the market group can coordinate on a punishment norm, limited favoritism is no longer sustainable. Higher-order social norms further reduce the largest size below which favoritism is sustainable from g^* to $\min(g^*, n - g^*)$.

To summarize, both within group individual incentives and external group punishment possibilities limit the size of a group which can practice favoritism. Widespread favoritism is easier in societies with relatively equal size groups, while limited favoritism is easier in a society with unequal sized groups.

In the discussion so far we have taken the group sizes to be given exogenously given. Our results on the role of group size leads naturally to a study of individual and collective incentives to shape group size. We examine this issue in Appendix B.

4 Extensions

This section explores the role of heterogeneity across individuals and groups, multiple experts, and arbitrary rules for division of surplus in the practice of favoritism.[17]

4.1 Heterogeneity

The basic model assumes that everyone is equally likely to be a principal or an expert. Due to historical and institutional reasons, it is often the case that one group of individuals – for instance, a tribe, linguistic group or an ethnic group in power – is significantly more

[17] We have also studied the relation between risk sharing and altruism and the practice of favoritism. We find that risk aversion and altruism both complement the surplus diversion motive identified in the basic model. The analysis of risk aversion is presented in Appendix C; we omit the computations for altruism.

likely to hear about economic opportunities than other groups. Similarly, due to historical reasons, some groups may have greater expertise than other groups. How does heterogeneity affect the practice of favoritism? We show that heterogeneity in opportunities across groups makes favoritism easier to sustain, while heterogeneity within a group makes favoritism less sustainable.

We suppose the probability that agent i is the principal while agent j is the expert is equal to p_{ij}. By definition, probabilities must satisfy $p_{ii} = 0$ and $\sum_{i,j} p_{ij} = 1$ (assuming as before that there is one opportunity per period). Given two sets of agents S and T, we introduce $p_{S,T} = \sum_{i \in S, j \in T} p_{ij}$ as the probability that the principal is in S while the expert is in T.[18] Individuals now differ in how much they gain, or lose, from a collective switch to favoritism. Consider individual i belonging to group $\mathcal{A}$. The counterpart to equation (3) is:

$$\pi_i(F) - \pi_i(M) = \frac{p_{A-i,B}}{g_A - 1}\frac{1}{2}qL - p_{i,B}\frac{1}{2}q(1-L) \tag{16}$$

The first part on the right hand side captures the gains from receiving favors and the second part the losses from giving them.

We start with an analysis of the case where probabilities of being a principal or an expert are homogenous within a group; this means, in particular, that $p_{i,B} = p_{j,B}$ for all $i, j \in \mathcal{A}$. From equation (16), we obtain:[19]

$$\pi_A(F) - \pi_A(M) = \frac{p_{A,B}}{g_A} q(L - \frac{1}{2}) \tag{17}$$

This equation tells us that a group gains from favoritism if and only if $q > 0$ and $L > \frac{1}{2}$. This is in line with the finding of our basic model. In addition, our dynamic analysis extends in a straightforward way: favoritism is a subgame perfect equilibrium of the repeated game (for the same strategies as in Proposition 3) if and only if δ is greater than or equal to the solution of the equation

$$\frac{1}{2}(1-L) = \frac{\delta}{1-\delta}\frac{p_{A,B}}{g_A}(L - \frac{1}{2}). \tag{18}$$

However, observe that group $\mathcal{A}$ gains more from favoritism as $p_{A,B}$ grows. Thus an increase in $p_{A,B}$ raises both group-level and individual-level incentives to practice favoritism.

The incentives for favoritism are largest when $p_{A,B} = 1$, which corresponds to situations

[18] In the baseline model, $\forall i \neq j, p_{ij} = p$ and $p_{S,T} = p|S||T|$ when $S \cap T = \varnothing$.

[19] Observe that $p_{A-i,B} = p_{A,B} - p_{i,B}$, and under homogeneity within, $p_{i,B} = \frac{1}{g_A} p_{A,B}$, hence $\frac{p_{A-i,B}}{g_A - 1} = \frac{p_{A,B}}{g_A}$.

where *the principal is always in the group while the expert is never in it.* When $p_{A,B} = 1$, opportunities always fall in the hands of group members so the group control over opportunities is maximal. Moreover, the expert is always an outsider and *any* production opportunity provides an occasion to give and receive favors. This maximizes the frequency of favor exchange and hence the expected gain from favoritism.[20]

Two features of this outcome are noteworthy. First, observe that under limited favoritism by group $\mathcal{A}$, welfare is given by:

$$W = 1 - p_{A,B}(1 - L) \tag{19}$$

so welfare is also lowest when $p_{A,B} = 1$. Situations where incentives to practice favoritism are highest are, ironically, precisely those where welfare loss from favoritism is also highest. Second, when $p_{A,B} = 1$, $\pi_A(F) - \pi_A(M) = \frac{1}{g_A} q(L - \frac{1}{2})$ and incentives to practice favoritism are also decreasing in group size. The effects of control over opportunities and match efficiency are now maximal and invariant. The only remaining effect is the competition for favors, which scales as the inverse of group size. We summarize these observations in the following proposition.

