

Politics and the Labor Market: The Role of Frictions

Matteo Richiardi ^{*}
Luigi Bonaventura [†]
Andrea Consoli [‡]
Salvo Spagano [§]

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Abstract

We study how political intermediation in the labor market interacts with search frictions. Politicians create and control (to a certain extent) business opportunities for firms, hence the creation of new vacancies. But to compete for these vacancies workers have to give their support to politicians. This leads to a fragmentation of the labor market, where politicians act as mediators between demand and supply. We show that in presence of information asymmetries (when non-affiliated workers are not able to distinguish non-affiliated firms, for which they are eligible, from affiliated ones, for which they are not eligible) the impact of political intermediation is U-shaped, and can more than double the resulting unemployment rate.

1 Introduction

Why is unemployment in the South of Italy so high? Why is the public sector so large? Why does the criminal sector grow at the expenses of the non-criminal one? Is there a relationship between political corruption and unemployment? Our focus is on the role of frictions introduced by external interferences in the labor market, by politicians and (possibly) by criminal bosses. Coordination failures are the mainstream explanation for equilibrium unemployment ([30], [33]): some vacancies might be flooded with too many applications, while some others might remain unfilled. We start from the observation that (i) structural

^{*}LABORatorio R. Revelli Center for Employment Studies, via Real Collegio 30, 10024 Moncalieri (Torino), Italy, www.laboratoriorevelli.it. Email: m.richiardi@labor-torino.it.

[†]Department of Economics and Quantitative Methods, Corso Italia 55, 95100, Catania, Italy.

[‡]University of Bologna

[§]University of Catania, Faculty of Law

unemployment is much higher in the South of Italy than in the rest of the country, not to say most other European regions, and (ii) political intermediation and, more generally, external interferences in the job matching mechanism seem to be extremely important in those regions. We study how these external interferences interact with the coordination failures in the labor market. We show that external interferences replace one type of coordination failure – what we call the “big market” effect – with another – the “patronage” effect. The big market effect comes from the fact that the bigger the market the more likely applications are misdirected. Political intermediation might reduce this coordination failure by dividing the labor market in smaller sub-markets. The patronage effect is due to a coordination failure in choosing the right protection – from a politician or a local boss.

In the basic model the two effects turn out to be small and almost of the same size, such that the resulting net impact on unemployment is negligible. We then introduce an information asymmetry – namely that non-affiliated workers are not able to distinguish non-affiliated firms, for which they are eligible, from affiliated ones, for which they are not eligible. As we fully explain below, workers become affiliated when they support or promise to support a specific party/politician/boss; firms become affiliated when they are given the possibility to open a new profitable vacancy, upon the condition of hiring only an affiliated worker.

This information asymmetry implies that some applications are wasted. The impact of political intermediation on unemployment in this case is U-shaped: both when politics has no power to control vacancies at all and when politics controls all the vacancies the waste is zero: in the first case because there are no affiliated firms, in the latter because there are no non-affiliated workers. In intermediate cases the resulting structural unemployment can increase by more than 100%.

A policy implication of this analysis is that things can actually become worse, before they start to improve, when an external decision to cut on corruption and criminality is taken.

However, frictions can explain only a fraction of actual unemployment. Therefore we conclude by discussing other ways in which political and criminal intermediation might affect the performance of the labor market, whose analysis we leave for further research.

The paper is structured as follows. Section 2 gathers some evidence on the poor performance of the labor market in the South Italian regions. Section 3 provides a short review of the explanations that are found in the literature to explain this poor performance. Section 4 introduces our basic idea to model the interactions between politics and the labor market: a triangle whose vertex are occupied by politicians, workers and firms, and where every actor benefits from the exchange. Section 5 discusses the nature and role of political interferences in the labor market and presents some new evidence on the mechanisms that allow politicians to control votes, which is a pre-requisite for the mechanism outlined in section 4 to work. Section 6 presents the models, while section 7 discusses the results and paves the way for further research. Section 8 summarizes and

concludes.

2 The labor market in the South of Italy

The starting point is a striking evidence: the performance of the labor market in the South of Italy is terrible. Unemployment in the South is more than 3.5 times higher than in the North (figure 1). More than 1 woman under 30 in three is unemployed (34.8 %, against 9.3% in the North). The share of long-term unemployed is very high as well: more than 35% of people are still unemployed after one year in the South, while in the North the figure is only 20% (table 1). Re-entry time into male dependent employment in the private sector are plotted in figure 2: average re-entry time is 10.1 months in the North and 13.8 months in the South.

Since activity rates are also extremely low in the South (53.8% for the whole working age population in 2005, to be compared with 68.0% in the North), this amounts to employment rates among the lowest in Europe: 62.4%¹ for men and a mere 30.2% for women (respectively, 75.2% and 55.3% in the North). The target adopted by the European Union (the so-called Lisbon target) for female employment, to be reached by 2010, is set at 60%, almost twice the level in the South of Italy.

Not only there are too few jobs: they also last less. The total worker turnover (the sum of the association and separation rate) was 80 % in 1998, against 60% in the rest of Italy². While this figure alone might also be interpreted as a sign of vitality, in such a context it appears to be rather a sign of weakness: relationships are fragile, many jobs appear to be highly precarious.

A low level of job security is also witnessed by (i) the size of the shadow economy and (ii) the diffusion of fixed-term contracts.

The Italian statistical office (ISTAT) produces estimates of the black economy based on a complicated procedure in order to integrate different data sources ([18]): in the South of Italy the irregular employment is found to exceed 20% of total employment (labor units), more than twice as high as in the Center and North of Italy (figure 3). Moreover, while the share of shadow employment has been decreasing in the Center and North of Italy in recent years (from 12.1% in 1995 to 10.8% in 2002), it has been increasing in the South (from 20.7% to 23.1%).

As for what concerns the use of temporary workers, their share was 16.4 % of the dependent employment in the South and only 10.0% in the Center-North in 2004 (table 2). Moreover, the rate of transformation of temporary contracts in permanent jobs is much higher in the North than in the south. After 3 years from the beginning of the fixed-term job around 30% of fixed-term workers in the North and 5,2 % in the South become permanent workers. After 5 years these rates are about 45 per cent and 14,9 per cent, respectively (ISTAT, 2000).

¹Source: ISTAT, RCFL 2005

²source: WHIP

The low level of job security in the private sector partly explains why workers in the South prefer to seek employment in the public sector. In addition, [19], shows that the propensity to seek employment in the public sector increases with the local rate of unemployment, since a high unemployment rate is a signal of low labor demand in the private sector. [25] offers some empirical evidence to support this thesis.

Another indicator of the bad health of the labor market in the South of Italy is the outflow of workers. Although significantly smaller than at their peak in the 60s, emigration flows are higher than in the rest of Italy. Considering internal mobility alone, about 12% of job changes of young individuals (aged 14-24) in the South involve a large geographical change, i.e. moving to the Center or the North, about 4 times more than in the North (table 3).

Finally, the low number of private employment agencies provides indirect evidence of a matching mechanism that heavily relies on individual networks. In the aggregate 630 employment agencies are allowed to administer and match labor demand and supply, in Italy. Sicily, for instance, is one of the most densely populated region but only 3 agencies are located on the island. The same picture is found when looking at branch offices. *Manpower*, a leading employment agency, has only 6 branch offices in Sicily compared to almost 40 in Emilia-Romagna, 46 in Piedmont and more than 140 in Lombardy.

