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A SIMPLE MODEL OF NEPOTISM

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A Simple Model of Nepotism

Michela Ponzo and Vincenzo Scoppa*

This paper analyses theoretically favouritism in recruitment decisions. We study the investments in connections by applicants for jobs which pay a wage rent and the behaviour of public or private managers intending to favour the recruitment of connected agents in place of more competent candidates. Key elements in determining favouritism are the delegation of recruitment decisions and unverifiable information regarding the skills of job applicants. We show in an agency framework that if the manager is "corruptible", both low and high ability workers invest in connections and that nepotism is more widespread in jobs paying high wage-rents; in organisations in which "low-powered incentives" are used for managers; when firm performance is slightly sensitive to abilities; when it is easy to make hidden payments and the intensity of family ties is strong; when the uncertainty of connection process is low.

Keywords: Recruitment policies; Favouritism; Nepotism; Connections; Incentives.
JEL classification: M510; D730; J240; J710; J310

1. Introduction

The role of family and social ties ("social networks") in helping workers to find jobs has recently been investigated in some theoretical and empirical works (see, among others, Montgomery, 1991; Ioannides and Loury, 2004). In this paper, we deal with a potential drawback related to social networks: the favouritism shown by managers towards members of their families, friends or other socially connected people, in appointing them to valuable jobs because of their connections rather than their merits. These behaviour are typically defined as *nepotism* (when family members are involved) or *cronyism*.[1]

Nepotism and cronyism are widespread phenomena. Although, because of their very nature, it is difficult to document them, a growing number of works find that parents tend to facilitate the hiring of their children in the firm in which they work, even when family members exhibit lower observable quality. Other evidence shows that, in many contexts, managers and those responsible for recruitment decisions hire people with whom they are socially connected regardless of their ability. Moreover, abundant anecdotal evidence shows that nepotism is common in Italy, especially in the South and in the public sector.[2]

In this paper we aim to provide a theoretical explanation for this evidence and try to explain why favouritism in recruitment is more frequent for some occupations, sectors or in particular labour

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[1] The word *nepotism* originates from the behaviour of some Medieval Church officials and Popes who helped their family members, and their illegitimate sons, to rise to ecclesiastic office or even to become Pope. For a historical account of the phenomenon of nepotism see Bellow (2003).

[2] See, among others, Kramarz and Nordstrom Skans (2007), Perez-Gonzalez (2006), Laband and Lentz (1990), Scoppa (2009), Combes, Linnemer and Visser (2008), Perotti (2008).

markets. We refer to favouritism in recruitment as the practice followed by public officials or private firm managers – endowed with decisional power – which is intended to favour connected people in order to obtain pecuniary or non-pecuniary gains or for personal preferences, even when these connected people have lower abilities than other job applicants. Favouritism can therefore be brought about by the desire to benefit family members and friends because this yields utility to the manager (a form of altruism) or because of the exchange of money, favours or loyalty. Individuals may typically be connected by family ties, friendship, clanship, or because they belong to the same social or political networks.

We model favouritism as a form of moral hazard in an agency framework in which a manager obtains private benefits by hiring connected people of lower ability. Three ingredients are fundamental to our model: 1) the delegation of recruitment decisions to an agent-supervisor whose interests are not perfectly aligned with those of the principal; 2) the absence of verifiable measures of job applicants' abilities; 3) the existence of wage rents related to the job and difficulty in establishing performance related pay. There are few studies in the economic literature which deal with favouritism (see Prendergast and Topel, 1996; Bramoullé and Goyal, 2009) and, to our knowledge, none considers nepotism in an agency framework.

We show that both low and high ability agents have an interest in investing in connections and that nepotism is more widespread in jobs paying high wage rents; in organisations in which low-powered incentives are used for managers; in jobs with a low sensitivity of performance to abilities; where the making of hidden payments is easy and family ties are strong; where the uncertainty of the connection process is low.

The paper is organised in the following way. Section 2 briefly discusses the related theoretical and empirical literature. In Section 3, we present the structure of the model with two agents competing for establishing a connection and a manager who decides whether to favour the connected job applicant. Section 4 analyses the behaviour of both the agents and the manager and studies the related equilibrium. Section 5 concludes.

2. Related Literature

2.1. Theoretical Works

Prendergast and Topel (1996) is perhaps the first paper analysing favouritism in an organisation. In this model, a supervisor who has the task of evaluating subordinates' performances shows favouritism towards some of them because he receives utility if his preferred subordinates' wages are higher. This distorts performance evaluations and, therefore, the incentive system. The source of the problem is similar to ours – in that subjective evaluations of employees are distorted by managers' personal preferences – but we focus on employee recruitment rather than on performance evaluation.

Problems in the selection of new employees have been studied by Friebel and Raith (2004) and Carmichael (1988), although the causes of the problems they study are different from those considered in our model. In these papers, managers responsible for selection may choose to recruit low-quality candidates because they fear being replaced by more productive candidates while, in our model, low ability candidates are hired by managers in exchange for bribes or favours.

Levine, Weinschelbaum and Zurita (2007) have shown that the employer may hire, for a job paying a rent, his "brother-in-law" because this gives him utility and this may lead to a higher level of employment. Goldberg (1982) has coined the term "nepotism coefficient" to denote the increase in the employer's utility deriving from employing preferred workers (positive discrimination). The studies by Goldberg (1982) and Levine, Weinschelbaum and Zurita (2007) point out that favouritism benefits, in some form, the firm owner, while we analyse a form of favouritism that is detrimental to firm performance.