Proposition 5 *Suppose there is heterogeneity across groups but within a group individuals are identical. Incentives to practice favoritism and welfare loss are both maximal when the principal is always in the group but the expert is never in it. These incentives for favoritism are declining in the size of the group.*

Suppose now that probabilities are also heterogeneous within a group. In this case, individuals may differ in their gains from favoritism. From equation (16), we see that individuals who gain less from favoritism are those with higher probability $p_{i,B}$. Observe now that $p_{i,B}$ exactly captures how often individual i has to give a favor to a member of his own group $\mathcal{A}$. In particular, individuals who are more likely to be principals, everything else held constant, gain less from favoritism. Under repeated interactions, favoritism may be sustained as a sub-game perfect equilibrium if and only if $\delta \geq \delta_i$, where δ_i solves $\frac{1}{2} q(1 - L) = \frac{\delta_i}{1 - \delta_i} [\pi_i(F) - \pi_i(M)]$ for the individual with highest $p_{i,B}$. So, within group heterogeneity of this form will lower the prospects of favoritism.

[20]Widespread favoritism is most likely to emerge when incentives to practice favoritism are maximal and equalized across groups, so that $p_{A,A} = p_{B,B} = 0$ and $p_{A,B}/g_A = p_{B,A}/g_B$. This happens when the Principal is picked uniformly at random while the Expert never belongs to the same group as the Principal.

4.2 Multiple experts

A simple way to model an increase in the competitiveness of the economy would be to assume the presence of two (or more) experts rather than one. The presence of multiple experts has two impacts. On the one hand, this affects the division of surplus. Competitive bidding now brings experts' payoffs to zero. Under bargaining with frictions, a principal would earn $1 - \frac{1}{2}q$ in an interaction with an expert. On the other hand, it changes the likelihood of favor giving. When group A practices favoritism, a favor would be given every time the principal is in the group but all experts are outsiders. With two experts, this happens with probability $g_A g_B(g_B - 1)/[n(n-1)(n-2)]$. Therefore, the group incentives to practice favoritism with two experts are now:

$$\pi_A(F) - \pi_A(M) = \frac{g_B(g_B - 1)}{n(n-1)(n-2)}(L - 1 + \frac{1}{2}q) \tag{20}$$

rather than $\frac{g_B}{n(n-1)}q(L - \frac{1}{2})$ with a unique expert. Thus, a group has an incentive to practice favoritism only if $L > \frac{1}{2}$ and q is high enough, i.e., $q > 2(1 - L)$. Note, also, that the two factors go in the same direction. Competition among experts reduces the amount of rents earned by experts: they depress the attractions to a group from engaging in favoritism *and* as there are multiple experts, there is a lower probability for the need to offer favors.

Overall, group gains from favoritism are decreasing in the number of experts. It is possible to extend the dynamic analysis: multiple experts make it harder to sustain favoritism as a sub-game perfect equilibrium outcome.

4.3 Rules of surplus division

The basic model assumes that there is a friction in the exchange process (modeled by the parameter q); we embed this friction within a specific model of bargaining. It is possible to show that our principal arguments extend to arbitrary rules of division of surplus.

Suppose that the Principal earns α in an interaction with the Expert and βL in an interaction with a non-expert. For instance, a regulation imposing a minimum wage w would yield $\alpha = 1 - w$ and $\beta = (L - w)/L$.

Appendix A shows that our analysis extends to any fixed division of surplus, reflected in (α, β) pair. We show that group members have a collective incentive to play favoritism if and only if experts earn rents and $L > \alpha$. Giving a favor is costly if $\alpha > \beta L$. The dynamic analysis extends. Favoritism is sustainable as a subgame perfect equilibrium for the strategies described in Section 3 if and only if $\alpha - \beta L \leq \frac{\delta}{1-\delta} p(n - g_A)(L - \alpha)$. All other results extend in a similar way. Our derivations demonstrate that the key feature explaining the emergence of favoritism is the presence of rents in the economy, rather than the specific shape taken by these rents.

5 Favoritism and Investments

Individuals invest in search of economic opportunities. We study how the practice of favoritism affects incentives for such investments. We also examine whether investments aggravate or mitigate the payoff inequality across favoritism and market groups identified in the basic model.

