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. Favoritism is prevalent in both rich and poor countries. At the same time, favoritism is widely associated with economic inefficiency, violent political opposition and slow economic growth. This paper examines the economic origins of favoritism and then studies its consequences.

We argue that favoritism is a mechanism for *surplus diversion* away from the society at large and toward the group. 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.

We show that this surplus diversion motive is distinctive in its implications and complements more traditional theories for privileged within-group exchange such as preference bias and social insurance.

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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. Favoritism is prevalent in both rich and poor countries.[1] At the same time, favoritism is widely associated with economic inefficiency, violent political opposition and slow economic growth.[2]

Favoritism often involves a quid pro quo which take an indirect form: so Mr. A may sign a contract with Mr. B for the supply of some inputs, and Mr. B may offer a relative of Mr. A a job in his firm. At some point in the future, Mr. A may call upon this relative to help him arrange a meeting with an important politician (who is close to the relative).[3] In this paper, our goal is to identify the economic circumstances under which such exchange of favors is attractive and then to examine its consequences for individual and collective well being.

We consider an economy in which people belong to different 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 differ 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 problems; 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, restrictions on terms of trade and/or transfers *must* be present

[1] Privileged access to resources and contracts for dominant tribal groups has been highlighted in the African context; see e.g., Barr and Oduro (2002), Fisman (2003), and Collier (2009). For a study of social favors and the terms of commercial loans in Thailand, see Charumilind, Kali and Wiwatankantang (2006). Lentz and Laband (1989) find evidence of favoritism in medical school admissions in the US. Bertrand et al. (2008) and Kramarz and Thesmar (2008) present empirical evidence on the exchange of favors among politicians, civil servants and corporate executives in France.

[2] In their theory of economic history, North, Wallis and Weingast (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.

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

for favoritism to arise. We believe that such restrictions are common and this explains why favoritism is so widely prevalent. In labor contracts these restrictions take the form of unionized/minimum wages (which are above market clearing levels). 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 who choose the location of public projects. Finally, in planned economies, individuals preferences and willingness to pay do not have a natural way of expressing themselves in the form of prices.

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 maximal when the two groups are of equal size.[4]

Given this tension between group and societal interests we examine the *limits* on favoritism. We start with individual incentive constraints. The total output produced in a match with a non-expert own group member in smaller than the output produced in a match with an expert and 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 mechanism (outlined in the second paragraph above). 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 imply that favoritism is easier to sustain in a smaller group.

Next, let us consider higher-order social norms which may limit favoritism.[5] 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.[6]

[4]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).

[5]In the theory of North, Wallis and Weingast (2009), the establishment of formal institutions aimed at preventing exclusionary practices, such as favoritism and discrimination (based on grounds of race, religion and ethnicity), constitutes an important aspect of the transition between a natural state and an open access society. Here we focus on the role of informal institutions and social norms.

[6]This finding is consistent with Olson's (1965) insights on the scope of collective action.

In the baseline model all individuals are equally likely to be principals and experts. We show that heterogeneity between groups facilitates the emergence of favoritism. On the other hand, such heterogeneity also increases the social costs of favoritism. By contrast, heterogeneity within a group lowers the prospects of favoritism. We then study the effects of favoritism on incentives to make payoff enhancing investments. On the one hand, favoritism entails exchange with inefficient non-experts; this lowers returns and *discourages* investment in new opportunities.[7] On the other hand, favoritism raises the prospects of exchange for a group member (as he may be employed even when he is not an expert) and lowers such prospects for outsiders (who may not be hired even when they are experts). So favoritism raises productivity enhancing investments inside and lowers them outside the favoritism group.[8]

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 an in-group bias in personal preference.[9] The *second* explanation is that privileged within group exchange mitigates information problems and saves on transaction costs.[10] We identify an elementary economic motive – the diversion of surplus away from society and toward the group – for the practice of favoritism. To the best of our knowledge, this surplus diversion motive for the practice of favoritism is novel. We emphasize that this motive does not rely on preference biases and that it obtains in a world where market exchange is first best and maximizes social surplus. Moreover, our model predicts that favor exchange is easier in smaller groups. This prediction is in contrast to what we find in a standard model of risk sharing or discrimination.

We recognize that the surplus diversion motive may coexist with these other traditional considerations and this motivates a close examination of how they are related? To address this question we enrich our basic model in two dimensions. One, we examine the implications

[7]This prediction is novel and is consistent with anecdotal evidence on the negative impact of favoritism on entrepreneurship and on the business climate in Africa and the Middle East. See e.g., Baland, Guirkinger and Mali (2010), Konate (2010), Loewe, Blume and Speer (2008).

[8]This prediction is in line with the empirical findings on investment in education, see e.g., Becker (1993), Loury, Modood and Teles (2005).

[9]For a classic account of taste based bias in hiring and resource allocation, see Becker (1957); for recent studies of the effects of preference biases, see Pendergast 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).

[10]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 (1996b)), and solidarity amongst the poor provides social insurance (Scott (1979), Fafchamps (2003)).

of risk-averse preferences and two, we allow for own group altruism in preferences. Observe that, under favoritism, two group members earn something every time any one of them is the principal. In a market, two members of the group make money only if the principal and the expert are both within the group. So favoritism *smooths* the flow of economic surplus to individuals and it is a form of *social insurance*. Turning next to altruism, note that on the one hand, it reduces the (effective) cost of doing a favor to own group member. On the other hand, it also makes punishment towards deviators more difficult (a form of the Samaritan's dilemma). We show that, on balance, altruism complements favor exchange and makes favoritism more attractive under repeated interactions. These arguments show that traditional factors such risk sharing and altruism both *complement* the surplus diversion motive identified in our basic model.