3 Possible explanations

What is wrong with the labor market in the South of Italy? One way of answering might be to extend the question and ask what is wrong with the South of Italy in general. To cut a long story short, the many problems of these regions might be explained with specific historical and social conditions: the Spanish domination, the widespread existence – until recent – of latifundism and sharecropping in agriculture (as opposed to direct land ownership), the burden of criminality, the dimension of the black or shadow economy even in the legal sectors ([32]), the lack of infrastructure (Picci, 2005, MANCA NELLA BIBLIO), an overwhelming presence of (poorly managed) state intervention in the economy, a general inefficiency of the bureaucratic apparatus and a widespread use of the least efficient forms of welfarism. [ALTRE REFS?]

All these factors can be grouped in three categories: a (static and dynamic) economic effect, a cultural effect and a statistical effect.

According to the statistical effect conjecture “real” unemployment in the South of Italy is much lower than officially recorded: people declare themselves unemployed – partly to receive benefits – but they do actually work, even if their occupation might well be precarious, fragmented, not safeguarded, possibly even illegal. The size of the shadow economy, not to speak of the criminal sectors, seems to support this thesis.

On closer inspection, however, the relevance of this argument appears to be small. Employment statistics in Italy ³ are collected by means of an individ-

³“Rilevazione sulle Forze di Lavoro”

ual interview and a great care is taken in order to guarantee anonymity of the respondents. They are generally considered to be a good proxy of real employment, and they also cover (to a great extent at least) shadow employment. By comparing employment and census data and using a probabilistic model to estimate the real employment status for those records where the two figures differ, conditioning on socio-economic variables, the number of employed individuals goes up only by 3% ([18]).

The unemployment problem in the South of Italy is thus not just an optical illusion. A second type of explanation refers to the cultural traits of the population, which are the legacy of past domination (before Italy was unified in 1861) and present misguided policies (in particular after World War II). According to this hypothesis people in the South are unemployed because they are not really willing to search for a job. They prefer to live on their wits, or on public assistance. The pervasiveness and persistence of public assistance over the years might have modified individual preferences and contributed to a lock-in effect by making people even less willing to go and search for a job. One might be tempted to look at the emigration flows to support this theory. If people can't find a job at home, why don't they move and look for a job elsewhere, more than they actually do?

However, small search efforts might be consistent with pure economic reasoning if the benefits of staying in unemployment are higher than in other regions, and the costs (think of stigma effects) lower, which are both plausibly true. The argument then collapses to pointing out the relevance of static economic inefficiencies.

A simple test of this rationality hypothesis, following [8], looks at the expected wages, i.e. average wages discounted by unemployment rates. Table 4, which refers to full-year employed males aged 30-50, shows that, on average, expected wages in the South are between 73% and 87% of expected wages in the North, depending on whether we look at the private or the para-public sector (which includes education, health care, banking and insurance) and at the blue or the white collars ⁴. However, the cost of living differs quite substantially between the North and the South. Although no official statistics on the regional price levels are recorded in Italy, consensus estimates point to a 30% reduction in the cost of living in the South: this is sufficient to make the choice of searching for an outside job much less attractive for a vast majority of unemployed workers. ⁵ Moreover, against conventional wisdom the data show that public spending in Italy does not privilege so massively the South. 32.8% of Italians live in the South while 33.8% of all public transfers to the P.A. and only 27.1% of all public transfers to households are targeted to the South, although firms

⁴of course it is not possible to disaggregate the unemployment rate along these dimensions, and we have considered an homogeneous unemployment rate within each macro-area

⁵Official statistics in Italy records only inflation rates at a regional level, but there is no anchor from which to compute the index. In the literature there are a number of studies devoted to reconstruct local price levels. Most of them compare, by means of *ad hoc* surveys, price levels in district cities (see for instance Campiglio, 1996). However, the differences in price level between urban areas and the countryside are probably more relevant in the South than in the North.

in the South receive 27.9% of all public transfers to firms while employing only 20.8% of all private workers in Italy (table 5).

The main implication of such an explanation, however, is that those unemployed people themselves should be blamed for their status, and an immediate policy prescription would be to cut on assistance and favor wage flexibility.

Another type of explanation comes from considering dynamic economic inefficiencies. High unemployment might be a result of the poor overall economic performance, as in [5] and [35]. These authors point to a lack of aggregate demand for labor due to the slow modernization process of local industry: Demand is low because technology and quality are low. This results in (i) a lower level of per capita wealth and (ii) lower growth rates, as witnessed by figure 4: not only does output per person in the South amount to only 58% of the level in the North, but there is little evidence of convergence.

Now, two comments can be made on this point. First, what really matters is purchasing power, rather than pure money value. As we have seen an official geographic index of the cost of living is not available, in Italy, but the differences in real GDP per capita are smaller than in nominal terms.

Second, it is not clear why a structurally weak economy should imply structurally high unemployment. Output and unemployment are obviously linked by short-term business cycle considerations, as described by the Okun curve ⁶ but any long-term correlation between the two variables might well be spurious. What is that causes *both* poor growth and high unemployment? Why is the labor demand so depressed? State intervention, even when it is bad for economic growth, is not necessarily bad for employment, as the case of former communist countries shows. Poor infrastructure might reduce productivity, but their effect on employment is definitely not a straightforward one.

This common factor might be found in the pernicious interaction between politics and the labor market.

The issue has been investigated in a political economics perspective by focusing mainly on the electoral cycle and the creation of political consensus. Early contributions in this direction are [31], [26] and [3], who model a competitive political market in which politicians obtain consent by means of a distribution of benefits among their electors. However, this traditional approach is based on competition between lobbies in a zero-sum game, in which the benefits obtained by one group correspond to those foregone by another. [10] analyze the relationship between politics and the job market in the South but, unlike the present study, they deal with the exchange of jobs in the public sector for political consent, that is with corruption in a narrow sense. Some results from models of political business cycle (PBC) are also worth remembering ⁷, since this strand of the literature considers both microeconomic and macroeconomic sources of politically induced variations in unemployment. In particular, at a microeconomic level, these models show how political fragmentation affects the level or variability of unemployment rates.

⁶which posits a positive relation between reduction in unemployment and growth

⁷see for instance [38]

The political economics approach can be integrated to include the determination of labor demand and supply. It can be argued that the poor economic environment in the South of Italy and the high implicit tax rate due to criminal interferences have diminished the benefits from working while at the same time prompting for a more pervasive role of welfare, which has brought down the costs of non working. In a situation where there are many obstacles to exercising any economic activity, the returns are low and the outside options – living out of welfare – not so unattractive it should be no surprise that activity rates are low, the demand for labor depressed and unemployment correspondingly high. Note that this argument adds to the cultural approach outlined above the endogenous determination of welfare policies and labor demand.

The ultimate goal of this paper is to reconcile this view, that explicitly takes into account the interactions between workers, firms and politics, with the prominent role of frictions and coordination failures highlighted by the search literature. We wish to provide answers to the following questions: are frictions responsible for the bad state of the labor market in the South of Italy? Do political (and criminal) interferences in the labor market affect unemployment by increasing the amount of frictions?