Consider first investments in search of new economic opportunities; this may take the form of market surveys and the appointment of consultants. Let us suppose that such an investment, $c > 0$, yields a positive probability of locating a profitable new opportunity, given by f, where $f \in [0, 1]$. For every economic opportunity, there is one expert and the match with the expert yields an output 1, while a match with non-experts yields $L \leq 1$. For simplicity, suppose that this new opportunity is parallel to the economic opportunities which arise in the basic model and also suppose that this search for opportunities is non-competitive, so that the probability of locating an opportunity is independent of investments by other individuals. The expected (net) returns from investing in a group practicing favoritism are:

$$f \left[\frac{g_A - 1}{n - 1}(L - q(L - \frac{1}{2})) + \frac{n - g_A}{n - 1}(L - \frac{1}{2}qL) \right] - c. \tag{21}$$

Then investment is optimal if and only if:

$$\frac{g_A - 1}{n - 1}(L - q(L - \frac{1}{2})) + \frac{n - g_A}{n - 1}(L - \frac{1}{2}qL) > \frac{c}{f}. \tag{22}$$

On the other hand, in a market abiding group, investment is optimal if and only if:

$$L - q(L - \frac{1}{2}) > \frac{c}{f}. \tag{23}$$

Therefore, *the incentives for investment in the favoritism group are lower than in the market abiding group if and only if $q > 0$ and $L < 1$.* In a favoritism group an investor may have to give a favor by hiring a non-expert, and this may lower his returns as compared to the principal who is free to hire an expert. In addition, returns to investment are increasing in group size, since the probability to hire inefficiently within is smaller in a larger group.

In the basic model, individuals earn more in the favoritism group than in the market abiding group, when $q > 0$ and $L > \frac{1}{2}$. How does investment affect these payoff differences? There are two interesting cases. One, when (23) is satisfied but (22) is not satisfied. In this case, we find that investment opportunities usually reduce the payoff advantage of the favoritism group which was identified in the basic model. Profitable investments by market group members partly compensates for the unfair advantages of favoritism. If, on the other hand, both inequalities are satisfied then everyone in both groups invests and the payoff advantage of the favoritism group is now magnified. The details of these computations are provided in Appendix A.

6 Conclusion

Favoritism refers to the act of offering jobs, contracts, and resources preferentially to members of one's own social group. There is wide ranging evidence for the prominent role of favoritism in developing countries. The aim of this paper is to examine the economic circumstances that give rise to favoritism and then to study its consequences for development and welfare.

We argue that favoritism is a mechanism for *surplus diversion* away from the society at large and toward the group. As it usually entails inefficiencies, favoritism highlights the existence of frictions in exchange. Familiar instances of such restrictions include unionized wages and minimum wage laws, procurement and public contracting based on 'beauty contests' (rather than auctions), centralized allocation of scarce goods and services (as in planned economies). Favoritism is easier to sustain in a small homogenous group, it lowers aggregate social welfare, creates inequality across social groups and has significant effects on investments. This surplus diversion motive yields predictions which are consistent with empirical patterns of favoritism.

We assume that favoritism may only appear within social groups and that social groups are exogenously given. While this is a reasonable assumption in some contexts – such as caste or ethnicity – there are other contexts where groups may be able to expand by including erstwhile non-members or coalitions of a group may be able to secede and form their own groups. We explore individual incentives to join or withdraw from groups and the incentives of groups to admit new members in Appendix B.

Our analysis suggests that, as there are large rewards to controlling economic opportunities, individuals and groups will try and secure positions of political power, in order to distribute rents to themselves. In future research, it would be interesting to model the political structure explicitly and to study how favor exchange would interplay with rent creation and regulatory capture.

Appendix A: Proofs

In this Appendix, we extend our analysis to any fixed division of surplus. The principal earns α in an interaction with the expert and βL in an interaction with a non-expert.The model of frictions developed in the paper corresponds to $\alpha = L - q(L - \frac{1}{2})$ and $\beta = 1 - \frac{1}{2}q$.

Proof of Proposition 3: Let us first define some notation and terminology for the repeated game. In any period $t = 1, 2...$, nature picks a principal $m_t \in N$, and conditional on this principal picks an expert from the complementary set $N\backslash\{m_t\}$. Each player has an equal and independent chance of being picked as principal in each period. Moreover, conditional on choice of principal, each of the other players have an equal and independent (across time) probability of being chosen as experts. In each period t, the principal m_t chooses to offer the job to someone $a_{m_t} \in N_{m_t}$ where $N_{m_t} = N\backslash\{m_t\}$. Player $a_{m_t} \in N$, is the respondent; he chooses a response, $r_{a_{m_t}} \in \{1, 0\}$, where 1 stands for YES and 0 stands for NO. Define $p_t = \{m_t, e_t, a_{m_t}, r_{a_{m_t}}\}$.