Bramoullé and Goyal (2009) have built a model in which favouritism is seen as an exchange of favours (contracts or jobs) between members of the same group. Agents practising favouritism benefit the members of their social group but, by hiring less competent individuals, they bear in the short-run the costs of a lower productivity. They explain the interest agents have in favouring connected people by supposing that the exchange of favours within the group can be repeated over time. However, their model cannot be used to explain favouritism in one-shot situations, such as those that we analyse, in which a manager hires an employee even though it is highly unlikely that that employee will be in the position to hire the manager in the future.

2.2. Empirical Evidence

There is growing empirical literature providing evidence of favouritism in labour markets, finding that connections may often lead to inefficient selections and weaker firm performance. Using a rich dataset of Swedish workers, Kramarz and Nordstrom Skans (2007) find that individuals frequently work in the same plant as their fathers and that, compared to their classmates, they tend to have lower school grades but higher initial wages and more stable jobs. In a controlled field experiment, Bandiera, Barankay and Rasul (2007) find that when managers face low powered incentives, they favour the workers they are socially connected to, regardless of their abilities. Kramarz and Thesmar (2006) show that social networks affect boardroom composition in France and that firms which exhibit greater network influence are less profitable. Scoppa (2009) shows that children of public sector employees in Italy have a much higher probability of being hired in the public sector and this advantage holds even when they attain lower grades in High School or in College. Laband and Lentz (1990, 1992) find that in jobs that tend to be transmitted from parents to children (for example, lawyers and doctors), offspring are favoured beyond their merits. Combes, Linnemer and Visser (2008) show that publications and merits are not so important as determinants of recruitment in French Universities, while network connections (links between candidates and jury members who make the recruitment

decisions) turn out to be fundamental. Checchi (1999), Perotti (2002), and Durante, Labartino, Perotti and Tabellini (2009) find similar evidence for the Italian University system.

Nepotism is often cited as an explanation for the intergenerational transmission of management within family firms. When the founder retires, control of the firm is often transmitted to his heir rather than to a hired professional manager (Burkart, Panunzi and Shleifer, 2003; Bertrand and Schoar, 2006). Although family transmission of control might have positive effects in terms of agency costs, the heir might have less talent than a professional manager. Bennedsen *et al.* (2007) and Perez-Gonzalez (2006) find evidence of a decline in the performance of firms which exhibit family succession.

3. A Simple Model of Favouritism in Recruitment

We present a model involving three risk-neutral players within an organisation: the manager *M* (female), delegated by a Principal of recruitment decisions, and two agents A_1 and A_2 (males), who apply for the job and compete to be selected. The assumption of risk-neutrality allows us to simplify the model. The Principal (the owners of the firm or the whole population in the case of public organisations) is the residual claimant of the output but, for the sake of simplicity, the principal's behaviour is left unmodelled.

The sequence of the game is as follows. The organisation has to decide which worker to hire. In the first stage, the two agents invest in order to find connections and influence the manager (seeking personal ties, keeping up contacts, doing favours etc.). Nature determines the type of the manager (whether she is corruptible or not). If the manager is corruptible, one agent will establish a connection with her (the probability of this depends on the agents' respective investments in connections). If a connection is established and a collusive deal is reached between the manager and the agent, the former will choose a level of effort to adopt in recommending the connected agent and helping his recruitment. Finally, the organisation hires one worker and all the players receive their payoffs.

Agents and wage rents. We suppose that the two agents seek to establish connections with the manager through investing time, effort and money. They are heterogeneous with respect to their skills: a_i indicates the level of ability of agent i, $i = 1,2$. We assume, without loss of generality, that $a_2 > a_1$, that is, agent A_1 has lower ability than agent A_2. Worker's productivity in performing the job is explicitly related to his ability according to the following simple linear function:

[1] $$Y_i = \pi a_i$$

where π is a positive parameter. The agents' outside option also depends upon their abilities:

[2] $$\underline{w}_i = \phi a_i$$

This is a standard assumption in adverse selection models (see, for example, Weiss, 1980; Greenwald, 1986). A possible justification is that workers could become self-employed and then their performance would depend directly on their ability.

In the job, a fixed wage *W* is paid since no verifiable measures of performance are available. We assume that worker productivity is higher than the wage, $Y_2 > Y_1 > W$, but that the wage *W* is greater than the outside wage $\underline{w}_i$ of both agents (both *W* and $\underline{w}$ are defined net of costs of effort). Therefore, the employee *i* obtains a wage rent in this job equal to $(W - \underline{w}_i)$: the wage rent is a decreasing function of worker ability.

In several jobs firms pay a wage rent, that is, a wage significantly greater than the market wage. The reasons leading to the payment of a wage rent have been extensively analyzed in the literature on efficiency wages, public sector labour markets and unions. Krueger and Summers (1988), among others, document how workers employed in some sectors gain a considerable wage rent, controlling for observable firm and worker characteristics. Moreover, unionised and large firms typically pay a wage premium ranging from 15-16% to 30% (Blanchflower and Bryson, 2003; Card, 1996). Gregory and Borland (1999) show that public wages in most OECD countries are higher than private wages. Controlling for relevant worker characteristics, it is found that public sector workers obtain wages which exceed those of private sector workers by 10% to 25% and that there are long queues for public sector jobs (Krueger, 1988).