These questions directly lead to an assessment of search models themselves. Search models have become the standard reference for the analysis of unemployment. They originated from the work of Stigler [37] on the economics of information, who considered a buyer choosing the number of price quotations before beginning the search process, in order to minimize expected price plus sampling cost. Search models were first applied to labor issues, in a more dynamic perspective, with the work of Phelps et al. [?]. A surge in this strand of the literature occurred during the eighties and nineties, with major contributions by Diamond ([13]; [14]; [15]), Mortensen ([22]; [23]), and Pissarides ([29]; [28]). Mortensen and Pissarides ([24]) and Pissarides ([30]) themselves provide extensive reviews of search models for the labor market, while [33] offer a state-of-the-art survey of the literature.

Search models focus on the coordination failures stemming from a decentralized search mechanisms, and account for the existence of equilibrium unemployment. Their wide acceptance comes not much from their empirical validity but rather from a theoretical framework that fits perfectly with the dominant view in the profession: they are general equilibrium models where workers and firms behave rationally and have full cognitive capabilities, yet – differently from the marginalistic theory of the supply and demand of labor – they are able to explain the existence of (equilibrium) unemployment.

In search models both the decisions of workers and the decisions of firms are modeled. In particular, firms choose how many vacancies to open. Here we still focus on the coordination failure arising from decentralized search, but keep the total number of available jobs constant and exogenous. Moreover, the political control over these jobs is also kept exogenous. This is motivated by the consideration that the level of political interference in the economy is often a systemic characteristic, over which workers and firms have little control: they can only adapt, or die. This modeling strategy also allow simple comparative

static exercises on what happens when the sphere of influence of politics is (exogenously) reduced, for instance by a wave of public indignation or as a consequence of changes to the political system induced from the outside (e.g. at a national level).

4 A model of political intermediation in the labor market

Our interpretation of the interactions between politics and the labor market can be explained in terms of a triangle, whose vertex are occupied respectively by politicians, firms and workers. Politicians create and control (to a certain extent) business opportunities for firms, hence the creation of new vacancies. But to compete for these vacancies workers have to give their support to politicians. Firms have an incentive to affiliate to politics because this is one way (sometimes the only way) to do business and survive. Workers have an incentive to affiliate to politics because this is one way (sometimes the only way) to find a job. Politicians have an incentive to perpetuate the system because they get support from individuals and expand their influence over the economy, which is very likely to produce extra benefits via increased corruption opportunities or other material or immaterial advantages. A similar argument holds when criminal influences are considered rather than political ones, although of course many more effects – included interactions between gangsters and politicians themselves – are also present.

But even if this mechanism is at work, is it really bad for the employment? A number of studies exist in which the interference of politicians in the economy has been considered an instrument of efficiency, because it helps to avoid both market and government failures and makes it possible to carry out exchanges which without their intervention would remain mere potentialities ([36], [1]). In this sense, political intermediation is no more than an alternative instrument for allocating resources and re-establishing a balance between supply and demand of goods and services, which may even encourage a healthy form of competition among firms and, more in general, among economic agents ([4]).

In what follows we will establish some conditions for the political interferences in the labor market to harness employment, by increasing the amount of coordination failures.

Note that if politicians offer jobs, the more temporary contracts are widespread the more power politicians have, since workers need to come back for renewal or to ask for a new position, once their contract has expired. This might explain the diffusion of temporary jobs in the public administration, especially in the South [TROVIAMO DELLE STATISTICHE AL RIGUARDO?]

There are other ways in which political interferences may increase unemployment. Politicians may to a certain extent benefit from unemployment, because what they sell – a promise to hire – becomes more valuable. They could therefore deliberately act in order to restrict employment opportunities (in the

non-affiliated sectors). In the same way, the mafia benefits from unemployment, because the protection it sells becomes more necessary and the alternative options more limited.

We will come back in the concluding sections to the possibility that politicians and mafia bosses might act in order to increase unemployment voluntarily and damage the non-affiliated sectors, while focusing in the rest of the paper only on the coordination effects of their interferences in the labor market.

Some conditions have to be met in order for the incentives outlined above to work properly. Politicians must be able to check whether individuals give them their support or not. Moreover, they must be able to preempt outsiders (i.e. non-affiliated firms) from doing business, at least to a certain extent. But there is ample evidence, collected and discussed in the next section, that both these cases are true, at least in some southern Italian regions. There are a number of determinants for each of these conditions. Some are legal, others less so. Probably the main explanation for the ability of politicians to control how people vote lies in how the voting system works, although explicit threats by organized crime also play a part. Criminal connections have even a bigger role in giving politicians the power to control the economy, and the level of indeterminacy and arbitrariness granted to bureaucrats by law – which might be itself promoted by politicians with an interest – exacerbates it.

5 The basis of political influence

Studies of corruption are certainly not a novelty in the literature and a number of methods of analysis have been proposed. Besides the more traditional juridical and institutional approach (Williams, 1976 MANCA; [9]) which attempts to identify possible causes of corruption and to define prevention and control strategies, many attempts have been made to connect corruption to social, cultural and economic traits ([2]; [21]; [11]). An international research of Transparency International has compared the Growth Competitiveness Index (GPI) 2004 with the Corruption Perception Index (CPI), and shown a negative relation between corruption level and economic performances for all the 146 Countries considered. Italy is placed in 47th place, with a high CPI and a low GPI, in particular for the southern regions.

Some contributions ([34]; [20]; [19]) consider corruption as a consequence of public intervention in the economy. When a large part of the economy depends on public intervention (subsidies, investments, transfers, etc.), there are many opportunities of rent seeking for politicians and bureaucrats. From some of these studies it is possible to extrapolate a number of variables as an indirect measure of corruption (table 6).

For all the variables considered the situation in the South looks more corruption-prone than in other Italian regions.⁸ This is the conclusion reached also by [16],

⁸This is witnessed by the fact that, among the 23 local Councils dismissed by the Italian Interior Ministry because of criminal infiltrations in 2006, 10 were in Campania, 9 in Sicily, 3 in Calabria and 1 in Lazio.

who compare the level of corruption in each region using the difference between the physical quantity of public infrastructures and the amount of public money paid for those infrastructures.

Although a more traditional definition of corruption refers to the abuse of public office alone in order to obtain a private benefit, for this study we adopt a more general one that identifies the essence of corruption in the exchange of undue advantages connected to a specific activity ([6]) and refers to collusive behaviors present also in the private sector ([12]).

In particular we refer not to the widespread and legally punishable phenomenon, but to a relational system that, while deplorable for the most part, remains on the right side of legality. These relationships have been defined by [17] as “white corruption”: within such a system mutual agreements and, in particular, behaviors aimed at securing political consent are considered corrupt but not illegal. Forms of collusion which do not involve the use of public functions or the spending of public money but only the use and exchange of private favors are not considered a misdemeanor, because they are socially accepted and widespread.

The exchanges described here are certainly not based on a gentlemen’s agreement, but require mechanisms to check that the affiliation has been respected. In other words: how can a politician be sure of the political consent due to him for his intermediation activity? There must be a way of verifying *a posteriori* that the intermediation has given its promised results, i.e. a way of checking the vote cast.

To this respect a crucial role is played by the election methods (both at a national and a local level). The work of [27] underlines how proportional electoral systems are the most prone to the risks of corruption in general, and to vote checking in particular. Moreover, as noted in the Report of the Study Commission for the Prevention of Corruption ⁹, a number of techniques can be used in order to assess the vote.

In the first place, in a nominal preference system it is enough to instruct each voter to express his/her preference for the candidate writing the name (name, surname, nickname, title, etc...) in an order that is different and pre-arranged so as to be able to identify, at the counting, who voted for whom. For each electoral section politicians build a map of affiliated people that are expected to support them, distribute voting instructions and finally verify if anyone has really voted according to the instructions.