At time t, the history of the game consists of moves of nature in choice of principal and expert and the actions of the principal and the respondent. Define history at time t as $h_t = \{p_1, p_2, ...p_{t-1}\}$. Let H_t be the set of possible histories at time t. The strategy of a principal picked at time t is $s_{m_t} : H_t \to N_{m_t}$, while the strategy of a respondent chosen by m_t is $s_{a_{m_t}} : H_t \to \{1, 0\}$. All other players have no choice of action at time t.

A principal practices *favoritism* if she offers the job to a member of her own group. Formally, if $m_t \in g_x$ then $s_{m_t}(.) = e_t$ if $e_t \in g_x$ and some player $j \in g_x$ otherwise. In the latter case, the player is chosen at random with equal probability across all members of group (excluding m_t). At the start of the game, $t = 1$, the favoritism strategy for principal $m_1 \in g_x$ where $x = A, B$, is simply: $s_{m_1} = e_1$ if $e_1 \in g_x$ and $j \in g_x\backslash\{m_1\}$, otherwise. The respondent a_{m_1}'s strategy is $r_{am_1} = 1$.

Consider time $t \geq 2$. Suppose m_t is the principal and $m_t \in g_x$, for $x = A, B$. Given history h_t, the principal knows for each date $\tau < t$, the principal m_τ the expert e_τ and their actions a_{m_τ} and $r_{a_{m_t}}$. Start at time $t = 2$: the principal constructs an *effective group* as follows:

if $m_1 \in g_x$, then she checks if m_1 followed favoritism. If yes, this principal remains in her effective group. If m_1 deviated from favoritism then m_2 excludes her from her effective group at date $t = 2$. Next she turns to the respondents, and checks if $a_{m_1} \in g_{x,1}$. If yes, then she verifies if a_{m_1} accepted the offer made to him. If yes then respondent remains in her effective group; if no, then she excludes him from the effective group. Using these operations she then defines an effective group $g_{x,2}$ at date $t = 2$. principal m_2 then has the favoritism strategy: $s_{m_2} = e_2$ if $e_1 \in g_{x,2}$ and some $j \in g_{x,2} \backslash \{m_2\}$, otherwise. The respondent a_{m_2} at date $t = 2$ always accepts an offer $r_{a_{m_2}} = 1$.

The effective groups are defined recursively for any time period t. In particular, at any point t, it is common knowledge if a player is in an effective group $g_{A,t}$ or $g_{B,t}$ or out of these groups. Define $d_{A,t} = g_{A,1} - g_{A,t}$ and $d_{A,t} = g_{A,1} - g_{A,t}$, as the players who have been excluded from groups $\mathcal{W}\rangle\sqcup\langle\wr\sqcap\sqcup$ and $\mathcal{B}$, respectively, between periods $\tau = 1$ and $\tau = t - 1$. The favoritism strategy for principal $m_t \in g_{x,t}$, at time t is then simply: $s_{m_t} = e_t$ if $e_t \in g_{x,t}$ and $j \in g_{x,t} \backslash \{m_t\}$, otherwise principals who are not in an effective group, $m_t \in d_{A,t} \cup d_{B,t}$ offer the job to the expert: $s_{m_t} = e_t$. The respondent a_{m_t} always accepts an offer $r_{a_{m_t}} = 1$.

In period $t = 1$, if she is the principal $m_1 = i$, then $s_{m_1} = e_1$ if $e_1 \in g_x$ and $j \in g_x \backslash \{m_1\}$, otherwise. If she is the respondent $i = s_{m_1}$, then $r_i = 1$. For $t \geq 2$: if $i = m_t$ and history h_t a member of an effective group practices favoritism within effective group as follows: $s_{m_t} = e_t$ if $e_t \in g_x$ and $j \in g_{x,t} \backslash \{m_1\}$, otherwise. If $i = s_{m_t}$, she accepts the offer, $r_i = 1$. Players who are not members of effective groups play the market: always offer jobs to experts and accept all offers made to them.

Without loss of generality, focus on group $\mathcal{A}$. Since non-group members do not react to group members' deviations, the effect of outsiders' behavior on payoffs cancel out when computing payoff differences. Thus, following any history, incentives to act in $\mathcal{A}$ do not depend on actions in $\mathcal{B}$. To simplify equations, we next assume that everyone in $\mathcal{B}$ practices the market. There are two types of histories: one, where effective groups are the initial groups, and two, where they have changed as players have deviated.