Investment in connections. Both agents may invest an amount s_i in an attempt to establish connections with the manager. The investment in connections by an agent increases his probability of being connected with the manager but the relationship between investment and connection is not deterministic. We choose to model connections as not deterministicly related to influence activities to take into account the fact that random factors and chance often determine connections in the real world. Moreover, given the illicit nature of favouritism, it is realistic to assume that a job (and the associated wage rent) cannot be publicly auctioned to the highest bidder.

We follow the framework of rent-seeking contests (Tullock, 1980; Skaperdas, 1996) and, in order to model the probability for each agent of establishing a connection with the manager, we use the approach that Lazear and Rosen (1981) adopted to model tournaments among agents. This allows us to take into account the fact that the probability of obtaining a connection is the result of investment s_1 and s_2 made by the two agents and of an external shock *z*. To be precise, the probability p_1 that agent A_1 will establish the connection instead of agent 2 is:

[3] $$p_1 = \Pr[s_1 \geq s_2 + z]$$

z indicates a random variable: if $z > 0$, a positive shock occurs for agent 2, while if $z < 0$, a positive shock occurs for agent 1. We suppose that z is uniformly distributed along the interval

$[-m/2,+m/2]$, where *m* measures the degree of uncertainty related to the outcome of investments in connections. The probability that agent A_2 will establish the connection is obviously $p_2 = 1 - p_1$.

The cost of the activity of search and influence for each agent is an increasing and convex function, $c' > 0$, $c'' > 0$. For simplicity, and to obtain closed-form solutions, we assume the cost-of-effort function, $c(s_i) = \psi s_i^2/2$, where the parameter ψ determines the marginal cost of effort.

We suppose that it is possible that no connection will be established regardless of agents' investments (for example, the manager may be incorruptible). The probability that neither agent 1 nor agent 2 will find a connection with the manager is χ.

The manager's role. An asymmetric information problem plagues the agent's recruitment, since the Principal is not able to verify the abilities of the new hires (in the absence of objective measures of ability) while the manager is able to observe worker skills. The Principal delegates the manager to select the best candidate for the job. Since the manager is not the residual claimant of firm profits, the low-productivity agent might find a connection with the manager and bribe her in order to be selected for the job and obtain the rent $(W - \phi a_1)$ in place of a more qualified candidate. In this case, the manager and the agent collude at the expense of the principal.[3]

This problem can be classified as "moral hazard with hidden information" since the opportunism of the manager occurs *after* the stipulation of the contract with the Principal although there is no *hidden action* – as in standard models of moral hazard – but *hidden information* (the Principal observes the manager's choice but he is not able to judge its appropriateness).

On the basis of the outcome of the first stage, the manager may be connected with agent 1, agent 2, or neither of them. In the case in which a connection between the manager and the low-ability agent A_1 is established and a promise of a bribe is made to the manager by the agent, the manager provides effort in order to increase the probability of hiring the connected worker. It is natural to suppose that the manager will not be able to determine the agent's recruitment with certainty, but that her activity will increase the probability of his being hired. This because the Principal might, in some way, monitor the selection process. The manager has to take into account many elements when hiring a worker and the other job applicant might have much better qualifications. Therefore, the manager may only recommend the connected agent and try to influence the selection with her biased evaluation. We assume that the more the Principal has control over her decisions, the more costly it is for the manager to abuse her power.

To model this aspect, we use a framework similar to the influence costs approach of Milgrom and Roberts (1988): the manager provides effort e_i in order to increase the probability of hiring the

[3] The relationship between the agent and the manager might only be indirect, that is, through an external party (for example, a politician as in the case of clientelism). This party intermediates between the manager (influencing her recruitment activity and compensating her in some way) and the agent, so receiving electoral support or loyalty.

connected worker *i* and obtain the "bribe" (see also Prendergast, 1999). The probability of hiring the connected individual *i* coincides with the manager's effort e_i, while there is probability $(1-e_i)$ that the manager will select the best candidate.

The cost-of-effort function is given by: $c(e_i) = ce_i^2/2$. Cost *c* is determined, at least in part, by the principal's activity of monitoring the recruitment process. A similar framework is adopted in the model of Friebel and Raith (2004) to show that the manager's effort is increasing in the probability of hiring a weak candidate, in order to convince the Principal.

Assuming that the activity adopted to increase the probability of the connected agent's being selected is costly allows us to deal with the problem of favouritism in a continuous framework, rather than as a discrete-binary choice consisting of favouring or not favouring the agent. Nothing relevant would change if a binary choice were considered in a framework in which the manager bears a moral cost when she behaves opportunistically.

Bribes. When the hiring of a low-ability connected individual is realized, the latter makes a payment *T* (a bribe) to the manager as compensation for her help. We assume that the bribe is proportional to the wage rent: $T = \tau(W - \underline{w}_1)$, where τ is a parameter, $0 < \tau < 1$, which represents the bargaining power of the manager vis-à-vis the connected agent. Transfer *T* can be thought of as a monetary bribe paid by the agent or, more simply, as favours or non-monetary benefits which the manager expects to receive from the agent. For example, when a politician helps in the recruitment of a connected agent, then the latter is expected to provide electoral support for the politician. In his seminal analysis of collusive activities, Tirole (1992) considers that, in the case of non-monetary transfers, the cost *T* for the donor can be greater than the utility for the recipient. Moreover, the recipient can typically obtain a fraction of *T* since payments have to be hidden, and a fraction is lost in transfer. To take these aspects into account, we assume that the increase in the manager's utility deriving from a transfer *T* is equal to $kT = k\tau(W - \underline{w}_1)$, where $0 \le k \le 1$. Parameter *k* measures how costly hidden transfers are: if *k* is low, it is costly to make side-payments. Therefore, *k* may represent the possibility of enforcement of side-contracts.