Verification is possible since in case of a dispute over any single vote (by the party representatives that watch over the scrutiny) parties are given access to all votes and extra time for an additional check.

For instance, the electoral rules of the Sicilian parliament are based on a single preference mechanism. The preferences for each candidate can be expressed by writing only the surname, first the name and then the surname, first the surname and then the name, and freely using italics and capital letters. The combination used, in each electoral section, allows to a great extent the identi-

⁹[7]

fication of voters. Where the electoral rules allows multiple preferences another method for identifying voters relies on the sequence of candidates. Politicians then assign a different sequence to each voter.¹⁰

In the second place, the increasing diffusion of electronic devices (video-phones, etc...) makes it possible to document the act of voting, which should remain strictly confined to the voting booth. Thus, politicians are able to check the vote of citizens, and therefore also to put into effect the threats of retaliation on those who claimed the benefits of their intermediation without “paying” the price.

Taking our study into more detail and with some necessary simplifications, it is possible to set out the exchange mechanisms for each of the subjects involved:

- politicians need to acquire more (downwards) consent, by means of the votes of affiliated workers, and to consolidate (upwards) their influence in the institutions;
- workers ingratiate themselves with politicians in order to increase their chances of getting a job: a job in exchange for a vote;
- firms are obliged to consolidate their positions by seeking to create a stable relationship with those who are more or less directly in control of public funds.

Affiliation and political consent, therefore, become the primary instruments to shape relationships based on mediation between the subjects belonging to these groups.

6 The role of frictions

6.1 No politics

In a very simple uniperiodal search model¹¹, suppose there are N unemployed workers and V vacancies. Suppose each worker posts randomly one application, and each firm (vacancy) chooses randomly among its list of applicants. A vacancy remains unfilled only if it receives no applications, since workers cannot receive multiple offers. A worker remains unemployed only if the vacancy s/he has applied to receives multiple applications and that worker is not selected.

The probability that a vacancy remains unfilled, hence the share of unfilled vacancy, is thus:

$$v_0 = \left(1 - \frac{1}{V}\right)^N \quad (1)$$

since each worker has a probability $1 - \frac{1}{V}$ not to apply to that vacancy.

¹⁰Politicians might prove to be corrupt and inefficient, but at least they seem to know statistics!

¹¹this assumption removes the distinction between urn-ball and stock-flow matching

Let $\theta = \frac{V}{N}$ be a measure of market tightness: the lower θ the tighter the market. The share of workers that remain unemployed is given by

$$u_0 = \frac{N - V(1 - v_0)}{N} = 1 - \theta \left[1 - \left(1 - \frac{1}{N\theta} \right)^N \right] \quad (2)$$

which, if $N = V$, is equal to v_0 . Note that the coordination problem is entirely caught by v_0 : the number of unemployed workers is just N - the number of filled vacancies, i.e. $N - V(1 - v_0)$.

Note also that the unemployment rate is increasing in market tightness (i.e. decreasing in θ) and, holding market tightness constant, in the size of the market¹².

Finally, let us acknowledge that the assumption that individuals are able to send out only one application and firms are able to process only one applicant per period is quite unrealistic. Once a CV is prepared, it takes only a little effort to send it to many different firms. Also, job search is often made through newspapers, websites, employment agencies, etc., which provide information on many vacancies at the same time. On the other hand firms usually make offers after a pre-selection of the candidates. In the real life firms generally make a ranking of suitable applicants and then try to hire starting from the top. If the best candidate refuses the offer the recruiting process does not have to re-start from scratch. Moreover, the bargaining process often involves parallel negotiations with different candidates.

However, the “one application, one offer” assumption is generally used because it provides a minimal model to catch the core coordination problem. Even when workers send multiple applications and firms make multiple offers it might happen that some vacancies receive no applications at all, and some firms are not able to hire any of their applicants because all of them have already been hired by competitors.¹³ Following the literature we will then focus on the one application, one offer case. We will consider a “multiple applications, multiple offers” case in a later section as a test of robustness for our results.

6.2 The effects of political intermediation

Suppose now that there are I parties and that each party i controls a share P_i of these vacancies, which we refer to as affiliated vacancies. Suppose that affiliated vacancies can only hire affiliated workers, i.e. workers that have either promised to support party i or have supported it in the past. The political intermediation in the labor market can thus either be thought of as a reward for past loyalty, or as a payment in exchange of future support.

Vacancy affiliation shall be regarded as exogenous, and we will not model the decision of firms and politicians. As we have seen in section 5 there are a number of (legal, not so legal, definitely illegal) ways in which firms and politicians might interact: our basic model focuses only on the result, i.e. the

¹²see the Appendix

¹³The “multiple applications, one offer” case has been analyzed by Albrecht et al. (2003).

fact that some vacancies become affiliated. On the other hand we explicitly model the affiliation strategy of workers.

We can distinguish different versions of the model according to its information structure. We assume that affiliated workers are able to recognize affiliated firms: this information might be revealed by the politicians themselves, when workers decide to affiliate. Moreover, we assume that affiliated workers do not choose to post their application to non-affiliated firms: once they decide to participate into the political exchange, they don't step back. This could also be obtained by assuming that workers' affiliation is visible to the firms, and that non-affiliated firms are not willing to hire affiliated workers ¹⁴. As for what concerns non-affiliated workers, we distinguish between two cases:

1. non-affiliated workers are also able to recognize affiliated firms: as a consequence, they apply to non-affiliated firms alone (total segmentation);
2. non affiliated workers are not able to recognize affiliated firms and they send their application randomly (partial segmentation).

Let \mathbf{V} be the set of all vacancies, irrespective of affiliation: \mathbf{V}_0 is the subset of non-affiliated vacancies and \mathbf{V}_i the subset of vacancies affiliated to party i . Finally, let \mathbf{N} , \mathbf{N}_0 and \mathbf{N}_i be the corresponding sets of workers. The information structure and application strategy can then be summarized as in table 7.

6.3 Total segmentation

In the first case non-affiliation is treated as a party on its own: each worker must decide whether to affiliate and compete in the affiliated sector, or to remain free and compete in the unaffiliated sector. The best affiliation strategy for workers is to affiliate to party $i = 0, \dots, I$ (including party 0, i.e. non-affiliation) with a probability p_i equal to the share of vacancies controlled by party i (the mixed strategy Nash equilibrium for the affiliation game).

The share of unfilled vacancies is now:

$$v_1 = \sum_{i=0}^I p_i \left(1 - \frac{1}{p_i V}\right)^{p_i N} = \sum_{i=0}^I p_i \left(1 - \frac{1}{p_i N \theta}\right)^{p_i N} \quad (3)$$

and since it is a weighted mean of terms that are all smaller than the share of unfilled vacancies in the unified market we have $v_1 < v_0$, hence $u_1 < u_0$.

In other words, political intermediation splits the labor market and thus reduces the coordination problem (the "big market" effect). To see the possible beneficial role of political intermediation, suppose there are V politicians, each of them controlling 1 vacancy. If they sell their "protection" to no more than 1 worker each, unemployment is minimized (it disappears if $N \leq V$). However, the market for protection is generally not so efficient and affiliated workers still

¹⁴for instance for fear of attracting political attention, or because they think that affiliated workers are less productive

have to compete against each other for the affiliated vacancies (the “patronage effect”).