The case where $g_{A,t} = g_A$ is covered in the main text. Suppose then that $g_{A,t} \neq g_A$. Notice first that for someone who has deviated already, there is positive cost to practicing favoritism but no gain, as ex-group members do not offer favors after a deviation. Hence for a deviating player it is clearly optimal to practice market behavior. Similarly, it is easy to see that the respondent will always find it optimal to accept an offer. So, again we need to check the incentives of an principal $m_t \in g_{A,t}$ who is faced with an expert $e_t \notin g_A$. If he hires within the group, he earns

$$\beta L + \frac{\delta}{1-\delta}\frac{1}{n}\left(\frac{g_A - 1}{n-1}\alpha + \frac{g_B}{n-1}\beta L\right) + \tag{24}$$
$$\frac{\delta}{1-\delta}\frac{n-1}{n}\left[\frac{g_{A,t}-1}{n-1}\left(\frac{1}{n-1}(1-\alpha) + \frac{n-2}{n-1}\frac{g_B}{n-2}\frac{1}{g_{A,t}-1}(1-\beta)L\right) + \frac{n-g_{A,t}}{n-1}\frac{1}{n-1}(1-\alpha)\right]$$

This can be simplified to:

$$\beta L + \frac{\delta}{1-\delta}p[n-1+g_B(L-\alpha)] \tag{25}$$

In particular, the continuation payoff does not depend on $g_{A,t}$ and turns out to be equal to $\pi_A(F, M)$. In contrast, if the principal deviates, his payoff is equal to

$$\alpha + \frac{\delta}{1-\delta}p[n-1]. \tag{26}$$

Therefore, playing favoritism in this case is individually rational if

$$\alpha - \beta L \leq \frac{\delta}{1-\delta}p(n-g_A)(L-\alpha). \tag{27}$$

We observe that the incentives to practice favoritism do not depend on the history of the game so long as there are at least two members in the effective group for a player.[21]

Finally, define δ^* as the unique solution to the equation:

$$\alpha - \beta L = \frac{\delta^*}{1-\delta^*}p(n-g)(L-\alpha) \tag{28}$$

Observe that δ^* is an increasing function of group size g. The result now follows.

QED

Proof of Proposition 4: From our computations in Proposition 3 it follows one, that the key incentive condition to check is whether a principal desires to offer a favor to a non-expert and two, that given δ, L, α, and β there is a g^* such that the principal will offer favors if and only if $g < g^*$.

So to complete the proof we need to check the incentives of a principal in a favoritism practicing group faced with the threat of a punishment from group $\mathcal{B}$ members. Persisting

[21]Notice that $g_{A,t}$ individuals practice favoritism but favors are only given when the expert is in B. The effective group's gain from practicing favoritism is then equal to $pg_{A,t}g_B(L-\alpha)$. Thus, the individual relative gain from belonging to the effective group is $pg_B(L-\alpha)$ and does not depend on the history.

with favoritism within group $\mathcal{A}$ yields the following present discounted value of payoffs:

$$\beta L + \frac{\delta}{1-\delta}\pi_A(F,F) \tag{29}$$

By contrast, deviating to market behavior means losing out on favors from own group, but in return he can receive expert offers from group $\mathcal{B}$ members. The present discounted value of payoffs is:

$$\alpha + \frac{\delta}{1-\delta}\pi_A(M,M) \tag{30}$$

It may be checked that (29) < (30) for all $\delta \in [0,1]$. So a principal in group $\mathcal{A}$ will deviate away from within group favoritism.

QED

Appendix B: stability of groups

To fix ideas, consider two groups which practice favoritism of sizes, $K > 0$ and $R > 0$, respectively. Suppose there is also a group which practices market and its size is given by $M \geq 0$. (There may be other groups which practice favoritism).

The payoffs to members of group K are:

$$p\left[(K-1) + (n-K)L + M(1-\alpha)\right] \tag{31}$$

Similarly, the payoffs to members of group R are:

$$p\left[(R-1) + (n-R)L + M(1-\alpha)\right] \tag{32}$$

Now it is easy to see that an increase in membership of group K by adding an individual from group R is:

$$p\left[(K) + (n-K-1)L + M(1-\alpha)\right] \tag{33}$$

So payoffs are increasing when we add another person from a favoritism group. Also, observe that payoffs in group R are smaller than payoffs in group K, if $K \geq R$. So a member of group R would be happy to move to group K, if invited to do so. One the other hand, the payoff to group K member once they add someone from the market group is:

$$p\left[(K)+(n-K-1)L+(M-1)(1-\alpha)\right] \tag{34}$$

This payoff is smaller than the payoff in the group of size K (since $\alpha < L$.). So group K will not invite people from the market to join their group.

So groups which practice favoritism have an incentive to grow by attracting members of other favoritism groups but that they will not grow by shrinking the market. However, from our earlier analysis, we know that a favoritism group has certain maximal size g^*; a group larger than that is vulnerable to deviation by a member away from favoritism. This leads us to conclude that, in a stable society, if there are multiple favoritism groups then all (but one) must be of maximal size g^*. However, favoritism groups lose by inviting market group members. So a stable society will consist of members in favoritism groups x and $n-x$ members in the market. The number of favoritism groups is equal to x/g^* (or the smallest integer larger than x/g^*).

