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# ***The Use of Informal Networks in Italy: Efficiency or Favoritism?***

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*A large body of literature considers the advantages of using informal networks to match workers to jobs. However, family ties may interfere with a genuine process of worker selection, favoring people with connections over more talented workers. We offer a simple model of favoritism to explain these risks and show firms' trade-off in using informal channels. We then investigate empirically the determinants and consequences of using informal networks in Italy by using the Bank of Italy Survey. We find that informal networks tend to be used by low educated individuals, in small firms, in low productivity jobs and in less developed regions. Finally, we show that informal networks have a negative impact on wages, controlling for individual and firm characteristics.*

*Keywords: Informal Networks, Favoritism; Nepotism; Earnings functions.*

*JEL classification: M510; D730; J240; J710; J310*

## **1. Introduction**

A large and growing evidence shows that workers often find jobs thanks to the help of relatives, friends and professional acquaintances (the so-called *social or informal networks*) and that firms extensively use referrals from their employees to fill job vacancies. Ioannides and Loury (2004) report that informal networks are extensively used in the labor markets of a large number of countries. Pellizzari (2004) documents that the use of informal networks is widespread in European countries and Bewley (1999) summarizes the results of 24 works concluding that the proportion of jobs found through relatives and friends ranges from 30 to 60% (see also Rees and Shultz, 1970; Holzer, 1988; Granovetter, 1995; Corcoran *et al.*, 1980).

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A number of theoretical explanations have been offered to interpret the widespread use of informal networks which predominantly emphasize the positive role played by these channels in terms of high quality job matches, better selection of workers, and low search and recruitment costs. One of the main explanations is that workers tend to be socially related to other individuals of comparable abilities and, as a consequence, firms find it convenient to follow referrals from their own high ability employees (Montgomery, 1991). Other mechanisms explaining the wide use of informal networks which are considered in the literature are: the savings in search, advertising and screening costs, the importance for incumbent employees of maintaining a good reputation and considerations regarding possible consequences for their future careers, employee interest in having high ability co-workers if there is team production in the firm, and peer-pressure which lowers monitoring costs (Rees, 1966; Saloner, 1985; Kugler, 2003; Pellizzari, 2004).

However, in principle, family ties and social relationships might interfere with a genuine process of selection, favoring employees' family members and people with connections over more competent workers for access to good jobs. Since people care for their relatives and receive utility if they find employment, individuals may try to favor the recruitment of their family members even if they are not the best workers on the market. Moreover, individuals belonging to "old boy networks" may be preferred for reasons unrelated to productivity, such as loyalty, exchange of favors, and altruism.

Favoritism practiced by employees in helping relatives or friends to acquire a job above and beyond their merits, increasing their own utility at the expense of their employers who hire low-productivity workers, can be viewed as a form of opportunism in agency relationships (see Prendergast and Topel, 1996, for a seminal model of favoritism in organizations). Moreover, Goldberg (1982) has explained the preference of employers in hiring some particular categories of people, so-called "positive discrimination". He coined the term "nepotism coefficient" to denote an increase in employer utility deriving from the employment of preferred workers.

Therefore, as argued by Ioannides and Loury (2004), the effects of informal networks on the quality of matches are complex and multi-faceted and, importantly, these effects may differ according to the type of referrals, work environment, institutional characteristics, and so on.

Probably because positive and negative factors are jointly at work, empirical works have produced mixed results. An important distinction has emerged in the empirical literature between the effects of "professional contacts" (referrals from current employees) and "family contacts" (see Bentolila, Michelacci and Suarez, 2004) on the quality of the matches (typically measured by the wages perceived by workers). In most of the papers in which informal networks are based on professional contacts the effect is positive (see Granovetter, 1974; 1995; Simon and Warner, 1992; Kugler, 2003) while, on the other hand, a negative effect is typically found when family or friends have provided help to find the job (Pistaferrri, 1999; Addison and Portugal, 2002; Pellizzari, 2004; Bentolila, Michelacci and Suarez, 2004; Sylos-Labini, 2004).

It is plausible to think that when individuals are interested in the well-being of their family members, they may favor their employment on non-meritocratic criteria. This problem is less important in professional contacts. This is reminiscent of the distinction between Granovetter's (1995) "weak ties" and "strong ties", with the former being considered more informative than the latter.

In this paper, we offer firstly a stripped-down theoretical model to show the risks of favoritism in recruitment when family ties are involved and to examine the trade-off faced by firms in using informal networks.

Subsequently, in order to contribute to the solution of the theoretical puzzle regarding the effects of informal networks, we analyze empirically both the determinants and the effects of the use of informal networks in Italian labor markets, using the *Survey of Household Income and Wealth* (SHIW) conducted by the Bank of Italy in 2004 which contains information on the methods adopted by workers for access to the labor market, as well as a wide variety of information on individual socio-demographic and economic characteristics.

Our aim is to provide evidence regarding the working of informal networks in a system which exhibits certain specific economic and institutional characteristics, such as the strength of family ties, high levels of unemployment, highly centralized wage bargaining systems (in which wages depend little on individual productivity) and so on. We focus on private employees (excluding the self-employed), since, for this category, an agency relationship is at work that may potentially generate the risks of favoritism. We also exclude public sector employees because, in Italy, access to these jobs may only formally take place through a "public competition".

In the econometric analysis we first try to explain the factors determining the probability of using informal networks by estimating a probit model. Our estimates show that informal networks are used more frequently by low educated individuals, in small and low productivity firms, in less developed regions and in high unemployment labor markets. The finding that informal networks are predominantly used to fill low-skilled positions is in contrast with the "efficiency explanations" mainly based on US evidence (see, for example, Kugler, 2003).

These factors are consistent with the idea that firms face a trade-off in using informal networks: they must balance the advantages of social contacts against the costs of favoritism (i.e. the recruitment of connected but less productive workers). The evidence suggests that firms strategically limit the use of informal networks to particular segments of their labor force. If employers are aware that listening to referrals from family members may lead to the recruitment of less productive employees, then they do not use these methods to hire an engineer or a manager, but reserve them for the hiring of a secretary or a janitor. In these cases, even though connected workers may be less talented than other potential workers, this fact does not produce relevant costs in terms of losses of production, while it allows savings in the costs of a formal process of job advertising, search, and recruitment.