Our paper contributes to the study of the relationship between informal institutions and markets.[11] A recurring theme in this line of work is the tension between informal institutions on the one hand and anonymous market exchange on the other hand. Favoritism creates a similar tension: it enhances group payoff but is detrimental for outsiders and for aggregate social welfare.

More generally, our analysis draws attention to the importance of examining the aggregate impact of practices which may be beneficial to a specific social group. There is a large literature on how repeated interactions can help groups solve collective action problems.[12] In this line of work, groups are considered in isolation and the interest is in understanding how credible threats can improve social welfare. By contrast, in our paper groups are embedded in a wider market context. While groups benefit from social norms supporting favoritism, society benefits from meritocratic norms and from norms which punish favoritism. Similarly, our study of altruism complements a large existing literature on altruism in families, see e.g. Becker (1981). Most of this literature studies families in isolation, and in contexts where altruistic transfers are necessarily Pareto-improving. By considering social groups in a wider context, we show how altruism may facilitate the emergence of a socially detrimental practice. Finally, our study of risk aversion contributes to the large literature on informal insurance, see e.g., Fafchamps (2003), Genicot and Ray (2003), and Townsend (1994). As with altruism, economic studies of risk-sharing usually focus on the positive effects of informal risk-sharing

[11] Influential contributions include Akerlof (1970, 1976), Arnott and Stiglitz (1991), Bowles and Gintis (2004), Greif (1994), Kali (1999), Kranton (1996a,1996b), Montgomery (1991), Munshi and Rosenzweig (2006), North, Wallis and Weingast (2009), Taylor (2000).

[12] For a survey on repeated games, see Mailath and Samuelson (2006); for recent work on cooperation and favor exchange in social networks, see Möbius (2003) and Jackson, Rodriguez-Barraquer and Tan (2010).

arrangements.[13] We show that favor exchange provides a clear way for group members to share risk, but that it has unambiguously negative effects on outsiders.

The basic model is presented in section 2 and analyzed in section 3. Section 4 extends this framework to examine heterogeneity, altruism, and risk aversion. Section 5 examines the impact of favoritism on incentives for investment. Section 6 concludes.

2 Model

Individuals 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 $n \geq 3$.[14]

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.[15]

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 rule of division of output. Consider the exchange between a principal and an expert. A principal gets a share α and the expert gets a share $(1-\alpha)$, where $\alpha \in [0, 1]$. Similarly, in an exchange between a principal and a non-expert, the principal earns βL and

[13] For an exception which highlights the negative effects of kinship, see Hoff and Sen (2006).

[14] Our analysis and results directly extend to the case of multiple groups. We consider two groups for clarity.

[15] The assumption of one opportunity per period may be justified by choosing a small enough time length. It may then of course depend on n.

the non-expert earns $(1-\beta)L$, for $\beta \in [0,1]$. This formulation of division of output covers a number of interesting examples.

1. *Competitive bidding:* Potential agents all bid for a contract; a natural outcome would be $\alpha = L$ and $\beta = 1$.

2. *Bargaining with frictions:* A principal and an agent bargain over the division of output. If bargaining fails, the opportunity disappears with probability $q \in [0,1]$. With probability, $1-q$, competitive bidding takes place. In this case, Nash bargaining at the first stage yields:[16] $\alpha = L - q(L - \frac{1}{2})$ and $\beta = 1 - \frac{1}{2}q$. As frictions worsen, the output division varies continuously from the competitive case, $\alpha = L$, $\beta = 1$, when $q = 0$, to the equal split case $\alpha = \beta = \frac{1}{2}$, when $q = 1$.

3. *Minimum/unionized wages:* A principal always pays a wage w in a contract with an agent. In this case, $\alpha = 1 - w$, and $\beta = (L - w)/L$.

We denote by $\pi_A(F, M)$ the expected payoff of an individual in group $\mathcal{A}$ when his group practices favoritism while the other group practices market behavior, and use similar notations for the other combinations. We will sometimes write $\pi_A(F)$ when the behavior of outsiders is irrelevant.

3 Analysis

We analyze the circumstances under which favoritism may arise and then examine its economic implications. Three general results are obtained. First, we show that favoritism arises 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 sub-optimal 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.

[16] Reservation utilities are $(1-q)L$ for the principal, $(1-q)(1-L)$ for an expert agent, and 0 for an non-expert.

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 in 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 $\alpha - \beta L$ to the principal, relative to market behavior, and yields $(1-\beta)L$ to the favored group member. The group gains $(1-\beta)L - (\alpha - \beta L) = L - \alpha$ while the other group loses $1-\alpha$ 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 $pg_A g_B$. Therefore, the net group gain from favoritism is equal to $pg_A g_B(L-\alpha)$ while the other group loses $pg_A g_B(1-\alpha)$ and society loses $pg_A g_B(1-L)$. The per capita gain from a collective switch to favoritism is thus:

$$\pi_A(F) - \pi_A(M) = pg_B(L-\alpha) \tag{2}$$

This leads to our first result.