Appendix C: Risk-aversion and altruism

This section presents our analysis of the interaction between risk aversion and altruism and the practice of favoritism.

6.1 Risk aversion

In our basic model, individuals have linear preferences: in an uncertain world, this reflects risk-neutrality. Here we examine how risk-aversion - and therefore a desire to smooth the payoffs from economic opportunities – affects the incentives for the practice of favoritism. Our main finding is that risk-aversion complements the surplus diversion motive identified in the basic model. We find that if $q \geq 0$ and $L \geq \frac{1}{2}$, the distribution of payoffs for group members under favoritism second-order stochastically dominates the distribution of payoffs under market behavior. Favoritism thus provides a form of insurance by allowing group members to partially smooth payoffs. An individual may prefer to earn less in situations where he is the principal in return for earning more in situations where he is a non-expert. The dynamic analysis extends and favoritism is easier to sustain as a subgame perfect equilibrium outcome when players are more risk-averse. Under decreasing absolute risk aversion, and in the absence of other mechanisms of sharing risk, poorer communities thus have greater incentives to practice favoritism.

We model risk-aversion in terms of a concave utility function for players. Define $U : \mathcal{R} \to \mathcal{R}$ as a twice continuously differentiable real valued function which is increasing and concave. We retain all the other features of our basic model.

Let us examine the incentives to practice favoritism for members of group $\mathcal{A}$, when group $\mathcal{B}$ abides by the market. The payoffs in the market are given by:

$$\frac{1}{n}\left[U(\alpha) + U(1-\alpha)\right] + \left(1 - \frac{2}{n}\right) U(0). \tag{35}$$

By contrast, the expected payoffs from favor exchange are given by:

$$\begin{aligned}&\frac{1}{n(n-1)}\left[U(\alpha)(g_A - 1) + U(1-\alpha)(n-1) + [U(\beta L) + U((1-\beta)L)](n - g_A)\right] \\ &+ \left[1 - \frac{3n - g_A - 2}{n(n-1)}\right] U(0).\end{aligned} \tag{36}$$

Therefore, the net expected returns from favoritism are:

$$U_A(F) - U_A(M) = p(n - g_A)\left[U(\beta L) + U((1-\beta)L) - U(\alpha) - U(0)\right] \tag{37}$$

We can view these returns as arising out of the difference between lotteries with two states: one in which the player is the principal and the other in which he is the non-expert receiving a favor. Under favoritism, a player receives βL in the first state and $(1-\beta)L$ in the second. Under market behavior, a player receives α if principal but nothing if non-expert.

Would risk averse individuals prefer to be in a group practicing favoritism? We show next that when $L \geq \alpha$, favoritism is always *less risky* than the market in the sense of Rothschild and Stiglitz (1970). In particular, we prove that favoritism second-order stochastically dominates market behavior. In this case, risk-averse individuals always prefer to belong to a group practicing favoritism and $U_A(F) \geq U_A(M)$. In addition, dominance is strict and $U_A(F) > U_A(M)$ if U is strictly concave and if either $L > \alpha$ or $L = \alpha$ and $\beta \in (0, 1)$.

Proposition A: *If $L \geq \alpha$, the distribution of payoffs for group members under favoritism second-order stochastically dominates the distribution of payoffs under market behavior.*

Proof: Let F and M denote favoritism and market outcomes, and introduce L_F the lottery $U(\beta L)$ with proba $\frac{1}{2}$ and $U((1-\beta)L)$ with proba $\frac{1}{2}$ and L_M the lottery $U(\alpha)$ with proba $\frac{1}{2}$ and

$U(0)$ with proba $\frac{1}{2}$. Previous computations show that there exist some common lottery L_C such that F is obtained as the compound lottery L_F with proba $2(n-g_A)/(n(n-1))$ and L_C otherwise while M is obtained as the compound lottery L_M with proba $2(n-g_A)/(n(n-1))$ and L_C otherwise. Through classical results on stochastic dominance, F second-order stochastically dominates M if and only if L_F second-order stochastically dominates L_M.[22] Denote the cumulative distribution function of the lottery L_F by $F(x)$. Recall that L_F second order stochastically dominates L_M, if for all $x \in [0,1]$

$$\int_0^x F(t)dt \leq \int_0^x M(t)dt. \tag{38}$$

It is easy to see that $U(\beta L) + U((1-\beta)L) - U(\alpha) - U(0) > 0$ if $\alpha < \beta L$; so we focus on $\alpha > \beta L$. Suppose, without loss of generality, that $\beta \geq 1/2$. We have:

$$F(x) = \begin{cases} 0 & \text{if } x \in [0,(1-\beta)L) \\ 1/2 & \text{if } x \in [(1-\beta)L, \beta L) \\ 1 & \text{if } x \in [\beta L, 1] \end{cases}$$