Furthermore, the fact that informal networks are used more intensely in high unemployment regions, where a job has a much higher value, and in areas with strong family ties and low social capital represents indirect evidence that they tend to be used to favor the employment of family members rather than to find the best possible applicants.

Secondly, we study the impact of informal networks on the quality of the job matches, using the wage perceived by workers as a proxy of the quality. We estimate some standard earnings functions by controlling for a wide range of individual and firm characteristics. We find that, *ceteris paribus*, workers hired through informal networks receive a negative wage premium. Our interpretation of these findings is that informal networks do not always lead to efficient job matches. A proportion of workers hired through informal networks seem to be characterized by lower productivity, probably because they are hired for “altruistic” reasons. These negative aspects related to social networks contrast with other possible advantages associated with informal networks.

Our findings are consistent with a burgeoning literature that shows that, in many circumstances, family ties and social connections lead to the hiring of less talented individuals and, therefore, to poorer firm performance (see, among others, Perez-Gonzalez, 2006; Bandiera *et al.* 2009, Kramarz and Skans, 2007).

The paper is organized as follows. In section 2 we present a brief review of the literature on informal networks. Section 3 presents a theoretical model of favoritism to motivate our empirical analysis. In section 4 we describe the structure of the dataset. Section 5 contains the econometric analysis of the use of informal networks. Section 6 analyzes the impact of informal networks on wages. Concluding remarks follow.

## ***2. A Brief Review of the Literature***

An expanding literature has examined, both empirically and theoretically, the methods used by workers and firms in the job matching process. The main aspect that emerges from these works is the predominant role played by social networks (networks of relatives, friends, and professional acquaintances) in facilitating the search for jobs and the matching between firms and workers.

According to the studies carried out by Myers and Shultz (1951), Rees and Shultz (1970), Granovetter (1995), Corcoran *et al.* (1980), Calvò-Armengol (2006) and Bewley (1999) (among others) in the United States, it emerges that approximately 50% of workers currently employed found employment through networks of relatives and friends. In addition, a study by Holzer (1988) shows that a job search conducted jointly with friends and relatives is the most efficient search method among the young Americans, since it increases the number of job offers and reduces the duration of unemployment.

From a study recently conducted by Pellizzari (2004), using data from the European Community Household Panel (ECHP) for the period 1994-1999, it emerges that informal contacts are widely used by both firms and workers in most European countries. The estimated probability of finding a job through the use of personal contacts is very high in countries like Spain (45%), Portugal (38.5%), Greece (41%), Italy (37.9%), France (34.4%) and Germany (32.2%). On the other hand, this percentage is relatively low in the UK (23%) and in Scandinavian countries. In Finland and in Denmark, for example, only 13.3% and 17.7% of workers, respectively, adopted this method as a channel of entry into the labor market.

From a theoretical point of view, a variety of explanations of the use of social networks have been offered, mainly highlighting the positive aspects of informal networks in improving the quality of job matching.

First of all, firms that need to fill a position have to bear search and advertising costs to contact a pool of prospective employees and need to screen them to select the workers with the best characteristics. Alternatively, firms may save search and screening costs if they follow the suggestions of their employees and hire their relatives or their acquaintances (see Pellizzari, 2004; Pistaferri, 1999).

An important strand of literature is based on the assumption of imperfect information in the labor market: the firm typically does not know the characteristics and productivity of workers and the latter do not have adequate knowledge of the job (for example, a worker does not know if the job offered is in line with his expectations in terms of tasks performed, career prospects, etc.). In this context, the informal networks, providing information both to employers about unobservable characteristics of potential employees, and about the quality of the job to these potential employees, allow job matching with higher productivity and lower turnover (Simon and Warner, 1992) and, at the same time, enable firms to reduce the costs of searching and publicizing the job vacancy. Simon and Warner show that the use of informal methods of job searching through the “old boy network” (referrals) is related to higher wages at the beginning, but leads to lower wage growth afterwards (because the referral quality is already revealed at the beginning but the quality of non referral is learned from time to time). However they admit to not being able to discriminate between the hypothesis of good matching and that of favoritism.

The informal channels typically taken into consideration by firms consist of signalling provided by other workers already operating in the firm. According to Montgomery (1991), workers are typically linked to other potential workers of comparable skills, so firms find it convenient to accept referrals from their highly productive workers because this gives them a high probability of recruiting workers with comparable ability.

On the other hand, workers have an interest in only signalling people with a high level of skills so as to maintain a good reputation with the employer and to avoid a negative impact on future career perspectives within the firm (Rees, 1966; Saloner, 1985). In addition, current workers

have an incentive to promote the integration of new highly productive workers into the firm if worker remuneration is, at least partially, related to firm performance or to that of the team of workers (“team production”).

Other analyses attempt to give an explanation for the presence of the practice of signalling in terms of efficiency wages. Firms use this practice to select and monitor new recruits, because they may reduce monitoring costs through “peer pressure” (Kugler, 2003). In fact, peer pressure is particularly effective if workers interacting in the workplace are also linked by other social relations (Spagnolo, 1999; De Paola and Scoppa, 2001; 2003).

According to these theories, since informal channels allow the formation of better matches in the labor market, their use should be associated with higher productivity, higher wages and lower turnover. Granovetter (1995), Corcoran *et al.* (1980), Kugler (2003), Simon and Warner (1992) find a positive effect of the use of informal networks on wages and turnover.

However, notwithstanding the advantages deriving from the use of informal networks, a negative effect of these networks is often found when family or friends have provided help to find the job (Pistaferrri, 1999; Addison and Portugal, 2002; Pellizzari, 2004; Bentolila, Michelacci and Suarez, 2004; Sylos-Labini, 2004).

A recent approach in literature is investigating the relationship between family ties, recruitment and firm performance, finding that connections may often lead to inefficient selections. Kramarz and Nordstrom Skans (2007), using an exceptionally rich dataset of Swedish workers, find that individuals frequently work in the same plant as their fathers (particularly true for relatively low-educated males). Children employed by the firm for which their father works tend to have lower grades than their classmates who are not hired in the same workplace as their fathers, yet typically, they have higher initial wages, and more stable jobs than the latter. Bandiera *et al.* (2009) find, in a controlled field experiment, that when managers face low powered incentives, they favor the workers they are socially connected to, regardless of the workers’ ability. This highlights how this mechanism is detrimental to the firm’s overall performance. Kramarz and Thesmar (2006) analyze the effects of social networks within boardrooms in France. They show that social networks affect board composition and that firms which exhibit greater network influence are less profitable.