Proposition 1 *A group gains from favoritism if and only if $L > \alpha$. When a group practices favoritism, insiders gain while outsiders and society lose.*

This result captures a basic tendency of economic exchange: 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 benefits from keeping the economic exchange within. So groups may choose to practise favoritism absent informational frictions, social preferences and social dilemmas. They do so simply to increase the monetary benefits accruing to group members.

The value of α may be lower than L due to a variety of reasons. We illustrate this in the context of the rules of output division mentioned in the previous section.

1. *Bargaining with frictions:* If $L > \frac{1}{2}$ and $q > 0$, then $L > \alpha$ and the group gains from favoritism.[17] Moreover, this gain is increasing in the extent of frictions q and in the efficiency of non-experts L.

[17] If $L < \frac{1}{2}$ and $q > 0$, then $\alpha > L$. Non-experts are highly inefficient, so the expert has, a priori, a good bargaining position. In this case, the principal benefits from the presence of frictions. This, in turn, means that the group prefers to engage into market behavior to reap these benefits.

2. *Minimum/unionized wages:* If $w > 1 - L$ then $\alpha < L$ and the principal's group prefers to exchange favors within the group rather than form a relation with an expert outside the group.

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. Now α is group specific and lower than β if the expert is in the other group. This could yield a situation where $\alpha < L$. We finally observe, that under competitive bidding, $\alpha = L$ and the principal's group is indifferent between favoritism and the market rule.

We note that a group's gain from favoritism, and its associated negative impacts, do not depend on the behavior of the other group. This separability partly comes from the exclusive nature of group membership. An individual cannot belong to two groups, so circumstances where favors may be given within one group are disjoint from those where they may be given in the other group.[18]

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 α. Similarly, he is an expert with probability $\frac{1}{n}$ and then he earns $(1 - \alpha)$. Therefore his expected payoff is:

$$\pi_A(M, M) = \pi_B(M, M) = p(n - 1) \tag{3}$$

As expected, the market generates equal payoffs across individuals. Moreover, total welfare is simply the sum of individuals utilities and is given by 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 α. Or, with the remaining probability $\frac{g_B}{n-1}$, the expert is an outsider and i provides a favor and earns βL. (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 $1 - \alpha$. (3) Individual i obtains a favor. 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.

[18] Separability is a natural property of our benchmark model, but may not hold in more complicated setups. It would not hold, for instance, with overlapping groups, or in the presence of search frictions in the market, as in Kranton (1996b).

So with probability $\frac{(g_A-1)g_B}{n(n-1)}\frac{1}{g_A-1}$, favored individual i earns $(1-\beta)L$. Formally,

$$\pi_A(F,M) = \frac{1}{n}\left(\frac{g_A-1}{n-1}\alpha + \frac{g_B}{n-1}\beta L\right) + \frac{1}{n}(1-\alpha) + \frac{(g_A-1)g_B}{n(n-1)}\frac{1}{g_A-1}(1-\beta)L \tag{4}$$

Regrouping and simplifying gives us the expected payoff to an individual i in group $\mathcal{A}$ which practices favoritism:

$$\pi_A(F,M) = p[n-1+g_B(L-\alpha)] \tag{5}$$

In contrast, group $\mathcal{B}$ loses $1-\alpha$ per favor provided. So the individual's expected payoff is:

$$\pi_B(M,F) = p[n-1-g_A(1-\alpha)] \tag{6}$$

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. We discuss these size effects in more detail below. We simply observe here that 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, outsiders in group $\mathcal{B}$ lose more than what insiders gain, and the payoff advantage to group $\mathcal{A}$,

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

is increasing in its size.

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,

$$\pi_A(F,F) = p[n-1-g_B(1-L)] \tag{8}$$

and by symmetry $\pi_B(F,F) = p[n-1-g_A(1-L)]$. Recall that $\pi_A(M,M) = \pi_B(M,M) = p(n-1)$, and so individuals in *both* groups lose relative to the market!

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

$$\pi_A(F,F) - \pi_B(F,F) = p(g_A-g_B)(1-L), \tag{9}$$

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. So, in either case welfare loss is maximal in a society with two groups of equal size.[19]

We summarize our arguments in the following proposition.

Proposition 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.

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. So principals may not be willing to offer favors to non-experts as it entails a potential loss in their static payoff (i.e., if $\alpha > \beta L$). Two, there may exist social norms – which involve punishments of one group by another – which may restrain the practice of favoritism. We explore the scope of these constraints now.

[19] With k groups of sizes $(g_j)_{j=1}^k$, welfare loss is proportional to $\sum_{j=1}^k g_j(n - g_j)$, which is also maximized when $k = 2$ and $g_1 = g_2$.

3.1 Limits on favoritism

Observe that if $\alpha > \beta L$, then providing a favor entails a current period cost for the principal. So, if individuals cannot commit ex ante to favoritism, market behavior is 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 examine the ability 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 restraint a group from practising favoritism.

We outline the main ingredients of the repeated game; for formal definitions see the appendix. 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. 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 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. We consider a recursive punishment, and provide the details on the repeated game, notation and solution concept in the appendix.

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 the appendix.