However, the net reduction in coordination failure is almost negligible as soon as there are more than a handful of vacancies: supposing half of the vacancies are intermediated by 2 parties with equal power, when there are 5 vacancies ¹⁵ u_1 is only 63% of u_0 ; with 10 vacancies this share has gone up to 87%; with 20 vacancies to 94%; with 50 vacancies to 98% (figure 5).

6.4 Partial segmentation

If we suppose that non-affiliated workers are not able to distinguish non-affiliated firms things change. This might be considered almost trivial, since applications that are directed toward affiliated firms are wasted.

However, this assumptions might be regarded as quite realistic: all involved actors (politicians, firms and workers) have an incentive to keep the political exchange unnoticed.

The best affiliation strategy is now different, because the payoffs from remaining free are smaller. Suppose workers affiliate to party i , controlling a share p_i of the vacancies, with probability q_i .

The share of unfilled vacancies is now:

$$v_2 = q_0 \left(1 - \frac{1}{V}\right)^{q_0 N} + \sum_{i=1}^I q_i \left(1 - \frac{1}{p_i V}\right)^{q_i N} \quad (4)$$

To find the best affiliation strategy we have evolved a population of workers, who choose their strategy according to an individual genetic algorithm. Individuals thus learn from their own experience only, rather than from the observed performance of others’ strategies. Note that the learning process involves shifting from one party to another if payoffs are too low: parties have to compete to get the support they need.

A detailed description of the algorithm is reported in section B of the Appendix, while the simulation is described in section C.1.

The resulting probabilities of not finding a job, for different shares P of intermediated vacancies and $I = 2$ parties (a) and for different number I of parties and constant share $P = .25$ of intermediated vacancies (b) is reported in figure 7. N_0 is the share of non-affiliated workers, while e the probability of getting a job. Different simulation runs are characterized by different values of the parameters. Each run involves 1,000 workers and 1,000 vacancies, and lasts 5,000 iterations. The values of N_0 and e reported are the average of the last 500 iterations of each run. The higher and lower bounds refer to the 95% confidence interval of e .

When parties have no influence ($P = 0$) the model collapses to that of section 6.1 and no application is wasted, i.e. sent to a firm that does not even consider it. When all vacancies are controlled by politicians again there is no waste, since

¹⁵and abstracting from integer considerations

all workers choose to affiliate. The probability of finding a job is thus U-shaped (figure 7a): the reduction in this probability can be as high as 20% when about 50% of the vacancies are intermediated. On the other hand no significant effect is found for the level of political fragmentation I (figure 7b).

6.5 Discussion

Is this an adequate explanation of the high unemployment rate in the South of Italy? The model predicts a share of 40-60% of unemployed workers who are able to get to work after only 1 period. Real data (see figure 2) show that the 50% threshold is reached – for males – after 5 months in the North, and 9 months in the South. When focusing only on those workers that eventually do re-enter into the labor market (about 20% exit from the labor force) the threshold is reached in the second month in the North, and in the fifth month in the South. The statistics however refer to dependent employment in the private sector only, and do not include those people that have other work spells (self-employment, employment in the public sector, atypical contracts in both the public and the private sectors), in between two recorded episodes as dependent employees in the private sector. Re-entry times are thus over-estimated in the data.

Another strategy is to look at the North-South differentials, which should be less affected by this problem. In the first 3 months of unemployment the share of workers who find a job (as dependent employees in the private sector) in the South is 40% lower than in the North. The model shows that up to 50% of this gap (i.e. a 20% reduction in the hiring probability) might be due to the effects of political intermediation, interacting with information asymmetries.

As a test of robustness of this result we have considered a slight variation of the model where workers are able to send m applications every period, and firms screen their entire list of applicants in order to fill a vacancy (the “multiple applications, multiple offers” case)¹⁶. Figure 8 shows the effects of increasing the number of simultaneous applications: as expected re-entry times become even shorter. The effects of political intermediation are also reduced: from a 20% reduction in the hiring probability with one application to a 5% reduction with 10 applications.

6.6 The effects of worker turnover

Finally we extend the model to multiple periods, considering an exogenous job termination probability δ . Some of the matches break every period: some workers become unemployed, some jobs become vacant. This allows to compute an equilibrium unemployment rate for the model.¹⁷ The modifications to the simulation model are described in section C.3 of the Appendix. Figure 9 reports

¹⁶see section C.2 in the Appendix

¹⁷The relationship between the share of unemployed workers and the unemployment rate depends on the interpretation of a period, because the definition of unemployment generally refers to non employment in the last 4 weeks. If one period is interpreted as lasting less than a month, this value should be regarded as an upper bound for the “true” unemployment rate.

the equilibrium unemployment rate for different values of the separation rate and for different levels of political intermediation.

Note that, since the the separation rate is higher in the South than in the North (see section 2 above), even without political intermediation we should expect a higher unemployment rate in the South, due to a higher level of frictions. The monthly separation rate in 1998 was 3.0% in the North, while it topped 4.0% in the South ¹⁸. This alone brings an increase in the unemployment rate of 32% (from 1.7% to 2.3%).

For the relevant range of the monthly separation rate (figure 9b) political intermediation in the labor market significantly increases the unemployment rate: + 18% when only 10% of the vacancies are intermediated; + 33% when 25% of the vacancies are intermediated; + 54% when 50% of the vacancies are intermediated.

If we compare a scenario with a monthly separation rate of 3% and no intermediation (the North) and a scenario with a monthly separation rate of 4% and a share of intermediated vacancies of 50% (the South) we find a difference in unemployment rates of +107%: the unemployment rate in the South is more than double that in the North simply because of the role of frictions originated by (i) increased turnover, (ii) political intermediation and (iii) information asymmetries (table 11).

7 Further effects of politics on unemployment

We have shown that political interferences in the labor market, interacted with information asymmetries, can increase the role of frictions in explaining unemployment by more than 100%. However, frictions can account only for a small part of structural unemployment, especially in the South of Italy: our model predicts in the worst case scenario an unemployment rate of 3.5%, while in the South of Italy it is actually 4 times as much.

But political and criminal influences are likely to have an impact on the level of structural unemployment well beyond an increase in frictions. One interesting line of research is then whether politicians (and criminal bosses) might actually benefit from rising unemployment, and how they might operate in order to increase it.

We have already argued that, following our approach, politicians (and criminal bosses) benefit from unemployment because it actually increases the value of the “protection” they sell. Moreover, higher unemployment generally calls for more public intervention in the economy, that is likely to please both politicians and mafia bosses.

This incentive has to be balanced, at least for incumbent politicians, with the risk of causing too much discontent in the voters, who might eventually shift to some other party, but the net effect is likely to persist: unemployment might be a big business opportunity.

¹⁸source: WHIP

One must then understand how politicians and criminal bosses might act in order to boost unemployment. The immediate answer is: by discouraging vacancy formation. $\theta = V/N$ provides an upper bound for the employment rate. Note that as the market becomes tighter the role of frictions becomes smaller (the probability that a vacancy receives no application goes down).

Politicians and criminals might discourage vacancy formation in a number of ways. Criminals might extort money from businessmen and bureaucrats might make their life complicated to an extent that they decide to go out of business. More subtle, if politicians are able to rise wages they could set them too high, so that less vacancies are opened. There is actually some evidence that real wages are too high, in the South of Italy. Table 12, which is based on the same data as table 4, shows that – especially in the para-public sector and for the blue collars – nominal wages in the South are quite close to those in the North. After taking into account the differences in purchasing power, and considering that labor productivity in the South is generally lower than in the North, the problem of excessive wages in the South becomes evident.