Manager's wage. Following the extensive literature on agency contracts (see Prendergast, 1999), the manager receives performance related pay, $W_M = b\Pi$, where *b* is a parameter, $0 \le b < 1$, representing the "power" of incentives and Π are firm profits, which are simply equal to $\Pi = Y - W$. If *b* is high, manager pay depends greatly upon firm performance ("high-powered incentives"), whereas, if *b* is zero, the manager is paid a fixed wage (which we set as equal to zero without loss of generality). As agency theories show, *b* is determined by a variety of factors: the uncertainty and measurability of performance, parties' risk aversion, and so on.

A crucial assumption we adopt is that b cannot be equal to 1, that is, the manager cannot be the residual claimant. Plausible explanations might be that the manager is liquidity constrained or that there are limits to the liability that individuals are forced (or willing) to accept. Sappington (1991) discusses other reasons why agents cannot be residual claimants even when they are risk-neutral.

Note that in our framework *b* is also meant to take into account implicit incentives, rather than being considered simply as part of an explicit contract. It is reasonable to think that a manager's pay is related to the firm's performance through implicit contracts, career concerns and reputational considerations (see, for example, Holmstrom, 1999), which are not stated in explicit contracts. For example, firm performance affects manager's utility by influencing the probability that the principal will renew the manager's contract.

Our assumption of different pay systems for managers and workers is not unusual. As is shown in the literature (see, among others, Baker, Jensen and Murphy, 1988; Prendergast, 1999), it is common for firms to use performance related pay to reward top executives, but to pay fixed wages to lower rank employees.

Payoffs

Agent A_1's pay-off. The decision of agent A_1 to invest in connections and search for favouritism is based on the following utility function:

[4] $$U_1 = \chi \underline{w}_1 + (1-\chi)\{p_1[e_1(W-T)+(1-e_1)\underline{w}_1]+ p_2\underline{w}_1\} - \frac{\psi s_1^{\,2}}{2}$$

There is probability χ that no connection will be established and agent 1 will obtain the external wage $\underline{w}_1$ because the organisation will hire A_2 since the latter has higher productivity . The probability agent 1 or 2 are connected is $(1-\chi)$. p_1 is the probability that agent 1 is connected: in this case, the probability that he will be recruited, obtain W and pay bribe T is e_1, while the probability that he will not be hired and will obtain $\underline{w}_1$, notwithstanding the recommendation, is $(1-e_1)$. On the other hand, agent 1 will not be recruited (obtaining $\underline{w}_1$) if agent 2 has a connection with the manager (probability p_2). The costs of connections are given by $\psi s_1^{\,2}/2$.

Agent A_2's pay-off. The utility of agent A_2 is equal to:

[5] $$U_2 = \chi W + (1-\chi)p_1[(1-e_1)(W)+(e_1)\underline{w}_2]+(1-\chi)p_2 W - \frac{\psi s_2^{\,2}}{2}$$

Agent A_2 is hired (obtaining W) if no candidate is connected (probability χ), since he has higher abilities, or if agent A_2 himself is connected (probability $(1-\chi)p_2$). On the other hand, if agent A_1 is connected and favoured (probability p_1e_1), agent 2 obtains $\underline{w}_2$ while he is recruited if agent A_1 is connected but favouritism does not take place (probability $p_1(1-e_1)$).

Manager's pay-off. As explained above, three situations can emerge as the outcome of an agent's investment in connections:

1) the manager is not connected with either agent (probability χ). The manager receives no bribe and her utility – considering her performance-related pay $W_M = b\Pi$ – is equal to:

[6] $$U_M = b(Y_2 - W)$$

since she hires A_2 in the absence of connections.

2) the manager is connected with agent A_1 (probability $(1-\chi)p_1$). The manager's utility is equal to:

[7] $$U_M = e_1[kT + b(Y_1 - W)] + (1-e_1)[b(Y_2 - W)] - \frac{ce_1^2}{2}$$

By behaving opportunistically, the manager obtains (when the connected individual is hired) a bribe kT (probability e_1), but she will receive a lower wage due to the consequent poorer performance of the firm $(Y_1 < Y_2)$, while there is a probability of $(1-e_1)$ that the high-ability, non-connected, individual A_2 will be recruited instead of A_1 (and the manager will obtain no bribe). The manager has to sustain a cost of $c(e_1) = ce_1^2/2$ for her influence activity.

3) the manager is connected with agent A_2 (probability $(1-\chi)p_2$). The manager's utility is:

[8] $$U_M = e_2[b(Y_2 - W)] + (1-e_2)[b(Y_2 - W)] - \frac{ce_2^2}{2}$$

We assume that in this case agent A_2 pays no bribe.

4. Equilibrium and Comparative Statics

We analyse the game by backward induction. In the first stage the two agents invest to establish a connection with the manager, while in the second stage the manager decides who to hire and whether to favour the connected agent. Therefore, at first the manager's problem is solved and then, given the manager's choice, we determine the optimal decisions of candidates in finding connections.