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 discounted payoff is given by:

$$\beta L + \frac{\delta}{1-\delta}\pi_A(F, M) \tag{10}$$

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 α 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:

$$\alpha + \frac{\delta}{1-\delta}\pi_A(M, M). \tag{11}$$

A principal will only offer a favor to a non-expert in his group if (10) $\geq$ (11). Substituting values of $\pi_A(F, M)$ and $\pi_A(M, M)$ from equations 4 and 3, simplifying and rearranging yields us the following inequality:

$$\alpha - \beta L \leq \frac{\delta}{1-\delta} p(n - g_A)(L - \alpha) \tag{12}$$

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 the appendix, and show that equation (12) 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 equation (12) *also* captures the incentives faced by effective group members. Let δ^* be the unique discount factor for which the left hand side and right hand side of equation (12) are equal.

$$\alpha - \beta L = \frac{\delta^*}{1-\delta^*} p(n - g_A)(L - \alpha) \tag{13}$$

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

Proposition 3 *Suppose that $L > \alpha > \beta L$. 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 if and only if $\delta \in [\delta^*, 1]$. Favoritism is easier to sustain in smaller groups.*

The key mechanism here is favor exchange: 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.

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: one, control over opportunities, two, competition for favors, and three, 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 (1996b) has shown 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.

Equation (13) 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. Similarly, a growth in β makes favoritism easier, as it reduces the cost of doing a favor to a non-expert. In contrast, an increase in α dampens incentives for favoritism as it increases current costs for the principal and lowers future group gains from this practice.[20]

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. One possible way in which penalties can be implemented is through a combination of formal legal and administrative institutions. The main difficulty an institution is likely to face is to establish that favoritism has actually taken place. Such formal procedures require clear and verifiable evidence; but in many, if not most settings, output is difficult to measure and specifically attribute to individual actions. This motivates our study of how decentralized norms which entail cross group punishments restrain the practice of favoritism.

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

[20] In the model of bargaining under frictions (in section 2), positive and negative impacts of frictions on dynamic incentives exactly cancel out and δ^* turns out to be independent of q, as long as $q > 0$. In this case, δ^* simply solves

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

which is the counterpart of (13) under equal split.

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. Also recall, this number g^* was independent of whether the other group was practicing market or favoritism. We can now state:

Proposition 4 *Suppose $L > \alpha > \beta L$. 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 $g_A < g^*$ but $g_B > g^*$.*

The proof is presented in the appendix. 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.

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.

4 Extensions

This section explores how three features of the basic model matter for our main results. The first is homogeneity: every player is equally likely to be picked to be a principal or an expert. We formulate and analyze a model in which the probability of becoming a principal or an expert may differ across individuals. The second is risk-neutrality: individuals care only about expected payoffs. We extend the model to allow for risk-averse individuals. The third is that individuals are selfish: they care only about their own payoffs. We explore the role of altruism in shaping payoffs and the incentives for favoritism.

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 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.[21] 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 (2) is:

$$\pi_i(F) - \pi_i(M) = \frac{p_{A-i,B}}{g_A - 1}(1-\beta)L - p_{i,B}(\alpha - L\beta) \tag{15}$$

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 (15), we obtain:[22]

$$\pi_A(F) - \pi_A(M) = \frac{p_{A,B}}{g_A}(L - \alpha) \tag{16}$$

This equation tells us that a group gains from favoritism if and only if $L > \alpha$. This is in line with the finding of our basic model. However, observe that a group gains more from favoritism as $p_{A,B}$ grows. Thus an increase in $p_{A,B}$ raises group $\mathcal{A}$'s gains from the practice of favoritism.

The incentives for favoritism are largest when $p_{A,B} = 1$, which corresponds to situations where *the principal is always in the group while the expert is never in it.* When $p_{A,N} = 1$, opportunities always fall in the hands of group members so the group control over opportunities is maximal. If in addition $p_{N,B} = 1$, 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.

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

[22] 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 $\frac{p_{A-i,B}}{g_A - 1} = \frac{p_{A,B}}{g_A}$.

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

$$W = 1 - p_{A,B}(1 - L) \tag{17}$$

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 $p_{A,B} = 1$, $\pi_A(F) - \pi_A(M) = \frac{1}{g_A}(L - \alpha)$ 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. Group 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.*

We next consider individual incentives for the practice of favoritism. 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

$$\alpha - \beta L = \frac{\delta}{1 - \delta}[\pi_A(F) - \pi_A(M)]. \tag{18}$$

Thus, dynamic incentives to practice favoritism are increasing in $p_{A,B}$.

Suppose now that probabilities are also heterogeneous within a group. In this case, individuals may differ in their gains from favoritism. From equation (15), 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 subgame perfect equilibrium if and only if $\delta \geq \delta_i$, where δ_i solves $\alpha - \beta L = \frac{\delta}{1-\delta}[\pi_i(F) - \pi_i(M)]$ for the individual with highest $p_{i,B}$. So, within group heterogeneity of this form will lower the prospects of favoritism.

4.2 Risk-sharing

In our basic model, individuals have linear preferences: in an uncertain world, this reflects risk-neutrality. In this section, 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. Moreover, under the standard assumption of decreasing absolute risk aversion, poorer groups 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:

$$\frac{1}{n}\left[U(\alpha) + U(1-\alpha)\right] + \left(1 - \frac{2}{n}\right) U(0). \tag{19}$$

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

$$\frac{1}{n(n-1)}\left[U(\alpha)(g_A - 1) + U(1-\alpha)(n-1) + [U(\beta L) + U((1-\beta)L)](n - g_A)\right] \\ + \left[1 - \frac{3n - g_A - 2}{n(n-1)}\right] U(0). \tag{20}$$

Therefore, the net expected returns from favoritism are:

$$U_A(F) - U_A(M) = p(n - g_A)\left[U(\beta L) + U((1-\beta)L) - U(\alpha) - U(0)\right] \tag{21}$$

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 the favoritism lottery, a player receives βL in the first state and $(1-\beta)L$ in the second. Under a market lottery, a player receives α if principal but nothing if non-expert. Given the expression in equation (21) above, we may, without loss of generality, assign equal probability of $1/2$ to each of these two states.