8 Conclusions

Why is unemployment so high in the South of Italy? In the first part of the paper we have gathered an extensive evidence of the poor performance of the labor market in these regions, and connected it with the pervasive influence of political intermediation and, more generally, of external interferences in the job matching mechanism. But which are the mechanisms through which political intermediation damages the labor market? Many studies have shown that intermediation might even be beneficial, as long as it reduces coordination failures.

In this paper we have reconciled a political economics view of intermediation with the traditional search literature, which stresses the role of frictions and coordination failures to explain the persistence of structural unemployment. By keeping the vacancy creation decision by firms and the level of intrusion of politicians in the economy exogenous we have focused on the affiliation choices of workers, i.e. on their demand for affiliation.

We have shown that political (and possibly criminal) intermediation replaces one type of coordination failure – the “big market” effect – with another – the “patronage” effect. Both effects however turn out to be small, so that they cannot be blamed for the very high levels of unemployment in these regions.

In such a framework information asymmetries on the part of workers, who are not perfectly able to recognize affiliation patterns of firms, are necessary in order to find a significant negative impact of political intermediation on the labor market. These information asymmetries implies that some applications are wasted. The impact of political intermediation on unemployment in this case is U-shaped: both when politics has no power to control vacancies at all and when politics controls all the vacancies the waste is zero: in the first case because there are no affiliated firms, in the latter because there are no non-affiliated workers. In intermediate cases the resulting structural unemployment

can increase by more than 100%.

A policy implication of this analysis is that things can actually become worse, before they start to improve, when an external decision to cut on corruption and criminality is taken.

Further extensions of this line of research will consider the endogenous character of choices made by firms (on how many vacancy to open and the demand for affiliation – whether to affiliate and which party to affiliate to) and politicians (on the level of intervention in the economy, i.e. on the supply of affiliation).

A Proofs

Here we prove that the unemployment rate u_0 in eq. 2 is increasing in market tightness, i.e. decreasing in θ , and increasing in the size of the market.

The derivative of u_0 with respect to θ is

$$\frac{du_0}{d\theta} = \frac{\left(1 - \frac{1}{V}\right)^N (N + V - 1)}{V - 1} - 1 \quad (5)$$

Taking logs, this derivative is negative whenever $N(\ln(V - 1) - \ln(V)) < \ln(V - 1) - \ln(N + V - 1)$, which is always satisfied. ■

The derivative of u_0 with respect to N , holding θ constant is

$$\frac{du_0}{dN} = \frac{\left(1 - \frac{1}{V}\right)^N \frac{V}{N} \left[1 + (V - 1)\ln\left(1 - \frac{1}{V}\right)\right]}{V - 1} \quad (6)$$

and is positive whenever the term in the square brackets is greater than 0, that is whenever $\ln(V - 1) - \ln(V) > -\frac{1}{V - 1}$, which is always satisfied because of the curvature of the logarithmic function. ■

B The genetic algorithm

We use the standard genetic algorithm included in the open source JAS simulation platform (<http://jaslibrary.sourceforge.net>) and developed by Gianluigi Ferraris (see Sonnessa, 2004). Each rule (genome) is composed by 3 genes which can take only binary values (alleles), and is interpreted as a number between 0 and 7, corresponding to the affiliation strategy. Each individual is endowed with 30 rules (some might of course point to the same strategy). At every period

only one rule is active and gets a reward: its fitness is increased by 1 if the individual finds a job and is decreased by 1 if the individual remains unemployed. To ensure that strategies corresponding to non-existent parties are eliminated, they get an extra reward of -10.

When all 30 individual rules have been tested evolution is called a new generation of strategies is created.

To increase stability, the evolutionary algorithm selects only 50% of the rules for evolution at every generation (turnover rate = .5). The crossover threshold (the cutting point when two rules are mixed to produce an offspring) is set at .5. The mutation rate is set at 0 because no exploration of new strategies is needed and the environment is constant. Convergence, i.e. stationarity of the q distribution, is always achieved before 5,000 iterations (figure 6).

C The simulation

C.1 Single application, single period

The simulation is constructed as follows. At $t = 0$ N workers and V vacancies are created. There are I parties and each party randomly affiliates $p_i P$ vacancies. At the start of every period all individuals become unemployed (the separation rate is 100%) and all jobs become vacant. Hence, every period is equivalent to a new run.

Workers have to choose which party to affiliate, by means of an individual genetic algorithm (see previous section). Non-affiliated workers apply randomly to one vacancy; workers affiliated to party $i = 1, ..I$ apply randomly to a vacancy affiliated to the same party.

Vacancies affiliated to party $i = 0, ..I$ (party 0 refers to the non-affiliated vacancies) consider only workers with the same affiliation, select one applicant (if any) and hire him.

The sequence of events is reported in table 8, while the parameters are described in table 9.

A typical simulation run lasts for 5,000 periods. The first 4,500 periods are discarded in the analysis to ensure convergence of the individual strategies.

The simulation is written in Java, using the JAS open source agent-based platform (Sonnessa, 2004). The code is available from the authors upon request.

C.2 Multiple applications, one period

When multiple applications are considered, individuals send m applications each period. Firms screen all their applicants list in order to fill their vacancies. Thus only actions no. 6 and 7 in table 8 are modified, and the order of events remains unchanged.

C.3 Single application, multiple periods

An exogenous separation rate δ is considered ($\delta = 1$ in the basic model). Only unemployed workers apply. In each period the number of vacancies is determined as the number of unfilled vacancy plus the number of terminated jobs. The sequence of events is thus as reported in table 10.

Duration	North	Center	South	Italy
		%		
< 1 month	40.22	32.58	23.27	32.48
2-12 months	38.90	41.88	41.20	40.33
> 12 months	20.88	25.54	35.53	27.20
Total	100.00	100.00	100.00	100.00

Table 1: Duration of unemployment spells, dependent work. Source: WHIP 1998

	Center- North	South
	%	
Atypical ¹⁹ jobs / total employment	19.5	19.0
Temporary ²⁰ jobs / total dependent employment	10.0	16.4

Table 2: Employment composition 2004. Source: Svimez (2005)2005

Previous job region	Next job region			Total
	North	Center	South	
	%			
North	96.8	1.3	1.9	100.0
Center	5.2	91.3	3.4	100.0
South	8.5	3.3	88.2	100.0

Table 3: Job changes and geographical mobility. Individuals aged 14-24. Source: WHIP 1998

Area	Unemployment rate (%)	Expected wage (€)			
		Blue collar		White collar	
		private	para-public	private	para-public
North	4.1	19,325	14,276	26,972	32,979
Center	7.1	17,776	13,801	25,416	30,553
South	18.0	14,382	12,362	20,185	24,159
South / North ratio		74.4 %	86.6 %	74.8 %	73.3 %

Table 4: Expected wage for an unemployed male worker aged 30-50, full-time work. Para-public sector includes education, health care, banking and insurance. Source: WHIP (1998) for gross wages, ISTAT (1998) for unemployment rates

	Population	Private employees (%)	Public transfers to:		
			P.A.	households	firms
North	45.1	59.8	38.5	36.1	37.7
Center	22.1	19.4	27.7	36.8	34.4
South	32.8	20.8	33.8	27.1	27.9
Total	100.0	100.0	100.0	100.0	100.0

Table 5: Regional distribution of public spending for transfers (P.T.). Source: Ministry of Economics (2003), ISTAT (2001) and WHIP (1998).