Similarly, the cumulative distribution function for M is given by:

$$M(x) = \begin{cases} 1/2 & \text{if } x \in [0,\alpha) \\ 1 & \text{if } x \in [\alpha, 1] \end{cases}$$

It follows the required inequality in (38) is satisfied for $x \in [0, \beta L]$. For $x \in [\beta L, \alpha]$,

$$\int_0^x F(t)dt = \frac{1}{2}(\beta L - (1-\beta)L) + (x - \beta L) \tag{39}$$

while

$$\int_0^x M(t)dt = \frac{x}{2} \tag{40}$$

It can be checked that the inequality in (38) is satisfied if $x \leq L$; given that we are examining the range of $x \in [\beta\alpha, \alpha]$ a sufficient condition then is $L \geq \alpha$. Finally, consider the case $[\alpha, 1]$. For $x \in [\alpha, 1]$,

$$\int_0^x F(t)dt = \frac{1}{2}(\beta L - (1-\beta)L) + (x - \beta L) \tag{41}$$

[22] For formal definitions of risk aversion and stochastic dominance, see e.g. Gollier (2001).

while

$$\int_0^x M(t)dt = \frac{\alpha}{2} + (x - \alpha). \tag{42}$$

It can be checked that $L \geq \alpha$ is a sufficient condition for (38) in the range of x values.

So we have shown that the $U(\beta L) + U((1-\beta)L) - U(\alpha) - U(0) \geq 0$ if $L \geq \alpha$. Moreover, this net payoff from favoritism is strictly positive if $\beta \in (0, 1)$.

QED

Thus, risk aversion provides an additional motive for engaging into favoritism. Risk aversion works in parallel, and complements, the surplus diversion motive highlighted in the analysis of the baseline model. In particular, risk averse agents may prefer favoritism even when $L = \alpha$ (no surplus diversion) or $L < \alpha$ (expected surplus loss from favoritism), as shown in the example below.

Proposition A shows that *favoritism provides a form of insurance* by allowing group members to partially smooth payoffs. An individual may prefer to earn less in situations where he is the principal in return for earning more in situations where he was the non-expert (and would earn 0 in the market). In a dynamic context, with repeated interactions, this could lead to less variable streams of income, and we study next how risk aversion affects the individual incentives in the repeated game.

The cost to a principal of offering a favor to a non-expert, in the current period, is:

$$U(\alpha) - U(\beta L) \tag{43}$$

For a principal to offer a favor it must be the case that present cost is lower than the present value of future net benefits. In other words,

$$U(\alpha) - U(\beta L) \leq \frac{\delta}{1-\delta}\frac{1}{n}\frac{n-g_A}{n-1}\left[U(\beta L) + U((1-\beta)L) - U(\alpha) - U(0)\right]. \tag{44}$$

Our previous result shows that the right hand side is usually positive when $L \geq \alpha$. Denote by δ^*_{RA} the unique value of δ for which the left hand side and the right hand side of (44) are equal.[23]

Proposition B: *Suppose $L \geq \alpha > \beta L$. Then the practice of favoritism by group $\mathcal{A}$ is a subgame perfect equilibrium outcome so long as $\delta \geq \delta^*_{RA}$. Favoritism is easier to sustain with*

[23] The result holds, more generally, when $\alpha > \beta L$ and $U(\beta L) + U((1-\beta)L) \geq U(\alpha) - U(0)$.

more risk-averse players and in smaller groups.

Proof. Without loss of generality, consider the case where group $\mathcal{A}$ practices favoritism while group $\mathcal{B}$ abides by the market. (Separability still holds under risk aversion). As in Proposition 3, we restrict attention to individual strategies which are contingent on the behavior of own group members only. When group $\mathcal{A}$ has successfully practiced favoritism until time t the inequality in (44) is applicable. If some members of the group have deviated we need to check incentives within the smaller group. As in Proposition 3, it turns out the incentives for favoritism remain unaltered across 'effective' sizes of group $\mathcal{A}$. This completes the proof of the first part of the proposition. The relationship between incentives for favoritism and group size follows directly from inequality (44).