Would risk averse individuals prefer to be in a group practicing favoritism? We show in the appendix 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 the favoritism lottery second-order stochastically dominates the market lottery. 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 6 *If $L \geq \alpha$, favoritism second-order stochastically dominates market behavior for group members, no matter what outsiders do.*

The proof is presented in the appendix. 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. Note that the favoritism lottery brings higher expected payoff if and only if $L > \alpha$. Risk aversion does not alter the fact that individuals prefer their group to capture a larger share of the expected surplus. In fact, it further increase these incentives thank to the risk-reducing effect of favoritism. 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 6 shows that *favoritism provides a form of insurance.* Favor exchange allow group members to partially smooth payoffs. An individual may prefer to earn less in situations where he has control over opportunities if this is appropriately compensated by earning more in situations where he would not have any market gain. Under repeated interactions, this would indeed 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:

$$U(\alpha) - U(\beta L) \tag{22}$$

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,

$$U(\alpha) - U(\beta L) \leq \frac{\delta}{1-\delta}\frac{1}{n}\frac{n-g_A}{n-1}\left[U(\beta L) + U((1-\beta)L) - U(\alpha) - U(0)\right]. \tag{23}$$

Our previous result shows that the right hand side is usually positive when $L \geq \alpha$. We now want to understand how individual incentives vary with the degree of risk-aversion of players. We obtain the following result. Denote by δ^*_{RA} the unique value of δ for which the left hand side and right hand side of condition (23) are equal.[23]

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

Proposition 7 *Suppose $L \geq \alpha > \beta L$. Then the practice of favoritism by group $\mathcal{A}$ is a subgame perfect equilibrium so long as $\delta \geq \delta^*_{RA}$. Favoritism is easier to sustain with more risk-averse players and in smaller groups.*

The proof is presented in the appendix. 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, 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 (23) may be written as:

$$\frac{\delta}{1-\delta}\frac{n-g}{n(n-1)}\left[2(L/2)^\lambda - \alpha^\lambda\right]. \tag{24}$$

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, ch. 2)). So we can state the following corollary of Proposition 7.

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

$$pg_A[U(1-\alpha) - U(0)] \tag{25}$$

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

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 (21) and (25). 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.

4.3 Altruism

In our basic model, individuals care only about their own payoff. A rich literature in evolution and in economics has studied the role of other regarding preferences. We would like to understand how altruism toward members of one's own group shapes incentives to engage in the exchange of favors with them. Our main finding is that altruism *complements* the surplus diversion motive identified in the basic model.

Consider an individual i in group $\mathcal{A}$. Suppose that his preferences take the following shape:

$$U_i = \pi_i + G\Big(\sum_{j \neq i \in A} \pi_j\Big) \tag{26}$$

where π_i is the material payoff (as in the basic model) and $G \geq 0$ is an altruistic coefficient capturing how much an individual cares for any other group member.

Observe first that if altruism is strong enough, group members will naturally practice favoritism even without an expectation of reciprocity. In other words, favoritism would emerge in a one-shot interaction. Consider a principal faced with the choice between hiring inefficiently within his group or efficiently in the market. An altruistic principal partly internalizes the non-expert's gain: He earns $\beta L + G(1-\beta)L$ when hiring within and α when hiring in the market. Thus, a principal strictly prefers to practice favoritism in the one-shot game if and only if

$$G > \frac{\alpha - \beta L}{(1-\beta)L} \tag{27}$$

This inequality becomes easier to satisfy when G is higher, α is lower, L is higher and, if $L > \alpha$, also when β is higher.

When inequality (27) is not satisfied, altruism on its own will not induce a principal to offer a favor to a non-expert. This motivates an examination of repeated interaction. While altruism clearly decreases the one-shot cost of giving a favor, its effect on continuation payoffs is less clear. In particular, punishments will also become less attractive to such an altruist. This in turn may mean that a deviator from favoritism may have less to fear from future punishments. This reasoning may lead to an unraveling of the repeated game argument which sustains favoritism.

So, a priori, it is not clear how altruism may alter dynamic incentives. It turns out that for the strategies considered here, the positive and negative dynamic effects of altruism cancel out. For any $g_A \geq 3$, define δ^*_{ALT} as the unique solution to the following equation:[25]

$$\alpha - \beta L - G(1-\beta)L = \frac{\delta}{1-\delta} p(n - g_A)(L - \alpha) \tag{28}$$

Proposition 8 *If $G > \frac{\alpha - \beta L}{(1-\beta)L}$ then altruism can induce a principal to offering a favor to a non-expert, in a one-shot interaction. If $G < \frac{\alpha-\beta L}{(1-\beta)L}$ and $L > \alpha$, then favoritism is a subgame perfect equilibrium of the repeated game if and only if $\delta \in [\delta^*_{ALT}, 1]$. Favoritism is easier to sustain if altruism is stronger.*

The proof is provided in the appendix. Proposition 8 suggests that if individuals exhibit strong altruism toward members of their own group then they will be willing to offer favors even in a one-shot interaction, i.e., without the expectation of reciprocity. Moreover, if individuals display moderate altruism toward members of their own group then exchange of favors becomes easier. In this sense, altruism complements the surplus diversion motive identified in the basic model and facilitates the exchange of favors.