Scoppa (2009), controlling for a large number of individual characteristics, shows that children of public sector employees in Italy have a much higher probability of being hired in the public sector. This advantage regarding access to public employment for children of public employees holds even when they attain lower grades in High School or College. In a series of papers, Laband and Lentz (1983, 1990, 1992) tried to directly verify whether, in jobs that tend to be transmitted from parents to children, this transmission is due to nepotism or can instead be ascribed to human capital or physical capital transfer. They find that in some professions (for

example, for lawyers and doctors, see Laband and Lentz, 1990 and 1992), offspring have an unfair advantage and are favored beyond their merits.<sup>1</sup>

The selection of managers in family firms has received plenty of attention. When the founder retires, firm control is often transmitted to his heir rather than hiring a professional manager (Burkart, Panunzi and Shleifer, 2003; Bertrand and Schoar, 2006). This often reflects the preferences of the founder who is willing to sacrifice a firm's profitable performance in exchange for personal satisfaction deriving from his child's running of the company. In practice, the heir to the family firm might be less talented than a professional manager meaning that optimizing firm performance is not considered essential. Although transmission of control within the family may have positive effects in terms of agency costs, a host of evidence finds that family firms exhibit poorer performance. Perez-Gonzalez (2006) and Bennedsen, Nielsen, Perez-Gonzalez and Wolfenzon (2007) find evidence of a large decline in firm performance following the CEO appointment of a founder's family member.

### **3. Informal Networks and Favoritism in Recruitment**

In this Section we offer a simplified version of the favoritism model presented in Ponzio and Scoppa (2009) in order to illustrate the possible risks of using informal networks when individuals are interested in their family members' utility and there is room for opportunistic behavior. The formalization proposed – which introduces favoritism in the analysis of informal networks – helps explain why, in some contexts, informal networks can produce negative effects on the quality of the worker-firm matches.

Whereas it is difficult to reconcile nepotism carried out by employers with their profit maximizing behavior (see Goldberg, 1982), it is simpler to explain favoritism in recruitment by making recourse to an agency relationship within an organization where the decision-maker (in charge of recruitment decisions) is an agent of a principal (the shareholders, for example) and will not be significantly penalized by favoring friends or relatives even when they are low-productivity candidates (while he may obtain personal benefits).

We consider a firm or an organization in which a wage  $W$  is paid to lower-level employees while their alternative wage (outside option) is  $\underline{w}$ . We suppose that the wage  $W$  is higher than the alternative wage and, therefore, a rent equal to  $(W - \underline{w})$  is paid to workers.<sup>2</sup>

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<sup>1</sup> On the contrary, Grootuis and Grootuis (2008) do not find nepotism in NASCAR cup drivers, since performance of family connected individuals are not lower than other drivers.

<sup>2</sup> Wage rents might be justified by a variety of reasons: efficiency wages, union and public sector wage premium. Krueger and Summers (1988), among others, by controlling for observable firm and worker characteristics, document that workers employed in some sectors gain a considerable wage rent. Unionized 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 for most OECD countries public wages are higher than private wages. Controlling for relevant worker characteristics, it emerges that public sector workers



Following a standard result in agency theories (see Prendergast, 1999; Lazear, 1995) and in the literature documenting “wage compression” (see Acemoglu and Pischke, 1999), wages and productivity are related but they do not coincide. More specifically, we assume the following simple linear relationship:

$$[1] \quad W = W_a + \beta(Y - W_a) \quad \text{or} \quad W = (1 - \beta)W_a + \beta Y$$

where  $Y$  represents the worker’s productivity,  $W_a$  is a base-wage and  $\beta$  is a coefficient,  $0 \leq \beta \leq 1$ , representing the reactivity of the wage to productivity. The divergence between productivity and wage might arise for many reasons, such as imperfectly competitive labor markets, adverse selection or moral hazard problems, worker mobility costs, search and matching frictions, union preferences, etc. (see Acemoglu and Pischke, 1999).

The proposed wage structure is sufficiently general: if  $\beta = 1$  then  $W = Y$ , the outcome of a perfectly competitive labor market; if  $\beta = 0$  firms pay a fixed wage:  $W = W_a$ ; in the intermediate cases  $0 < \beta < 1$ , wages increase with productivity but less than proportionally. The average wage may or may not coincide with the average level of productivity. Firm profits (per worker) are  $\Pi = Y - W = (1 - \beta)(Y - W_a)$ , which are increasing with worker productivity  $Y$ . So, unless  $\beta = 1$ , firms are penalized if they hire low productivity workers.

The manager in charge of recruitment is an agent of the principal-owner and he earns a performance-related pay:  $W_M = b\Pi$ , where  $b$  is a parameter,  $0 \leq b \leq 1$ , representing the “power” of incentives and  $\Pi$  represents firm profits. The higher  $b$  is, the more the manager’s pay depends on firm performance (“high-powered incentives”).

Job applicants in the population are heterogeneous with respect to their productivity. For simplicity, we assume that workers may have productivity  $Y_B$  (“bad” or low productivity) or  $Y_G$  (“good” or high productivity), where  $Y_G > Y_B$ . When the manager behaves loyally in the recruitment task, choosing a high productivity worker, firm profits are  $\Pi = (Y_G - W_G)$ , where  $W_G$  is the wage corresponding to  $Y_G$ . The manager’s utility is equal to:

$$[2] \quad U_H = b(Y_G - W_G) = b[Y_G - (1 - \beta)W_a - \beta Y_G] = b(Y_G - W_a)(1 - \beta)$$

Suppose that the manager belongs to a network of relatives and friends. If the manager favors his low-ability “nephew” or a friend of his, he might obtain a pecuniary benefit, or alternatively, his utility will be higher because he cares for his relatives or friends (altruistic favoritism). In fact, the recruited worker increases his utility by  $(W - \underline{w})$ . In order to relate this

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obtain wages that exceed private sector workers by 10% to 25% and that there is a long queue for public sector jobs (Krueger, 1988).

aspect to empirical analysis, we presume that these types of hiring would be classified by employees as obtained through “informal networks”.