Proposition 1. The manager's optimal decision of favouritism:

1) No effort in favouritism is provided: $e_1 = 0$, $e_2 = 0$ if no connection is established;
2) If the manager is connected with the low-ability agent A_1, the optimal level of favouritism toward agent A_1 is given by:

   [9] $$e_1 = \frac{k\tau(W - \phi a_1) - b\pi(a_2 - a_1)}{c}$$

3) If the manager is connected with the high-ability agent A_2, $e_1 = 0$, $e_2 = 0$.

Proof.

1) In the case no connection is established, the manager selects the best candidate A_2 with ability level a_2. The manager receives no bribe and her utility is given by eq. [6]. Since the manager obtains no bribe, it is straightforward to show that no effort is put into favouritism;
2) If the manager is connected with the low-ability agent A_1, by maximising the manager's utility [7] with respect to e_1, we obtain the first order condition:

[10] $$\frac{\partial U_M}{\partial e_1} = \left[k\tau\left(W - \underline{w}_1\right) + b\left(Y_1 - W\right)\right] - \left[b\left(Y_2 - W\right)\right] - ce_1 = 0$$

By substituting eq. [1] for Y_i and [2] for $\underline{w}_i$, the optimal level of favouritism toward agent A_1 is given by eq. [9].

3) If the manager is connected with the high-ability agent A_2, by maximising eq. [8] with respect to e_2 it is straightforward to show that $e_2 = 0$. Favouritism towards agent A_2 is superfluous. Given that he is the best candidate, agent A_2 is sure to win the competition given that agent A_1 will not be favoured by the manager, i.e. the manager selects the best candidate, with productivity a_2.[4]

□

Equation [9] shows that the effort provided by the manager to favour the connected agent is higher, the higher the wage rent $\left(W - \phi a_1\right)$ received by the low-ability agent A_1. This is because the wage rent determines the size of the bribe to be paid to the manager by A_1. It is interesting to note that no favouritism would emerge if the wage *W* paid in the organisation were equal to the employee's outside option; therefore, the existence of a wage rent for A_1 is a crucial condition for the existence of favouritism.

Secondly, favouritism turns out to be higher, the lower the intensity of incentives b. When manager's pay is weakly related to firm performance, the manager bears little loss from favouritism, whereas most of the costs deriving from employees with lower productivity are borne by the principal. If, instead, b is high, the manager is discouraged from favouritism because a marked reduction to her wage would be brought about by hiring low-productivity workers. This is nicely consistent with the findings in Bandiera, Barankay and Rasul (2007) which, in a firm-level experiment, showed that a change in managerial compensation from a fixed wage (corresponding to $b = 0$ in our setting) to a performance related pay ($b > 0$) led to the selection of a better workforce.

Manager favouritism is negatively related to the productivity coefficient π. When productivity π is high, differences in employees' abilities have a great impact on firm performance

[4] We would obtain analogous results if agent A_2 also paid a bribe to the manager (see below).

and, hence, on the manager's wage. Therefore, the manager finds it less convenient to indulge in favouritism because of high penalisation in terms of lower wages.

Finally, the level of favouritism will be higher, the higher the fraction of wage rent τ paid as a bribe to the manager, the lower the marginal cost of influence *c* to recommend an agent and the higher the possibility of hidden payments *k* (if no side-contract is enforceable, $k=0$, then no favouritism takes place).

Proposition 2. The optimal investment in connections by the low-ability agent A_1:

[11] $$s_1 = \frac{(1-\chi)(W-\phi a_1)(1-\tau)}{\psi m} e_1$$

Proof. Agent A_1's decision to invest in connections maximizes the utility function (equation [4]). Given that *z* is uniformly distributed across the interval $[-m/2,+m/2]$, for a generic *x*, $\Pr(z \le x) = \frac{1}{2} + \frac{x}{m}$. Using equation [3], the probability that agent A_1 will obtain a connection with the manager is:

[12] $$p_1 = \Pr(s_1 \ge s_2 + z) = \Pr(z \le s_1 - s_2) = \frac{1}{2} + \frac{s_1 - s_2}{m}$$

and, as a consequence, $p_2 = \frac{1}{2} + \frac{s_2 - s_1}{m}$. After some rearrangement, eq. [4] can be written as:

[13] $$U_1 = (1-\chi) p_1 e_1 [W - T - w_1] + w_1 - \frac{\psi s_1^{\,2}}{2}$$

Maximising U_1 with respect to s_1, using eq. [12], the first order condition is obtained:

$$\frac{\partial U_1}{\partial s_1} = \frac{(1-\chi)}{m} e_1 [W - w_1 - T] - \psi s_1 = 0$$

Considering that $T = \tau(W - \phi a_1)$, we obtain eq. [11].

□

The optimal investment in finding connections by low-ability agent A_1 (eq. [11]) shows that the investment in establishing connections is greater than zero, provided that the wage rent for A_1 and that the manager's effort in favouritism are positive. The investment in connections depends positively on the wage rent $(W - \phi a_1)$ that A_1 would receive in doing the job. Therefore, the attempt to gain access to jobs with high wage rents gives rise to greater investment in connections, *ceteris paribus*. The investment by the low ability agent also depends positively on the manager's effort e_1 in favouring A_1's recruitment. In fact, A_1 would have low incentives to seek help if the manager did not subsequently provide sufficient effort in her favouritism.