5 Favoritism and Investments

Individuals invest in search of economic opportunities and in enhancing their productivity. 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.

[25] When $g_A = 2$, δ^* solves $\alpha - \beta L - G(1-\beta)L = \frac{\delta}{1-\delta}(1+G)p(n-g_A)(L-\alpha)$.

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:

$$f\left[\frac{g_A - 1}{n-1}\alpha + \frac{n - g_A}{n-1}\beta L\right] - c. \tag{29}$$

Then investment is optimal if and only if:

$$\frac{g_A - 1}{n-1}\alpha + \frac{n - g_A}{n-1}\beta L > \frac{c}{f}. \tag{30}$$

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

$$\alpha > \frac{c}{f}. \tag{31}$$

Therefore, *the incentives for investment in the favoritism group are lower than in the market abiding group if and only if* $\alpha > \beta L$. 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 in the favoritism group if $\alpha > \beta L$, since the probability to hire inefficiently within is smaller in a larger group. So the depressing effect of favoritism on investment may be especially acute in small groups.

In the basic model, individuals earn more in the favoritism group than in the market abiding group when $L > \alpha$. How does investment affect these payoff differences? There are two interesting cases. One, when (31) is satisfied but (30) 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 the appendix.

We next turn to a study of how favoritism affects investments which improve productivity of existing economic opportunities. Suppose an investment of $c > 0$ raises productivity by a factor $\rho > 0$ for agents. These investments can be interpreted as general purpose education. Thus an educated expert produces $1+\rho$ while an educated non-expert produces $L(1+\rho)$. For simplicity, we assume that $L(1+\rho) < 1$: this means that an educated non-expert produces less than an expert.

Suppose group $\mathcal{B}$ plays by the market rule and group $\mathcal{A}$ practices favoritism. There are two factors at work. One, the probability of being hired when a player is an expert: an expert in group $\mathcal{A}$ is always hired (irrespective of the identity of the employer) but an expert in group $\mathcal{B}$ will not be when the employer is in group $\mathcal{A}$. Two, there is a positive probability of a non-expert in group $\mathcal{A}$ being hired if the employer is in group $\mathcal{A}$ *and* the expert is in group $\mathcal{B}$; clearly a non-expert in group $\mathcal{B}$ will never be hired. These two factors make investment for members of group $\mathcal{A}$ more attractive. To summarize: *Productivity enhancing investments are higher in the group which practices favoritism.*

This result is consistent with empirical evidence that favoritism toward one's own group (and discrimination against outsiders) creates significant differences in incentives to acquire human capital, see e.g., Becker (1993), Loury, Modood and Teles (2005).

We now turn to the effects of favoritism on payoff inequality: recall that, in the basic model, the payoffs in the favoritism group are larger than the payoffs in the market abiding group. Investments enhance productivity and this could potentially reinforce the payoff inequalities identified in proposition above. However investment is costly, and non-experts who are educated are competing for 'rents' with other non-experts. These forces go in opposite directions and necessitate a careful analysis of payoffs.

Suppose that everyone invests in $\mathcal{A}$ and no-one invests in $\mathcal{B}$. In this case, we find that investments usually exacerbate the payoff advantage of the favoritism group when costs of investment are low but may *reduce* this advantage when costs of investment are high. So productive investments within the favoritism group can mitigate (or even reverse) payoff advantages. This happens because investments are costly and the market group gets to share in the benefits of investment – when a market group principal hires a favoritism group expert – without incurring any costs. The details of the relevant computations are presented in the appendix.

6 Concluding Remarks

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. Favoritism appears to be prevalent in both rich and poor countries and is associated with economic inefficiency, violent political opposition and slow economic growth. This paper develops a theory of the economic origins of favoritism and then studies it's consequences.

We show that favoritism is a mechanism for *surplus diversion* away from the society at large and toward the group. As it usually entails inefficiencies, this diversion requires restrictions on transfers across individuals. 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).

This surplus diversion motive is distinctive in its implications and complements more traditional theories for within-group privileged exchange such as bias in preferences and the sharing of risk. We also show that favoritism creates inequality across groups and has significant effects on incentives for investment (and hence for economic dynamism).

In our model, groups are given exogenously; an interesting extension would be to ask how groups for the practice of favoritism arise. Similarly, it would be interesting to extend our general approach to explore the phenomenon of crony capitalism.