Without distinguishing between pecuniary or altruistic benefits, we suppose that the manager’s utility increases by a fraction of the wage rent  $\lambda(W - \underline{w})$ , where  $0 \leq \lambda \leq 1$ , if he favors the recruitment of a member of his family or a friend. On the other hand, we assume that if the manager  $i$  indulges in favoritism, disregarding high ability applicants, he incurs moral costs denoted by  $c_i$ . Individuals are heterogeneous with regards moral costs and  $c_i$  is distributed in the population according to a density probability function  $f(c)$  and cumulative distribution function  $F(c)$ .

If the manager favors the hiring of a connected agent, the manager’s utility is:

$$U_F = \lambda(W_B - \underline{w}) + b(Y_B - W_B) - p_s S - c_i$$

where  $W_B$  is the wage corresponding to  $Y_B$ . Substituting equation [1] in  $U_F$ :

$$[3] \quad U_F = \lambda[(1 - \beta)W_a + \beta Y_B - \underline{w}] + b(Y_B - W_a)(1 - \beta) - p_s S - c_i$$

where  $S$  is the value of a penalization inflicted if favoritism is detected by the principal and  $p_s$  is the probability of detection (for simplicity, we do not analyze the mechanism of sanctioning and take it as exogenous). Note that in the case of opportunism by the manager, firm profits  $(Y_B - W_a)(1 - \beta)$  are lower with respect to the hiring of a high-productivity worker.

Favoritism takes place if  $U_F \geq U_H$ , i.e., using equations [2] and [3]:

$$\lambda[(1 - \beta)W_a + \beta Y_B - \underline{w}] + b(Y_B - W_a)(1 - \beta) - p_s S - c_i \geq b(Y_G - W_a)(1 - \beta)$$

from which, after some rearrangement, we obtain the following condition:

$$[4] \quad \lambda[(1 - \beta)W_a + \beta Y_B - \underline{w}] - b[(1 - \beta)(Y_G - Y_B)] - p_s S = \tilde{c} \geq c_i$$

Nepotism takes place if the manager has moral costs which are lower than the threshold  $\tilde{c}$ . Therefore, using the cumulative distribution function  $F(c)$  and condition [4], at the aggregate level, the proportion of nepotistic recruitments is equal to:

$$[5] \quad F(\tilde{c}) = F\{\lambda[(1 - \beta)W_a + \beta Y_B - \underline{w}] - b[(1 - \beta)(Y_G - Y_B)] - p_s S\}$$

Equation [5] shows that favoritism tends to be more widespread: 1) the higher the wage rent  $(W - \underline{w})$  paid to the employees, which may depend on the rate of unemployment; 2) the higher the intensity of family ties  $\lambda$ ; 3) the lower the productivity differentials between high and low productivity workers  $(Y_G - Y_B)$ ; 4) the lower the intensity of incentives for managers,  $b$ ; 5) the higher the expected penalization for opportunistic managers.

### 3.1. The Firm Trade-Off in Using Informal Networks

In which circumstances do firms make recourse to informal networks if the risk exists of hiring low-productivity workers through favoritism? We propose an extremely simplified formalization of this problem based on the hypothesis that the benefits of using informal networks for firms consist, without loss of generality, of the saving of recruitment costs.<sup>3</sup>

If a firm uses a formal process of recruitment consisting of advertising the job vacancy, incurring search costs and costs of screening applicants, it is able to select a high-productivity worker but it bears recruitment costs equal to  $R$ . We assume that the firm is able to select a high-ability worker with probability  $p$ ,  $0 \leq p \leq 1$ , while with probability  $(1 - p)$  it will select a low-ability worker. Profits are therefore:

$$[6] \quad \Pi_{Formal} = p(Y_G - W_G) + (1 - p)(Y_B - W_B) - R$$

Substituting the worker's wage by using equation [1] we obtain:

$$[7] \quad \Pi_{Formal} = (1 - \beta)[(Y_B - W_a) + p(Y_G - Y_B)] - R$$

Alternatively, the firm may recruit a worker using informal networks, saving the recruitment costs  $R$ , but it takes the risk of hiring a low productivity worker because of favoritism:

$$[8] \quad \Pi_{Informal} = (1 - F(c))[(1 - \beta)(Y_G - W_a)] + F(c)(Y_B - W_a)(1 - \beta)$$

Equation [8] implies that there is probability  $(1 - F(c))$  of the firm's hiring a high-productivity worker, while there is probability  $F(c)$  (see equation 5) of hiring a low-productivity worker, obtaining a profit of  $(Y_B - W_a)(1 - \beta)$ .

In order to take into account another possible advantage of informal networks, we are assuming that if the person responsible for recruitment does not favor connected workers with low ability, he is perfectly able to select a worker with a high ability (whereas using formal methods there is probability  $p < 1$  of selecting high ability workers).

Equation [8] may be written as:

$$[9] \quad \Pi_{Informal} = (1 - \beta)[(Y_G - W_a) - F(c)(Y_G - Y_B)]$$

Firm profits decrease when the probability of favoritistic recruitment is higher or the difference between high and low productivity workers is wider.

The firm finds it convenient to use informal networks if  $\Pi_{Informal} \geq \Pi_{Formal}$ . By substituting equations [7] and [9], we find the following condition:

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<sup>3</sup> Alternatively, one can suppose other advantages deriving from using informal networks, as lower employee turnover or the provision of a higher level of effort.

$$[10] \quad R \geq (1 - \beta)(F(c) + p - 1)(Y_G - Y_B)$$

Condition [10] shows that firms tend to use informal networks when: 1) recruitment costs following formal methods,  $R$ , are relatively high; 2) the response of employee wage to productivity  $\beta$  is high (because low productivity workers would be penalized automatically by low wages); 3) the probability of favoritistic recruitment  $F(c)$  is low; 4) the probability  $p$  of selecting a high-ability worker through a screening process is low; 5) the differential between high and low productivity jobs  $(Y_G - Y_B)$  is low. Therefore, informal networks will be used prevalently for jobs in which there are no significant variations in productivity with respect to individual ability.