The investment in connections s_1 also depends negatively on τ, χ, ψ and *m*: s_1 is higher if the bribe τ is lower, since the fraction of the wage rent obtained by A_1 is higher ; ψ defines the cost of seeking connections and well-connected agents may be represented as characterised by a low ψ and, hence, being more likely to establish connections; the higher the probability χ that the manager is incorruptible, the lower the incentives of A_1 to seek connections; finally, the higher the weight of external shocks in determining connections, the lower the level of s_1.

Proposition 3. The optimal investment in connections by the high-ability agent A_2:

[14] $$s_2 = \frac{(1-\chi)(W-\phi a_2)}{\psi m} e_1$$

Proof. After some rearrangements equation [5] can be written as:

[15] $$U_2 = (1-\chi) p_1(e_1)[-W + w_2] + W - \frac{\psi s_2^{\,2}}{2}$$

Substituting eq. [12] into U_2 and by maximising with respect to s_2 we obtain:

$$\frac{\partial U_2}{\partial s_2} = \left(\frac{1}{m}\right)(1-\chi)(e_1)[W - w_2] - \psi s_2 = 0$$

from which eq. [14] is obtained.[5]

□

The high ability agent's optimal level of investment in establishing connections (given by eq. [14]) shows that, if A_2's wage rent is positive, s_2 is greater than zero, even though A_2 has a higher level of ability (and he does not need any help in order to be hired): A_2 seeks connections just to prevent favouritism towards agent A_1 from the manager.

A_2 invests more in connections if the wage rent $(W - \phi a_2)$ he would obtain on the job is higher, since $(W - \phi a_2)$ represents the expected opportunity cost if the manager favours agent A_1. Secondly, s_2 will be higher, the greater the need to prevent collusion between the manager and A_1, i.e., the higher the expected level of favouritism e_1 towards low-ability agent, while A_2 would have nothing to lose if there were no managerial favouritism towards agent A_1.

[5] We have supposed that agent A_2 does not pay any bribe if connected. Results would be very similar if agent 2 also paid a bribe. In this case it is easy to show that the optimal investment in connections would be: $s_2 = (1-\chi)[e_1(W - \phi a_2) - T]/\psi m$.

Comparing s_1 and s_2, we show that the low-ability agent invests more in connections ($s_1 > s_2$) under the condition:

[16] $$(W - \phi a_1)(1-\tau) > (W - \phi a_2)$$

For small values of τ, the low-ability agent A_1 tends to invest more since the wage rent he obtains is greater. However, agent A_1 has to pay a bribe and the higher the bribe τ is, the lower the incentive to establish connections. If τ is very high, there even exists the possibility that the high-ability agent A_2 will invest more in connections (to avoid agent 1's being favoured) because he has more to lose.

Equation [16] can be rewritten as: $a_2 > \frac{\tau W}{\phi} + (1-\tau)a_1$, which can be shown as a line on a graph with a_1 on the horizontal axis and a_2 on the vertical axis. The points above the line are combinations of a_2 and a_1 leading to $s_1 > s_2$, while the combinations leading to $s_2 > s_1$ lie below the line (while the grey area in which $a_2 < a_1$ is not admissible under our assumptions): s_2 tend to be higher than s_1 when ability levels are relatively similar and low.

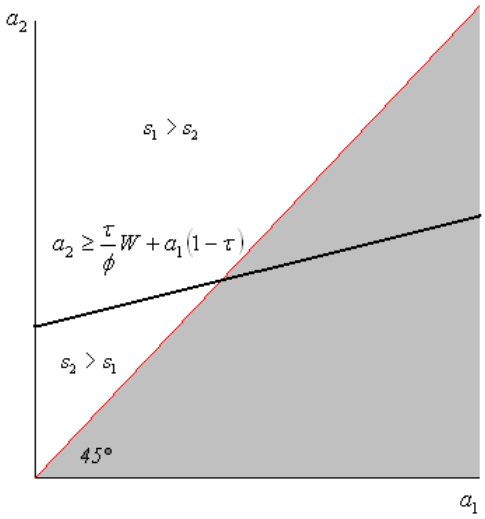

Figure 1. Investments in connections by agents A_1 and A_2

Proposition 4. The probability of nepotism in equilibrium:

[17] $$n = (1-\chi)\left\{\frac{1}{2} + \frac{(1-\chi)}{\psi m^2}\left[(W - \phi a_1)(1-\tau) - (W - \phi a_2)\right]\left[\frac{k\tau(W - \phi a_1) - b\pi(a_2 - a_1)}{c}\right]\right\}\left[\frac{k\tau(W - \phi a_1) - b\pi(a_2 - a_1)}{c}\right]$$

Proof. Favouritism takes place when a connection between the low-ability agent and the manager is established (with probability $(1-\chi)p_1$) and when the influence of the manager allows this agent to be

hired (probability e_1). Therefore, in equilibrium, a nepotistic hiring occurs with probability $n=(1-\chi)p_1e_1$.

Using eq. [11], [12] and [14], probability p_1 is equal to:

[18] $$p_1=\frac{1}{2}+\frac{1}{m}(s_1-s_2)=\frac{1}{2}+\frac{(1-\chi)}{\psi m^2}e_1[(W-\phi a_1)(1-\tau)-(W-\phi a_2)]$$

Substituting the equations [9] and [18] into *n* , we obtain [17].

□

Since the equilibrium level of nepotism is equal to $n=(1-\chi)p_1e_1$, the above considered factors affecting e_1 and p_1 will affect n. A simple graphical analysis is useful in the analysis of nepotism. In Figure 2, we represent the manager's reaction function, e_1, on the horizontal axis and the probability of A_1's establishing connections , $(1-\chi)p_1$, on the vertical axis.