Variable	Sign of parameter
- Public sector in economy	+
- Probability of punishment	-
- Concentration index (n° of firms)	+
- Market dimension	-
- Individual relations	+
- Political market competition	-
- Criminal liability of politicians	-
- Administrative discretion level	+

Table 6: Influence on the level of corruption

Worker type	applies to	considered by	Model
\mathbf{N}	\mathbf{V}	\mathbf{V}	no politics
\mathbf{N}_0	\mathbf{V}_0	\mathbf{V}_0	total segmentation
\mathbf{N}_i	\mathbf{V}_i	\mathbf{V}_i	
\mathbf{N}_0	$\mathbf{V}_0, \mathbf{V}_i$	\mathbf{V}_0	partial segmentation
\mathbf{N}_i	\mathbf{V}_i	\mathbf{V}_i	

Table 7: Information structure and application strategy

Order	Time	Who	What
1	0	Model	Create workers
2	0	Model	Create vacancies
3	0	Model	Affiliate vacancies
4	t	Firms	Fire all workers
5	t	Workers	Choose affiliation
6	t	Workers	Post application
7	t	Firms	Hire

Table 8: Sequence of events, one period model

Parameter	Range	Default value	Meaning
N	$[1, \infty]$	1,000	Population size
V	$[1, \infty]$	1,000	Jobs
P	$[1, \infty]$.25	Share of affiliated vacancies
I	$[1, V]$	2	Number of parties
p_i	$[0, 1]$	egalitarian	Party i 's share

Table 9: Parameters

Order	Time	Who	What
1	0	Model	Create workers
2	0	Model	Create vacancies
3	0	Model	Affiliate vacancies
4	t	Active firms	Fire randomly
5	t	Unemployed workers	Choose affiliation
6	t	Unemployed workers	Post application
7	t	Recruiting firms	Hire

Table 10: Sequence of events, multiple periods model

	Unemployment rate (%)	Index
Benchmark *	1.7	100
+ Increased turnover **	2.3	132
+ Political intermediation ***	3.5	207

* $\delta = 3.0\%$, no politics
 ** $\delta = 4.0\%$
 *** $P = .5$

Table 11: The role of frictions

Area	Average wage (€)			
	Blue collar		White collar	
	private	para-public	private	para-public
North	20,151	14,886	28,125	34,389
Center	19,135	14,856	27,358	32,888
South	17,539	15,076	24,616	29,462
South / North ratio	87.0 %	101.3 %	87.5 %	85.7 %

Table 12: Average wage for an employed male worker aged 30-50, full-time work. Para-public sector includes education, health care, banking and insurance. Source: WHIP (1998)

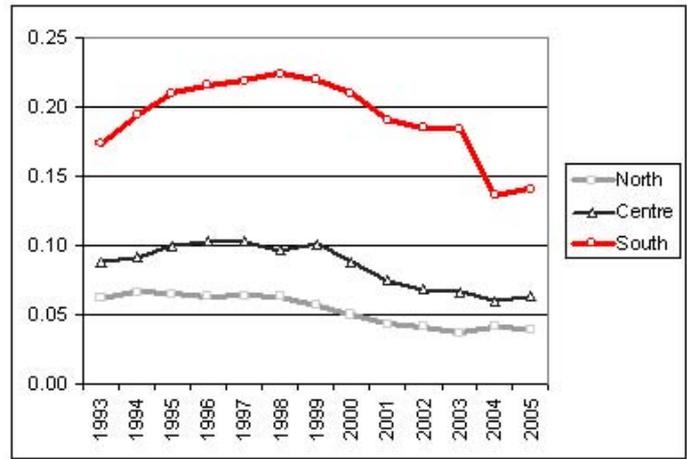


Figure 1: Unemployment rate. Source: ISTAT, RTFL and RCFL 1993-2005

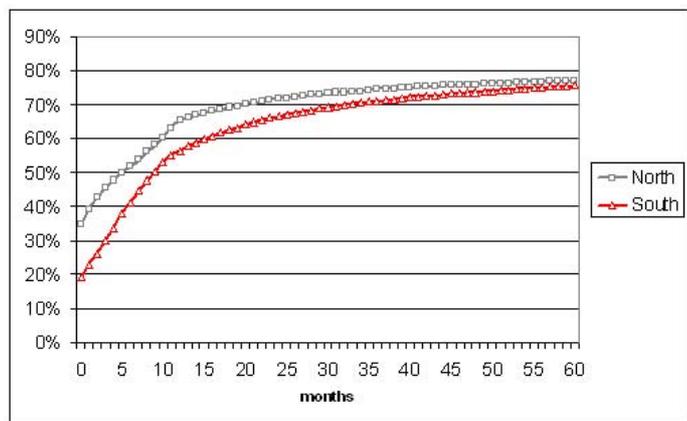


Figure 2: Re-entry time into male dependent employment, 1998. Source: WHIP

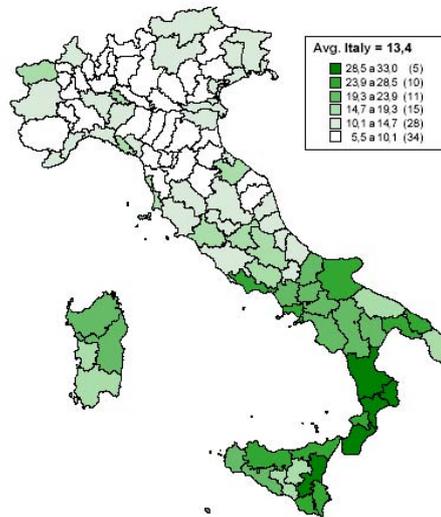


Figure 3: Share of irregular jobs, 2003. Source: ISTAT (2005)

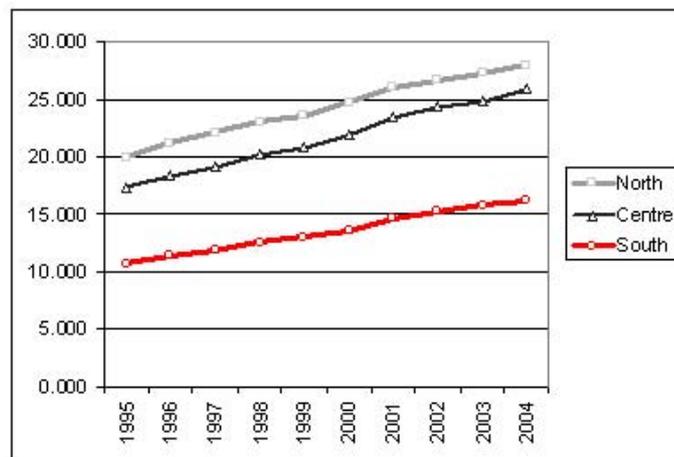


Figure 4: GDP per capita, 000 €. Source: ECHP (1998)

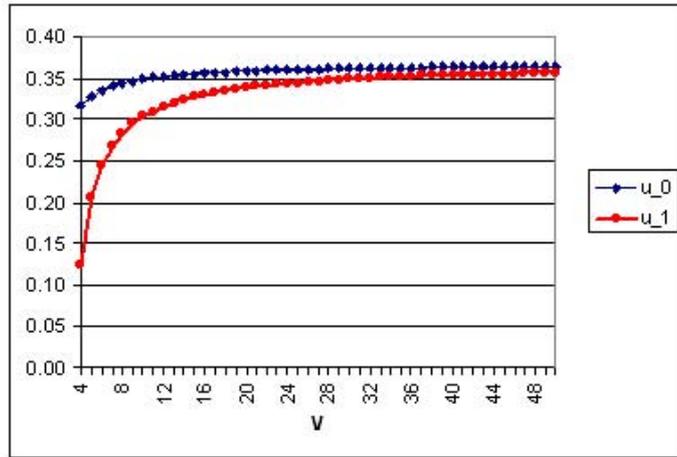


Figure 5: Probability of not finding a job. No politics vs. total segmentation with 2 parties controlling 25% of the vacancies each.