#### 4. The Data

This section briefly describes the data and the construction of the sample. The data source for our empirical analysis is the *Bank of Italy Survey on Household Income and Wealth* (SHIW) which has been carried out by the Bank of Italy since 1979. The SHIW is a household survey conducted every two years that covers every Italian region and contains a broad range of information on about 20,000 individuals covering a total of about 8,000 Italian households and about 13,000 income-earners.<sup>4</sup>

The SHIW dataset provides detailed information on the demographic and social characteristics of individuals within the households, such as age, gender, marital status, education, region of residence, as well as on their working activity (earnings, employment status, type of occupation, industry, firm size, work experience, and so on).

We use data from the 2004 wave because only in this wave do we find a subset of questions, about the methods undertaken by individuals in finding their current job, which are key to our analysis.<sup>5</sup> The question we use to discriminate between individuals who obtained a job through informal networks and individuals who used formal methods is the following: “What steps did you take to find work before obtaining your current job?”. The possible answers are listed in Table 1. Respondents were allowed to choose at most three different answers. A similar question has been asked to unemployed individuals with regards their methods of search. Table 1 reports the percentage regarding the different methods of job search used by both employed and unemployed individuals.

**Table 1. Methods of job search adopted by employees and unemployed individuals**

What steps did you take (are you taking) to find work?	Employed	Unemployed
Contacted public job centre	11.39%	34.11%

<sup>4</sup> SHIW data are freely available at [www.bancaditalia.it](http://www.bancaditalia.it). These data have been used recently by Guiso *et al.* (2004). We refer to the Appendix of their work that contains much detailed information about the dataset.

<sup>5</sup> Similar questions were asked in 1991 and used in Pistaferri (1999).

Took part in interview, selection process with private employer	36.75%	37.62%
Sat written/oral tests as part of public employment competition	19.57%	10.62%
Applied to take part in public employment competition	11.45 %	14.80%
Read job vacancies in daily press	9.83%	28.53%
Placed or answered advertisements in daily press	3.42%	6.83%
Applied and/or sent resumé to private employers	11.97%	20.31%
<b>Asked relatives, friends and acquaintances</b>	<b>24.79%</b>	<b>35.24%</b>
Looked for job vacancies on the Internet	0.66%	2.92%
Contacted private employment agency or temporary work agency	0.90%	6.17%
Looked for land, premises, equipment to start up business	2.66%	0.33%
Applied for permits, licences, loans to start up business	5.55%	0.66%
Other steps	0.62 %	0.53%

Source: SHIW (2004). Sample: (1) Employed (private and public employees; self-employed); 2) Unemployed.

Table 1 shows that almost 25% of the employees in the sample had found their job through social networks. It is the most widespread method, second only to taking part in an interview or a selection process with private employers (37%). If we consider the unemployed, the percentage is even higher: 35% of them had tried to find a job through social networks. These results highlight the quantitative importance of informal networks in finding a job in Italy.

To describe the phenomenon and to document the characteristics of the individuals who used informal networks, we define the dependent dichotomous variable “*Informal Networks*” which takes the value of one if the respondent got his/her job through social or family connections and zero otherwise. Table 2 lists the descriptive statistics for the main variables used in the analysis for the sample of all private employees.

**Table 2. Descriptive statistics of the variables used in the econometric analysis**

Variables	Mean	Std. Dev.	Min	Max	Obs.
Informal Networks	0.305	0.460	0	1	3983
Education (in years)	10.332	3.387	0	20	3996
Female	0.363	0.481	0	1	3996
Married	0.571	0.495	0	1	3996
Age	38.389	10.231	16	65	3996
North-West	0.278	0.448	0	1	3996
North-East	0.269	0.444	0	1	3996
Centre	0.220	0.414	0	1	3996
South	0.151	0.358	0	1	3996
Islands	0.081	0.273	0	1	3996
Number of Job Experiences	2.027	1.782	1	30	3995
Family Network Size	6.311	3.801	1	25	3996
Very Small City (<20)	0.469	0.499	0	1	3996
Small City (20-40)	0.130	0.336	0	1	3996
Medium City (40-500)	0.275	0.447	0	1	3996
Large City (>500)	0.126	0.332	0	1	3996
Annual wage	14.356	7.673	0.25	125	3909
Small Firm	0.460	0.498	0	1	3996
Medium Firm	0.316	0.465	0	1	3996
Large Firm	0.199	0.399	0	1	3996
Regional Unemployment Rate	8.589	5.771	3.342	22.533	3996

Source: SHIW 2004. Sample: Private employees.

In the sample of private employees, 30.5% had used informal networks. Females make up 36% of the sample. *Education* represents the number of years of schooling. It is set at 0 for no educational qualification; 5 for elementary school; 8 for middle school; 11 for some high school; 13 for high school; 18 for university; 20 for a postgraduate qualification. The average number of years of education is 10.3. 57% of the sample are married.<sup>6</sup> Individuals employed in small firms (with fewer than 20 employees) make up 46%, 32% work in medium-sized firms (20-99 employees) while 20% work in large firms (100 or more employees). Residents in the North-West or North-East constitute 55%, 22% live in the Centre and 23% live in the South or on the Islands.<sup>7</sup> People living in very small towns (below 20,000 inhabitants), make up 47% of the sample; 12.6% live in very large cities with more than 500,000 inhabitants. The average *Number of job experiences* (including the present job) by a worker is 2.03. *Family network size* built as the number of adults in the household plus the number of children (living outside the household), brothers and sisters of the household head or his spouse. The average *Family network size* is 6.3.

Employee earnings are net of taxes and social security contributions and measured in thousands of euros. The average annual wage is 14.4. The average *Regional Unemployment rate* is 8.6 percentage points.

Preliminary evidence shows that the use of informal networks is highly heterogeneous with respect to individual and socio-demographic characteristics. Jobs found through personal contacts are concentrated among less educated people: 39% of individuals with lower than high-school education use informal networks, while only 19% of high school graduates and 12% of individuals with a college degree use them. About 32% of men use informal networks and 28% of women. The South and the Islands are the regions where social connections are more pervasive: almost 50% have used informal networks while the percentage for North and Centre are, respectively, 25% and 24%. Informal networks are prevalently used (41%) in small firms (1-19 employees), and less in medium and large firms (about 20%). Furthermore, the use of informal networks is prevalent among workers with low-earnings: 38% of workers earning a wage below the median wage have used informal networks, while this figure is 23% for wage-earners above the median.