Finally, we show that incentives for favoritism increase with risk aversion. To see this, it is useful to rewrite the inequality (44) as follows:

$$\frac{U(\alpha) - U(\beta L)}{U(\beta L) + U((1-\beta)L) - U(\alpha) - U(0)} \leq \frac{\delta}{1-\delta}\frac{1}{n}\frac{n-g_A}{n-1} \tag{45}$$

So we need to assess how the left hand side of the inequality varies with risk aversion. We shall say that the utility function ϕ is more risk averse than utility function U if at all values $x \in [0,1]$, ϕ has a higher coefficient of absolute risk aversion than U. We know that if ϕ is more risk-averse than U, then there exists a function f such that $\phi(x) = f(U(x))$, and $f(.)$ is increasing and concave (see e.g., Gollier (2001)). So it is sufficient to show that

$$\frac{\phi(\alpha) - \phi(\beta L)}{\phi(\beta L) + \phi((1-\beta)L) - \phi(\alpha) - \phi(0)} < \frac{U(\alpha) - U(\beta L)}{U(\beta L) + U((1-\beta)L) - U(\alpha) - U(0)} \tag{46}$$

Simplifying the inequality, we obtain:

$$\frac{\phi(\alpha) - \phi(\beta L)}{\phi((1-\beta)L) - \phi(0)} < \frac{U(\alpha) - U(\beta L)}{U((1-\beta)L) - U(0)} \tag{47}$$

Write $U(\alpha) = x$, $U(\beta L) = y$, $U((1-\beta))L) = z$ and $U(0) = m$. So we need to show that

$$\frac{f(x) - f(y)}{f(z) - f(m)} < \frac{x-y}{z-m} \tag{48}$$

Suppose that $x > y > z > m$. Rewrite the inequality as $[z-m][f(x) - f(y)] < [f(z) - f(m)][x-y]$. Observe that the left hand side of this inequality is smaller than $[z-m][f'(y)(x-$

$y)]$, since $f(.)$ is concave and $x > y$. So it is sufficient to show $[z - m]f'(y) < f(z) - f(m)$. However, $f'(y) < f'(z)$, since $f(.)$ is concave and $z < y$. So it is sufficient to show that $[z-m]f'(z) < f(z) - f(m)$. But this last inequality holds because $f(.)$ is concave and $z > m$. **QED**

This result confirms our previous intuition. As players become more risk averse, they care more about reductions in risks and hence favoritism becomes more desirable. Our arguments establish that $L \geq \alpha$ is sufficient for the practice of favoritism among patient and risk-averse players. However, unlike the benchmark model, this condition is *not necessary* for favoritism. The following example illustrates this point.

Example 1 *Favoritism as pure insurance*

Suppose $\alpha = \beta = 1/2$, $U(x) = x^\lambda$, where $\lambda \in (0, 1)$. The right hand of equation (44) may be written as:

$$\frac{\delta}{1-\delta} \frac{n-g}{n(n-1)} \left[2(L/2)^\lambda - \alpha^\lambda\right]. \tag{49}$$

At $L = \alpha$, this expression is strictly positive. So, by the continuity of payoffs, there exist values of L and α, with $L < \alpha$, such that favoritism is sustainable among risk-averse and patient players.

■

Next let us next consider the effects of individual wealth on incentives for favoritism. In line with the literature, let us consider Bernoulli functions which exhibit decreasing absolute risk aversion (DARA).[24] Fix some Bernoulli function $U(.)$ with the DARA property. Consider two wealth levels w_1, w_2 where $w_1 > w_2$. Then given functions $U_1(x) = U(w_1 + x)$ and $U_2(x) = U(w_2 + x)$, U_2 is a concave transform of U_1 (see e.g. Gollier (2001)). So we can state the following corollary of Proposition B.

Corollary 1 *Under decreasing absolute risk aversion, poorer communities have greater incentives to practice favoritism.*

To conclude this section, we ask how risk aversion affects the impact of favoritism on outsiders and on social welfare. Observe, first, that any individual in group $\mathcal{B}$ suffers a loss in

[24]Examples of such functions include $U(x) = x^\lambda$ with $\lambda \in (0, 1)$, and $U(x) = log\ x$.

expected utility when group $\mathcal{A}$ switches to favoritism. This loss is equal to

$$pg_A[U(1-\alpha)-U(0)] \tag{50}$$

Therefore, individuals in group $\mathcal{B}$ prefer group $\mathcal{A}$ members to abide with market behavior in the sense of *first-order stochastic dominance*. Risk considerations reinforce the negative impact of favoritism on outsiders. Next, combine equations (37) and (50). We see that favoritism reduces social welfare if and only if

$$U(\beta L)+U((1-\beta)L)\leq U(\alpha)+U(1-\alpha)$$

which is always satisfied when $\alpha=\beta$ and $L\leq 1$. This condition may fail to hold, however, when β is close to $1/2$, α is close to 1, and L is not too low. In these situations, payoffs are much more unequal in market transactions than in group interactions. Thus there are circumstances under which group members' risk-sharing gains from favoritism may then dominate outsiders' losses, and widespread favoritism may improve social welfare with respect to market behavior.

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