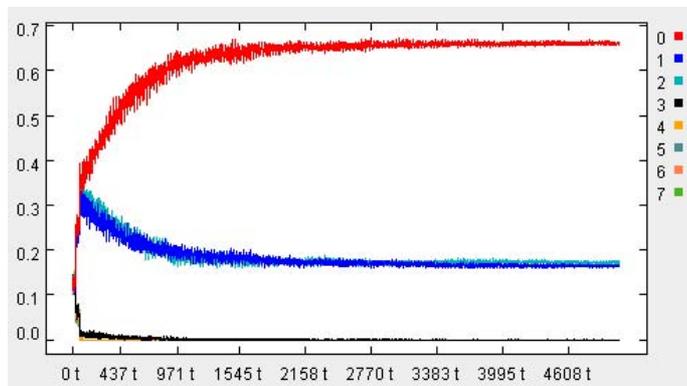
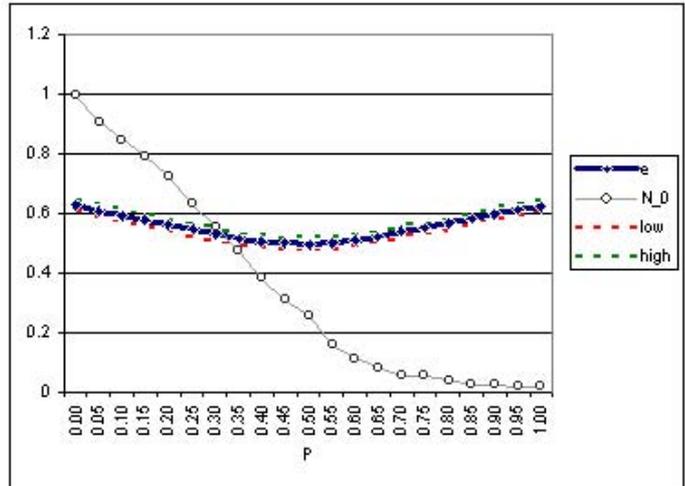
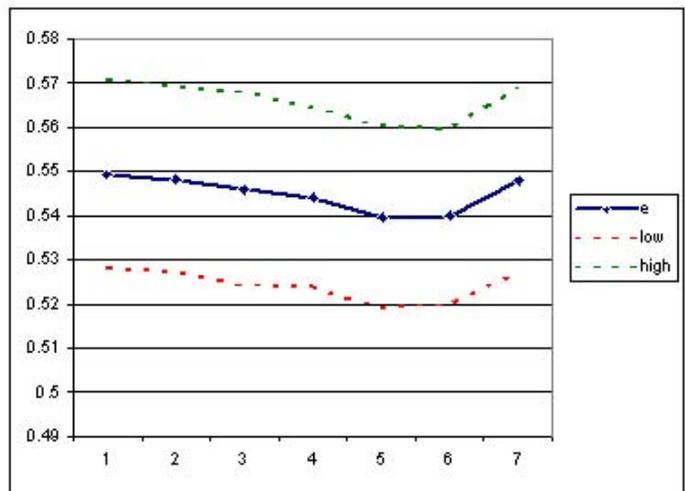


Figure 6: Convergence in the distribution of workers' affiliation strategies. $P = .25$; $I = 2$; $N = V = 1,000$.



(a) increasing P , $I = 2$



(b) increasing I , $P = .25$

Figure 7: Effects of increasing political intermediation P (left) and of increasing political fragmentation I (right) on the probability of finding a job e . $N = V = 1,000$. Parties have equal power.

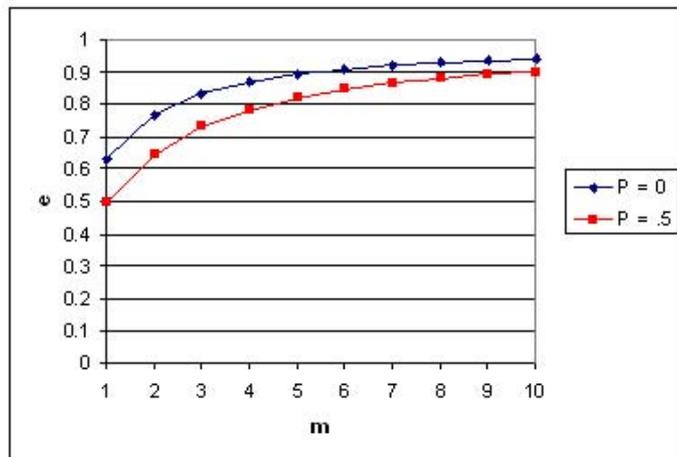
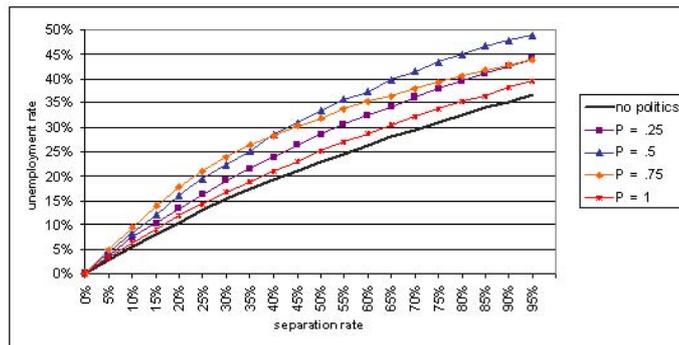
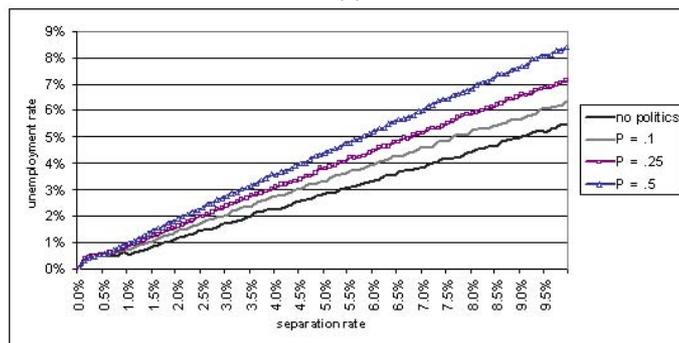


Figure 8: Effects of multiple applications (m) by workers in a model with complete screening capabilities of firms, $N = V = 1,000$. When political intermediation is considered, two parties with equal power are assumed.



(a)



(b)

Figure 9: Effects of separation rate on unemployment, different levels of political fragmentation. $N = V = 1,000$.

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