A more complete analysis of the use of informal networks is carried out through the econometric estimations in the next section, while in section 6 we analyze the impact of informal networks on wages.

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<sup>6</sup> We set *Married* equal to zero if the individual has never got married, is widowed, separated or divorced.

<sup>7</sup> North-West includes the following regions: Piedmont, Valle d'Aosta, Lombardy, Liguria; North-East includes Veneto, Trentino Alto Adige, Friuli Venezia Giulia, Emilia Romagna; Centre includes Tuscany, Lazio, Marche, Umbria; South includes Abruzzi, Campania, Apulia, Molise, Basilicata, Calabria; Islands includes Sicily and Sardinia.

## 5. An Econometric Analysis of the Use of Informal Networks in Italy

In this Section in order to analyze the characteristics of individuals who have used informal networks, we estimate the probability of using informal networks with several specifications of a probit model.

We restrict our sample to private employees, aged between 15 and 65 years. Although we have information on job search methods for self-employed workers and unemployed individuals, in the econometric analysis we only consider private employees since our aim is to investigate whether informal networks are a channel used to select workers of better quality or are used to favor connected people. Obviously, these aspects are not important in the case of the self-employed, since there is no agency relationship, and are not relevant for public employees since they formally have to go through a public competition/selection system to get a job.

In Table 3 we report our estimates of several specifications of a probit model. The dependent variable is *Informal Networks*. The reported coefficients in the Table are marginal effects, evaluated as the sample mean values of the explanatory variables. All the regressions are weighted by sampling weights.

**Table 3. Probit Model Estimates. Dependent variable: Informal Networks**

	(1)	(2)	(3)	(4)	(5)
Female	-0.00027 (0.02047)	0.00296 (0.02058)	-0.01126 (0.02045)	-0.00944 (0.02052)	-0.00828 (0.02184)
Married	0.01356 (0.02018)	0.00429 (0.02047)	0.02539 (0.02050)	0.02358 (0.02054)	0.02478 (0.02049)
Education	-0.02612*** (0.00302)	-0.02376*** (0.00305)	-0.02091*** (0.00305)	-0.02096*** (0.00307)	-0.01682*** (0.00314)
North-East	0.05462* (0.02993)	0.06614** (0.03040)	0.06309** (0.02987)		
Centre	0.03862 (0.02933)	0.05198* (0.02977)	0.04127 (0.02961)		
South	0.18574*** (0.03535)	0.17561*** (0.03583)	0.14035*** (0.03586)		
Islands	0.37899*** (0.04129)	0.36677*** (0.04198)	0.30869*** (0.04394)		
Small City (20-40)	-0.03388 (0.02594)	-0.02986 (0.02600)	-0.03592 (0.02585)	-0.04559* (0.02566)	-0.04296* (0.02580)
Medium City (40-500)	-0.03668* (0.02123)	-0.02736 (0.02154)	-0.03115 (0.02138)	-0.02840 (0.02164)	-0.02044 (0.02201)
Large City (>500)	-0.12778*** (0.02898)	-0.11096*** (0.03016)	-0.10816*** (0.03028)	-0.14891*** (0.02719)	-0.14334*** (0.02809)
Family Network Size		0.01243*** (0.00258)	0.01255*** (0.00258)	0.01181*** (0.00255)	0.01089*** (0.00254)
Number of Job Experiences		0.01561*** (0.00590)	0.01515** (0.00592)	0.01606*** (0.00587)	0.01599*** (0.00561)
Medium Firm Employee			-0.12447*** (0.02052)	-0.12510*** (0.02064)	-0.12157*** (0.02117)
Large Firm Employee			-0.12774*** (0.02450)	-0.12994*** (0.02433)	-0.11567*** (0.02569)
Regional Unemployment Rate				0.01172*** (0.00182)	0.01110*** (0.00187)
Manufacturing					-0.03834 (0.04021)
Building and construction					0.01400 (0.04721)

Wholesale and retail trade					-0.04936 (0.04163)
Transport, Communication					-0.06007 (0.04800)
Credit and insurance					-0.17445*** (0.03752)
IT services, research, real estate					-0.13633*** (0.04148)
Domestic services					0.05078 (0.05409)
Observations	3983	3983	3983	3983	3983
Pseudo R-squared	0.08784	0.09781	0.11255	0.10789	0.11671
Log-likelihood	-2233.53968	-2209.12567	-2173.01470	-2184.43811	-2162.82626
obs. P	0.30467	0.30467	0.30467	0.30467	0.30467

Notes: Sample: Private employees. The coefficients represent the marginal effects evaluated at the mean values of the explanatory variables in the sample. The dependent variable is *Informal Networks* which takes the value of one if the individual has used informal networks to find a job. Regressions are weighted by sampling weights. The standard errors (correct for heteroscedasticity) are reported in parentheses. The standard errors reported in column (4) and (5) are corrected for the potential clustering at the regional level. The symbols \*\*\*, \*\*, \* show that the coefficients are statistically significant, respectively, at 1, 5, and 10 percent levels.

Column (1) shows the estimates of a model in which we only use socio-demographic characteristics as explanatory variables. Females and married people do not appear to use informal networks more frequently. On the other hand, education has a strongly negative relationship with the use of informal networks: one more year of education reduces the probability of using an informal job search channel by about 2.6 percentage points. The coefficient is significant at the 1 percent level. Individuals attaining high levels of qualifications typically do not search through informal networks and firms do not use informal channels to fill high-skilled positions.

The dummies representing geographical areas have been entered into the regressions to capture the effects of different regional labor markets or heterogeneity in the types of social relationships among individuals. Results in column (1) show that, in regions in the South and Islands (the lesser developed areas of Italy), informal networks are used much more intensely, respectively 19 and 38 percentage points more, than North-Western regions, the reference category. These differences are strongly statistically significant. There are also differences of smaller magnitudes with respect to the North-East (+5/6%) and Centre (+4/5%).