From equation [9], it is possible to note that manager effort does not depend on s_i. In fact, the manager provides effort only after being connected with the agent. This implies that the manager's reaction function is a vertical line in Figure 2. As shown above, manager favouritism increases – i.e. the vertical line moves rightwards – if $(W-\phi a_1)$, τ , *k* increase, or if *b*, π , *c* decrease.

As regards the function $(1-\chi)p_1$ in [18], it turns out to be increasing in e_1 given the condition that the (net) rent to agent 1 is greater than that for agent 2. Moreover, the reaction curve rotates upwards if $(W-\phi a_1)$ increases or if $(W-\phi a_2)$, χ , τ , ψ , *m* decrease.

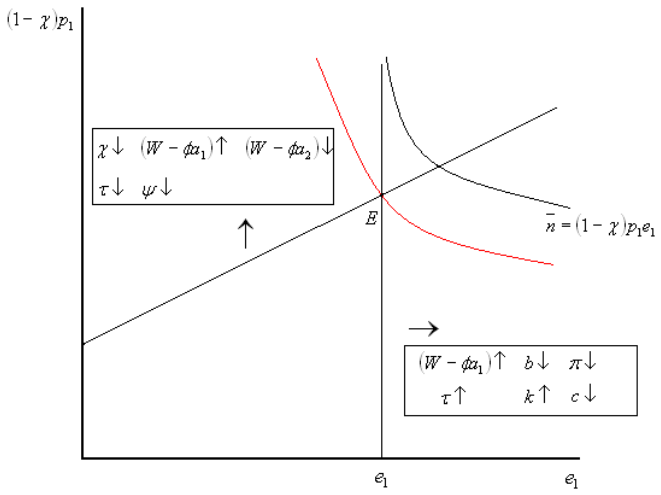

Figure 2. Optimal choice of *favouritism and connections* and nepotistic recruitment

The intersection of $(1-\chi)p_1$ and e_1 in point *E* gives the equilibrium values of e_1 and p_1. In order to understand how nepotism changes when the reaction curves move, it is useful to draw some

"iso-nepotism" curves, based on the equation: $\bar{n} = (1-\chi)p_1 e_1$. In Figure 2, these curves are decreasing hyperbolae: if e_1 increases, p_1 must decrease to keep nepotism constant. Moreover, curves located upwards and rightwards represent higher levels of nepotism. Any variation in factors determining e_1 or p_1 induces a move in the reaction functions and determines a different level of nepotism, represented by a shift on a different "iso-nepotism curve".

Our analysis shows that the emergence of nepotism depends positively on the wage rent $(W - \phi a_1)$ both because manager favouritism increases (e_1 moves rightwards) and the low-ability agent invests more in connections ($(1-\chi)p_1$ moves upwards). On the other hand, if the intensity of incentives (*b*) increases, e_1 moves leftwards and the intersection with $(1-\chi)p_1$ takes place on a lower "iso-nepotism" curve: nepotism is lower in organisations in which manager wage is more reactive to performance. Nepotism also turns out to be lower when the sensitivity of production to abilities (π) is higher and the possibility of hidden payments is easier (*k* high).

Moreover, nepotism turns out to be higher when the connections between A_1 and the manager are more frequent, i.e. when the costs of establishing connections ψ are lower, the wage rent for A_2 is lower, and the probability of an incorruptible manager is lower.

The effect of τ on nepotism is ambiguous since, on the one hand, the amount of the bribe increases the manager's effort in favouritism but, on the other hand, it depresses the investment in connections by the low-ability agent.

The model helps to understand how some institutional and macroeconomic variables might affect the diffusion of nepotism. First of all, whereas favouritism may, in principle, affect both the public and private sectors, it seems more relevant in the public sector (see Alesina, Danninger and Rostagno, 2001; Scoppa, 2009). Our model shows that the cause of the diffusion of nepotism in public sector might be the wide prevalence of low-powered incentives in public managers' compensation, i.e. the fact that *b* is near to zero. For a number of reasons, such as the prevalence of multitasking jobs or the difficulty in measuring performance (see, for example, Dixit, 2002), public managers' pay rarely depends on the performance of their organisation. As a consequence, opportunistic public managers sustain relatively low costs in recruiting low-productivity workers. A particularly good example is, perhaps, recruitment in the Italian university system (see Perotti, 2008; Durante, Labartino, Perotti and Tabellini, 2009) given that professors' remuneration is hardly related to the organisation's performance and that evaluators are not responsible for their choices in recruitment. Therefore, there is room for opportunistic behaviour and less talented agents invest in connections to be selected. Of course, in this context "bribes" are often non pecuniary transfers (provision of effort, loyalty, and so on).

An economy's higher level of development might reduce favouritism, if the wage rent is slightly reactive to increases in productivity. When the economy grows (π increases), high ability workers become more valuable. For managers whose pay is related, at least partially, to performance

$(b>0)$, it becomes simply more costly to forego good workers. The manager's effort in favouritism diminishes as technological efficiency increases. Therefore, nepotism tends to diminish when the economy grows, or, in other words, more developed economies tend to exhibit less nepotism.

Finally, strong family ties give rise to attempts to secure the hiring of family members and make the enforcement of side-contracts $(k=1)$ easier. Southern-European countries are typically characterised by strong family ties and by lower levels of social capital (see for example Bentolila and Ichino, 2008; Alesina and Giuliano, 2007). These factors might explain why nepotism appears more widespread in the South of Italy – where the level of productivity is lower, public employment higher and family ties stronger – with respect to the rest of Italy.