7 Appendix

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 $s_{m_t} : H_t \rightarrow N_{m_t}$, while the strategy of a respondent chosen by m_t is $s_{a_{m_t}} : H_t \rightarrow \{1, 0\}$. 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. This is due to the separability discussed in p.X. 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

$$\beta L + \frac{\delta}{1-\delta}\frac{1}{n}\left(\frac{g_A - 1}{n-1}\alpha + \frac{g_B}{n-1}\beta L\right) + \tag{32}$$
$$\frac{\delta}{1-\delta}\frac{n-1}{n}\left[\frac{g_{A,t}-1}{n-1}\left(\frac{1}{n-1}(1-\alpha) + \frac{n-2}{n-1}\frac{g_B}{n-2}\frac{1}{g_{A,t}-1}(1-\beta)L\right) + \frac{n-g_{A,t}}{n-1}\frac{1}{n-1}(1-\alpha)\right]$$

This can be simplified to:

$$\beta L + \frac{\delta}{1-\delta}p[n-1+g_B(L-\alpha)] \tag{33}$$

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

$$\alpha + \frac{\delta}{1-\delta}p[n-1]. \tag{34}$$

Therefore, playing favoritism in this case is individually rational if

$$\alpha - \beta L \leq \frac{\delta}{1-\delta}p(n-g_A)(L-\alpha). \tag{35}$$

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.[26]

[26] Notice that $g_{A,t}$ individuals practice favoritism but favors are only given when the expert is in B. The

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

$$\alpha - \beta L = \frac{\delta^*}{1-\delta^*} p(n-g)(L-\alpha) \tag{36}$$

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

$$\beta L + \frac{\delta}{1-\delta} \pi_A(F, F) \tag{37}$$

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:

$$\alpha + \frac{\delta}{1-\delta} \pi_A(M, M) \tag{38}$$

It may be checked that (37) < (38) for all $\delta \in [0, 1]$. So a principal in group $\mathcal{A}$ will deviate away from within group favoritism.

QED

Proof of Proposition 6: Let us refer to the favoritism and market lotteries as F and M, respectively.[27] Recall that F second order stochastically dominates M, if for all $x \in [0, 1]$

$$\int_0^x F(t)dt \leq \int_0^x M(t)dt. \tag{39}$$

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

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.

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

on $\alpha > \beta L$. Suppose, without loss of generality, that $\beta \geq 1/2$. Denote the cumulative distribution function of the lottery F by $F(x)$. It may be written as:

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

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 (39) is satisfied for $x \in [0, \beta L]$. For $x \in [\beta L, \alpha]$,

$$\int_0^x F(t)dt = \frac{1}{2}(\beta L - (1-\beta)L) + (x - \beta L) \tag{40}$$

while

$$\int_0^x M(t)dt = \frac{x}{2} \tag{41}$$

It can be checked that the inequality in (39) 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 $x \in [\alpha, 1]$,

$$\int_0^x F(t)dt = \frac{1}{2}(\beta L - (1-\beta)L) + (x - \beta L) \tag{42}$$

while

$$\int_0^x M(t)dt = \frac{\alpha}{2} + (x - \alpha). \tag{43}$$

It can be checked that $L \geq \alpha$ is a sufficient condition for (39) 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

Proof of Proposition 7 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 (23) 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 (23).

Finally, we show that incentives for favoritism increase with risk aversion. To see this, it is useful to rewrite the inequality (23) as follows:

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

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

$$\frac{\phi(\alpha) - \phi(\beta L)}{\phi(\beta L) + \phi((1-\beta)L) - \phi(\alpha) - \phi(0)} < \frac{U(\alpha) - U(\beta L)}{U(\beta L) + U((1-\beta)L) - U(\alpha) - U(0)} \tag{45}$$

Simplifying the inequality, we obtain:

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

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

$$\frac{f(x) - f(y)}{f(z) - f(m)} < \frac{x-y}{z-m} \tag{47}$$

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

Proof of Proposition 8: Note that $U_i = (1-G)\pi_i + GW_A$. Consider an history leading to an effective group of size $g_{A,t} \leq g_A$ with $d_{A,t} = g_A - g_{A,t}$. Examine a principal having to choose between hiring a non-expert within or the expert outside the group. If he hires within, he earns

$$\beta L + G(1-\beta)L + \frac{\delta}{1-\delta}U \tag{48}$$

where $U = (1-G)\pi + GW$ and π is the expected payoff to belong to an effective group of size $g_{A,t}$ while W is the overall group welfare. From computations in the proof of Proposition 3, we know that $\pi = p[n-1+g_B(L-\alpha)]$, and is independent of $g_{A,t}$, while $W = g_{A,t}p[n-1+g_B(L-\alpha)] + d_{A,t}p[n-1]$ since deviators earn market payoffs. This yields

$$W(d_{A,t}) = p[g_A(n-1+g_B(L-\alpha)) - d_{A,t}g_B(L-\alpha) \tag{49}$$

Next, suppose that the principal deviates and hires in the market. Suppose first that $g_{A,t} \geq 3$. The principal earns

$$\alpha + \frac{\delta}{1-\delta}[(1-G)p(n-1) + GW(d_{A,t}+1)] \tag{50}$$

Observe that $W(d_{A,t}) - W(d_{A,t}+1) = pg_B(L-\alpha)$, so the difference in continuation payoffs is equal to $(1-G)pg_B(L-\alpha) + Gpg_B(L-\alpha) = pg_B(L-\alpha)$. This shows that for any history such that $g_{A,t} \geq 3$, individuals have an incentive to practice favoritism as long as

$$\alpha - \beta L - G(1-\beta)L \leq \frac{\delta}{1-\delta}pg_B(L-\alpha) \tag{51}$$

When $g_{A,t} = 2$, the last remaining individual in the effective group also reverts to market behavior following a deviation. In this case, an individual does not want to deviate if

$$\alpha - \beta L - G(1-\beta)L \leq \frac{\delta}{1-\delta}(1+G)pg_B(L-\alpha)] \tag{52}$$

which is easier to satisfy than (51). This shows that condition (51) provides the relevant constraint.