In all the regressions, we also control for city size dummies. Results show that informal networks are used much more often in small cities (fewer than 20,000 inhabitants): in cities of more than 40,000 inhabitants informal networks are used 4% less often than in small towns, while they are used 12-13 % less often in cities larger than 500,000 inhabitants. This finding confirms the idea that more intense social ties are established in towns with a small population rather than in large cities since it is easier to develop personal relationships and to extend a network of acquaintances.

In column (2) we consider two additional factors that may affect the extent of the network of connections: *Family Network Size* and the *Number of Job Experiences*. The estimates show that one more member in the family network increases the probability of using informal networks by 1.2% (strongly significant at the 1 percent level). Similarly, the number of job experiences



significantly increases the probability of finding a job through informal networks and professional contacts (+1.6%): past job experiences allow a worker to develop a larger network of acquaintances with former colleagues, employers and so on (see also Cingano and Rosolia, 2006).

In column (3) we consider two firm size dummies as explanatory variables: *Medium Firm* (20-99 employees) and *Large Firm* (100 or more employees). The results show that informal networks are used primarily in small firms: employees in medium and large firms have probabilities of using informal networks which are about 12.4 and 12.7 percentage points lower respectively.

In column (4) we consider the unemployment rate at a regional level. It is plausible that the propensity to use informal channels as a job search method may depend on the situation in the local labor market. We expect that a worker will have greater interest in searching through informal channels when the wage rent he/she might obtain in a given job is higher. Moreover, in jobs paying a wage rent, there is greater interest on the part of current employees in contacting relatives and friends in order to allow them to gain a good wage. Regional unemployment rates are taken from the 2004 Labor Force Survey conducted by ISTAT (the National Statistic Institute). The estimates show that the unemployment rate is positive and highly significant: the probability of using informal channels increases by a 1.17 % for each percentage point of unemployment.<sup>8</sup> The standard errors reported in column (4) are corrected for the potential clustering of the residual at the regional level. Note that since the unemployment rate is defined at regional level, collinearity does not allow us to estimate regional dummies. The estimated effect implies that passing from Lombardy (the most developed region) with an unemployment rate of about 4% to Sicily where unemployment is nearly 19%, the use of informal networks increases by about 17 percentage points.

In column (5) we include a set of industry dummies (8) as explanatory variables. The omitted category is Agriculture. Results show that informal networks are used less in high added-value industries such as “Credit and insurance” (-17.4%), “IT services and research” (-13.6%), “Transport and Communication” (-6%) and more in “Building and Construction” and “Domestic Services”.

As a robustness exercise, considering that our model is almost fully saturated (see Angrist, 1999), instead of a probit, we estimate a Linear Probability Model for the probability of using informal networks. Results (not reported) show that the estimated coefficients and their significance levels using OLS are very similar to the probit estimates in Table 3.

The results of our empirical analysis – in line with our theoretical model of Section 3 – show that informal networks tend to be used predominantly in low-skilled and low-productivity jobs, in small firms and low technology industries, where, presumably, individual abilities are not

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<sup>8</sup> Since the rate of unemployment may be biased due to there being discouraged individuals who do not search for jobs, we have also considered the rate of employment as an alternative, obtaining substantially similar results (not reported).

so important in determining job performance and the variance of productivity among workers is not very high. In such cases, firms may hire from within the networks of employees' relatives and friends, so saving on search and recruitment costs (see condition [10]). Moreover, "formal" recruitment costs are proportionately higher for small firms. On the other hand, in jobs in which abilities are fundamental, firms tend to discard informal networks and prefer to hire through a formal recruitment process, advertising job vacancies to contact a wider pool of prospective employees and going through an accurate screening process, so as to avoid the risks deriving from hiring connected but less competent workers. The benefits of informal networks are simply not large enough to counterbalance the opportunity costs in high-productivity jobs.

Other theoretical predictions are confirmed by our empirical results. Informal networks appear to be mostly used in high unemployment labor markets. Our model shows that high unemployment makes a job more desirable since it increases the wage rent associated with it. Therefore, larger rents stimulate workers to seek the help of relatives and friends to get a "good job" and escape joblessness. Furthermore, incumbent employees are more willing to favor socially connected individuals.

We have shown that informal networks tend to be used less in high-productivity jobs and for highly educated workers: in these cases, the manager might be penalized severely, through performance related pay, for hiring a relatively unproductive connected worker in place of highly-productive candidates. The strong statistical significance of Southern regions dummies may also be interpreted in terms of our theoretical model. Southern regions are characterized by strong family ties (Alesina and Giuliano, 2007; Bentolila and Ichino, 2006) which make individuals keener to help relatives to find jobs. Furthermore, Southern regions show a greater propensity for opportunistic behavior (as pointed out in the classical works of Banfield (1958) and Putnam (1993) and more recently by Ichino and Maggi (2000).

## **6. The Effects on Wages of Using Informal Networks**

In order to provide evidence regarding the consequences of informal networks on the quality of the job matches realized, in this section, following much of the literature, we estimate a set of "earnings functions" to determine the relationship between worker wages and the use of informal networks.

As is standard in the literature (see Mincer, 1974), wages are expressed in logarithmic terms. We regress the log of wages on informal networks, controlling for a wide range of individual and firm characteristics (education, experience, gender, marital status, region of residence, city size, firm size, industry, and so on).

In column (1) of Table 4, we report the estimate of an equation using *Informal Networks* as a dependent variable and controlling only for worker's individual characteristics. The coefficient of *Informal Networks* is negative and highly statistically significant. Results show that the wage is

about 14% lower if a worker is hired through informal networks. A large part of this effect is obviously due to the omitted variables connected with the use of informal networks (firm size, regions, industries, etc.). Results of regression (1) indicate that education and experience greatly increase wages (+5% for each year of education and +4% for an additional year of experience) and that females earn nearly 30% less than males.

In column (2), we include macro-regional dummies (5), firm size dummies (3) and city size dummies (4) as explanatory variables. Column (3) introduces the regional unemployment rate and column (4) includes family network size and the number of job experiences. Results show that wages are lower in the South and Islands, higher in large firms and in large cities. Estimate results show that informal networks are associated with a wage loss of around 6 percentage points.