An interesting special case: no wage rent for the high ability agent

Given the complexity of equation [17], it is not easy to delineate a relationship between ability levels a_1 and a_2 and nepotism. An interesting case that gives unambiguous results arises when the firm wage W is equal to the reservation wage of the high ability agent, $W=\phi a_2$, so that no wage rent is paid for A_2 while a wage rent is only paid for A_1.

In this case, A_2 does not invest in connections: $s_2=0$ (see eq. [14]). The manager's favouritism (eq. [9]) becomes equal to: $e_1=\dfrac{(k\tau\phi-b\pi)(a_2-a_1)}{c}$. Note that favouritism exists only under the condition $k\tau\phi>b\pi$: the left hand side represents the increase in the bribe received by the manager when favouring an agent with a lower ability level (the agent's willingness to pay the bribe increases as his external wage decreases), while the right hand side is the wage loss that the manager bears by hiring an agent with lower ability.

The probability of nepotistic recruitment can now be written as:

$$n=\frac{(1-\chi)(k\tau\phi-b\pi)(a_2-a_1)}{2c}+\frac{(1-\chi)^2(a_2-a_1)^3\phi(1-\tau)}{\psi m^2}\left[\frac{k\tau\phi-b\pi}{c}\right]^2$$

By deriving *n* with respect to (a_2-a_1) we can easily show how nepotism reacts to the ability gap (a_2-a_1):

$$\frac{\partial n}{\partial(a_2-a_1)}=\frac{(1-\chi)(k\tau\phi-b\pi)}{2c}+2\frac{(1-\chi)^2\phi(1-\tau)}{\psi m^2}\left[\frac{k\tau\phi-b\pi}{c}\right]^2(a_2-a_1)^2$$

Under the condition $k\tau\phi>b\pi$, this expression shows that nepotism *n* is an increasing function of (a_2-a_1) (see the red curve in Figure 3). As the ability difference between high and low ability agents widens, nepotism increases because the low ability agent invests more in connections and the manager is more prone to favouritism (the wage rent is higher and so, therefore, is her bribe).

On the other hand, if $k\tau\phi \leq b\pi$ no manager favouritism and no nepotism emerge in equilibrium regardless of the ability gap between the workers $(a_2 - a_1)$ (see Figure 3, the blue horizontal line).

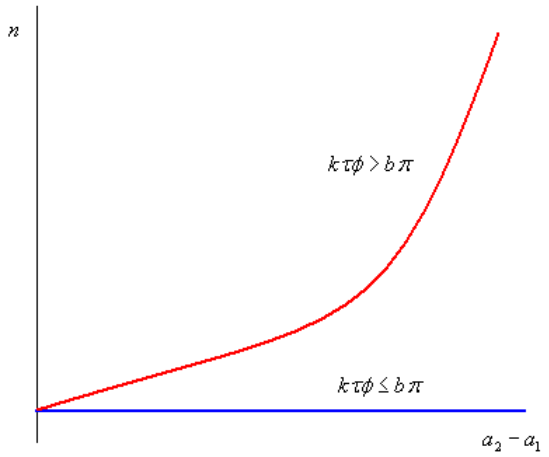

Figure 3. Nepotistic recruitment in relationship to agents' abilities

5. Concluding remarks

Favouritism in recruitment is a widespread phenomenon, which imposes substantial costs on private and public organisations. Whereas a number of empirical works have begun to document the diffusion of favouritism and its consequences, it has almost been neglected in theoretical works. In this paper, we have proposed a simple model to analyse the determinants of favouritism and the behaviour of involved parties, in order to shed some light on why nepotism is more frequent in particular occupations and labour markets.

We have examined favouritism in an agency framework, defining it as the opportunism of public or private managers in charge of recruitment decisions who favour connected agents in exchange for favours or bribes. By recruiting low quality workers, they impose a cost on the principal and on other, more competent, job applicants.

This form of opportunism is feasible when workers' skills are not verifiable and the manager's evaluation of workers' skills is subjective. Our analysis has shown that both low and high ability agents have an interest in investing in establishing connections and that favouritism is prevalent in jobs paying high wage rents, in organisations in which managers face low-powered incentives, when productivity is less reactive to abilities, when it is easier to make hidden payments and family ties are stronger.

Beyond the direct costs of nepotism on organizational performance, one has to take into account the costs agents face in finding and establishing connections. Other costs might be borne in the long-run. In a labour market in which nepotism prevails, individuals are discouraged from investing in skills, since these are not adequately rewarded and talented people are led towards less-efficient job

matching. Finally, apart from efficiency considerations, nepotism violates the widely shared belief in fairness and equality of opportunities since people have access to different opportunities on the basis of their characteristics.

The analysis points out that subjective evaluations may cause problems not only in incentive systems (Prendergast and Topel, 1996), but also in recruitment decisions. In order to avoid favouritism, firms may be induced to use bureaucratic rules in recruitment decisions, such as requiring job applicants to have specific educational qualifications or a minimum number of years of experience, or imposing other formal requirements in the process of selection.

Furthermore, the model shows that the positive relationship between wages and worker productivity – emphasised in the selection model of the efficiency wages literature – could be undermined if higher wages not only attract higher ability candidates, but also encourage investments in connections and nepotistic recruitment.

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