QED

Investments in search of new opportunities: There are two interesting cases. One, when (31) is satisfied but (30) is not satisfied. In this case, the market group invests in new opportunities while the favoritism group does not. Overall, fg_B new opportunities are created. Individual payoffs in the market group are:

$$\Pi_B(M,F) + f\alpha + f(g_B - 1)\frac{1-\alpha}{n-1} - c. \tag{53}$$

while the per capita payoffs in the favoritism group are:

$$\Pi_A(F,M) + f g_B \frac{1-\alpha}{n-1} \tag{54}$$

Investment opportunities mitigate payoff differences across groups if and only if

$$f\alpha - c > f\frac{1-\alpha}{n-1} \tag{55}$$

where $0 < f\alpha - c < f(\alpha - \beta L)g_B/(n-1)$. Note that if we keep relative group sizes constant and increase overall size n, the likelihood that inequality (55) is satisfied for arbitrary parameter values tends to 1.

If, on the other hand, both inequalities are satisfied then the payoffs in the market group are:

$$\Pi_B = \Pi_B(M,F) + f\alpha + f(g_B - 1)\frac{1-\alpha}{n-1} - c \tag{56}$$

while the payoffs in the favoritism group are given by:

$$\Pi_A = \Pi_A(F,M) + f\left[\frac{g_A - 1}{n-1}\alpha + \frac{g_B}{n-1}\beta L\right] + f(n-1)\frac{1-\alpha}{n-1} + f\frac{g_B}{n-1}(1-\beta)L - c \tag{57}$$

The payoff difference is then proportional to the baseline payoff difference $\Pi_A(F,M) - \Pi_B(M,F)$:

$$\Pi_A - \Pi_B = \left(p + \frac{f}{n-1}\right)[n(L-\alpha) + g_A(1-L)] \tag{58}$$

When $L \geq \alpha$, the payoff advantage to favoritism is magnified by the new economic opportunities. This effect is stronger for larger group sizes g_A. Thus, investment opportunities may make favoritism even more beneficial.

QED

Productivity enhancing investments: Suppose everyone invests in $\mathcal{A}$ and no-one invests in $\mathcal{B}$. The payoffs in the market abiding group and the favoritism group are, respectively:

$$\Pi_B = (g_B - 1)p + \alpha(1+\rho)g_A p$$
$$\Pi_A = L(1+\rho)g_B p + (1+\rho)(g_A - 1)p + (1-\alpha)(1+\rho)g_B p - c$$

Then the return from investment in the two groups are, respectively:

$$\Delta\Pi_B(I) = \Pi^B(I) - \Pi^B(N) = (1-\alpha)\rho(g_B - 1)p \tag{59}$$
$$\Delta\Pi_A(I) = \Pi^A(I) - \Pi^A(N) = (1-\alpha)\rho(n-1)p + (1-\beta)L(1+\rho)g_B p - c \tag{60}$$

Note that if an individual does not invest in $\mathcal{A}$, he does not receive any favor as a Principal prefers to hire a more productive educated non-expert. Then, everyone investing in group $\mathcal{A}$ and no one investing in group $\mathcal{B}$ is an equilibrium iff:

$$(1-\alpha)\rho(g_B - 1)p \leq c \leq (1-\alpha)\rho(n-1)p + (1-\beta)L(1+\rho)g_B p \tag{61}$$

In equilibrium, the difference in payoffs $\Delta\Pi = \Pi_A - \Pi_B$ is equal to:

$$\Delta\Pi = [L(1+\rho) - 1]g_B p + (1-\alpha)(1+\rho)pn - p\rho - c \tag{62}$$

When c takes on maximal value, this difference is minimal and

$$\Delta\Pi_{\min} = p\left[g_B(\beta L(1+\rho) - \alpha) + g_A(1-\alpha)\right] - \alpha p\rho \tag{63}$$

Recall, the difference in payoffs in the baseline model is $\Delta\Pi_0 = p\left[g_B(L-\alpha) + g_A(1-\alpha)\right]$. Thus,

$$\Delta\Pi_{\min} - \Delta\Pi_0 = p g_B L[\beta(1+\rho) - 1] - \alpha p\rho$$

and the payoff advantage to the favoritism group is mitigated as soon as $\beta(1+\rho) < 1$. It can even become a payoff *disadvantage* $\Delta\Pi_{\min} < 0$ when $[1 - \beta L(1+\rho)]g_B \leq (1-\alpha)n$. Thus the possibility of investment can actually reverse the payoff inequality. This happens because investments are costly and the market group gets to share in the benefits of investment – when a market group principal hires a favoritism group expert – without incurring any costs!

By contrast, when c takes on minimal value,we get:

$$\Delta\Pi_{\max} = p\left[g_B(L(1+\rho)-\alpha) + g_A(1-\alpha)(1+\rho)\right] - \alpha p\rho. \tag{64}$$

hence

$$\Delta\Pi_{\max} - \Delta\Pi_0 = p\left[g_B L\rho + g_A(1-\alpha)\rho\right] - p\alpha\rho \tag{65}$$

When costs of investment are small, the positive effects of investment prevail: the payoff advantage from favoritism identified in the basic model is generally amplified by investment opportunities.

QED

8 References

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