This negative effect of informal networks is reduced to 5 percentage points when we control for the number of job experiences, the size of family network (column 4) and industry dummies (column 5). However, the effect is highly statistically significant (at the 1 percent level).

Notwithstanding the fact that, in the latter specifications, we are controlling for a host of factors which are correlated with the use of informal networks, results show that wages are on average lower for workers using informal networks even when these workers have similar levels of education, work in firms of similar size, in the same area and in the same industry, and so on.

A possible interpretation of these findings is that a significant proportion of workers hired through informal networks – without a formal process of screening – tend to be of lower ability because they are typically selected on the basis of family ties rather than on purely meritocratic criteria. Firms are probably aware of the risks of using informal networks but accept these risks since informal networks allow a saving in recruitment costs (and may make employees related to the recruit happier).

**Table 4. OLS estimates of earnings functions. Dependent variable: logarithm of wage**

	(1)	(2)	(3)	(4)	(5)
Informal Networks	-0.1440***	-0.0633***	-0.0602***	-0.0526***	-0.0502***
	-0.0229	-0.0214	-0.0214	-0.0210	-0.0204
Female	-0.2973***	-0.3098***	-0.3124***	-0.3161***	-0.2882***
	-0.0233	-0.0223	-0.0223	-0.0219	-0.0243
Married	-0.0011	0.0116	0.0148	0.0296	0.0302
	-0.0263	-0.0249	-0.0249	-0.0242	-0.0238
Education	0.0524***	0.0417***	0.0412***	0.0383***	0.0320***
	-0.0040	-0.0038	-0.0038	-0.0038	-0.0039
Experience	0.0415***	0.0332***	0.0328***	0.0300***	0.0293***
	-0.0039	-0.0036	-0.0036	-0.0036	-0.0035
Experience Squared	-0.0007***	-0.0005***	-0.0005***	-0.0005***	-0.0005***
	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
North-East		-0.0243	-0.0400	-0.0541**	-0.0456*
		-0.0254	-0.0262	-0.0256	-0.0250
Centre		-0.0353	-0.0021	-0.0211	-0.0249
		-0.0300	-0.0294	-0.0286	-0.0277
South		-0.2110***	-0.0416	-0.0392	-0.0572
		-0.0355	-0.0510	-0.0502	-0.0498
Islands		-0.3489***	-0.1199*	-0.1160*	-0.1221**
		-0.0444	-0.0629	-0.0624	-0.0620
Small City (20-40)		-0.0148	-0.0082	-0.0125	-0.0202
		-0.0288	-0.0286	-0.0285	-0.0283
Medium City (40-500)		0.0367*	0.0362*	0.0243	0.0103

	-0.0211	-0.0210	-0.0209	-0.0205
Large City (>500)	0.1361***	0.1762***	0.1507***	0.1386***
	-0.0438	-0.0441	-0.0430	-0.0418
Medium Firm Employee	0.0767***	0.0715***	0.0725***	0.0730***
	-0.0241	-0.0242	-0.0239	-0.0237
Large Firm Employee	0.1638***	0.1585***	0.1629***	0.1357***
	-0.0280	-0.0279	-0.0280	-0.0262
Regional Unemployment		-0.0157***	-0.0152***	-0.0123***
		-0.0042	-0.0041	-0.0041
Family Network Size			-0.0155***	-0.0142***
			-0.0028	-0.0027
Number of Job Experiences			-0.0191**	-0.0198***
			-0.0075	-0.0068
Manufacturing				0.2270***
				-0.0435
Building and construction				0.2677***
				-0.0527
Wholesale and retail trade				0.2024***
				-0.0487
Transport, Communication				0.3044***
				-0.0539
Credit and insurance				0.4949***
				-0.0605
IT services, research, real estate				0.2446***
				-0.0557
Domestic services				0.0280
				-0.0622
Constant	8.6015***	8.7646***	8.8573***	9.0405***
	-0.0573	-0.0580	-0.0636	-0.0705
Observations	3879	3879	3879	3879
R-squared	0.2342	0.2926	0.2960	0.3085

Notes: The dependent variable is the logarithm of wage. Sample: Private employees. Regressions are weighted by sampling weights. The standard errors (correct for heteroscedasticity) are reported in parenthesis. The standard errors reported in columns (4), (5) and (6) are corrected for the potential clustering at the regional level. The symbols \*\*\*, \*\*, \* show that the coefficients are statistically significant, respectively, at 1, 5, and 10 percent levels.

## 7. Concluding Remarks

A great deal of literature considers recourse to the help of relatives, friends and acquaintances in order to find a job and to fill job vacancies to be an efficient mechanism, in terms of low recruitment costs, better selection of employees and higher quality matches.

However, the signalling by incumbent employees may be directed at favoring the employment of relatives and friends rather than selection of the best workers. We have proposed a simple model of nepotism, showing that favoritism in recruitment is more probable the stronger family ties are, the lower the level of job productivity is, and the higher the unemployment rate is. On the other hand, firms tend to use informal channels if “formal” recruitment costs are high, if the probability of selecting high productivity worker is low, and in jobs where productivity differentials are limited.

To investigate empirically the determinants and consequences of using informal networks, we have used individual data drawn from the Bank of Italy Survey on Household Income and Wealth (SHIW) regarding the methods used by employees to find their job.

Firstly, we have shown that the use of informal networks in Italian labor markets is associated with low educational levels, small firm size, low productivity jobs, high unemployment areas, high wage rent, wide family networks and multiple job experiences. These findings are in line with a number of predictions from our theoretical model.

Secondly, by controlling for a number of individual and firm characteristics, we directly verify whether informal networks are associated with a relatively poor quality of labor matches. Similarly to Pistaferri (1999) and other empirical works which find a negative effect of informal networks, we show that wages of workers using informal networks tend to be lower than wages of workers using formal methods of finding work.

Several findings from our work are in contrast with the theories that consider informal networks to be an efficient method of matching between firms and workers. Informal networks turn out to be used only in low-skilled jobs and the quality of the matches (measured by the wage) tends also to be lower, even when taking into account all the determinants of the use of informal networks. Our interpretation of the evidence is that informal networks in Italian labor markets – rather than being an efficient channel of information transmission – tend to interfere with a genuine process of worker selection, favoring socially connected people in place of more talented workers.

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